Online Appendices

After the Panic:
Are Financial Crises Demand or Supply Shocks?
Evidence from International Trade

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A. Simulations

A. Calibration

A first set of parameters is chosen directly based on the literature. Following Eggertsson and Krugman (2012) and Martin and Philippon (2017) we assume half the households are constrained ($\chi = 0.5$). We assign a value 0.04 to the real interest rate, and set the discount factor of patient households such that $\beta^s = 1/(1+r)$. We set the slope of the Phillips curve $\kappa = 0.1$ and the inverse elasticity of labor supply ϕ is set to 1 as in Monacelli (2009). We assume the fraction of firms' cost that must be financed before production takes place λ is set to $1/3$. We assume values for the parameters of the production function $\rho = 0.5$, $\theta = 0.7$, and $\epsilon = 0.5$, and we verify that simulation results do not change significantly as these parameters vary.

The remaining parameters are the price of the export good (P_X), the price of the import good (P_M), the price of the imported input (P_I), the relative weight of the nontraded good in the utility function (α_N), and the borrowing limit for impatient households ($\overline{D}$). These parameters are set to target the following conditions in the initial steady-state. First, we set the trade balance equal to zero, the share of inputs in total imports equal to either 10% or 40%, and the price of the import good and the export good equal.[13] Second, we set the employment share of the nontraded sector to either 60% or 80% of employment.[14] Third, we set the debt to income ratio of impatient households equal to one, an assumption which follows Eggertsson and Krugman (2012).

Finally, in each sector the borrowing limit for firms ($\overline{\delta}_S$) is set to be just below the optimal amount borrowed in the unrestricted steady state.

In our simulations, we assume a decline of equal magnitude (in %) in household or firm's borrowing limits. An alternative approach would have been to calibrate the change in these borrowing limits to match changes in certain ratios (such as the ratio of household debt or firm debt to GDP) observed during crises, but we do not have systematic evidence in this regard.

[13] While we do not have accurate historical data informing an average value of the share of imported inputs in total imports over our sample period, we believe these two values represent a reasonable range.

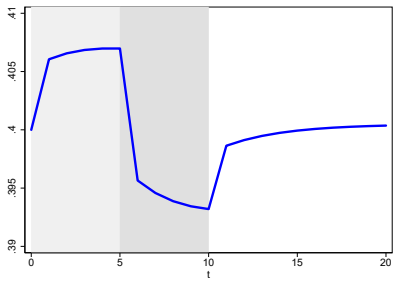
[14] Again, we do not have historical data describing the size of the nontradable sector, so we use a reasonable range of parameters.

B. Temporary Shocks

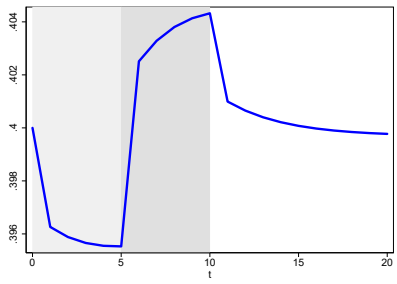
Figure A.1: *Adjustment in Response to a Household Deleveraging Shock.*

This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in impatient households' borrowing limit $\overline{D}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

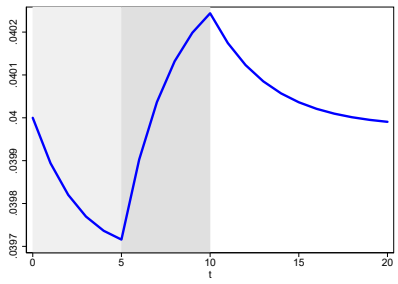
(a) *Exports / GDP*



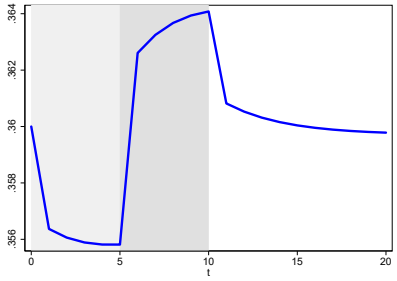
(b) *Imports / GDP*



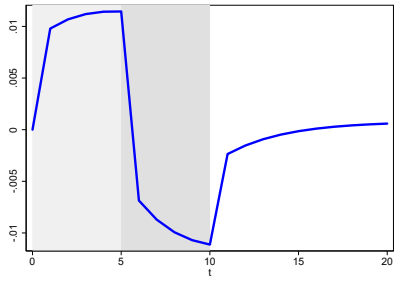
(c) *Imports of Inputs / GDP*



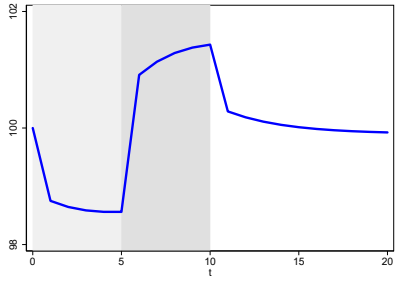
(d) *Imports of Final Goods / GDP*



(e) *Trade Balance / GDP*



(f) *Price of Nontraded Good*



(g) *Households' Borrowing Limit*

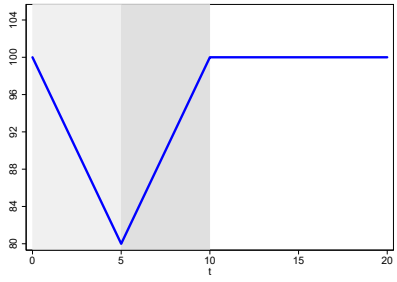
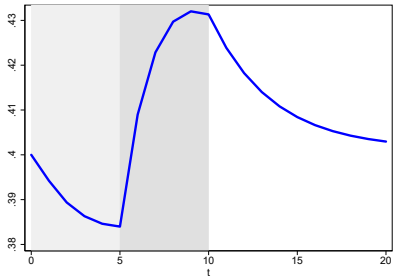


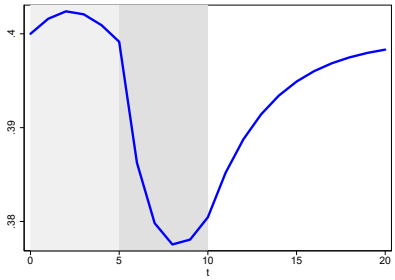
Figure A.2: *Adjustment in Response to a Firm Deleveraging Shock.*

This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in firms' borrowing limit $\overline{\delta}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

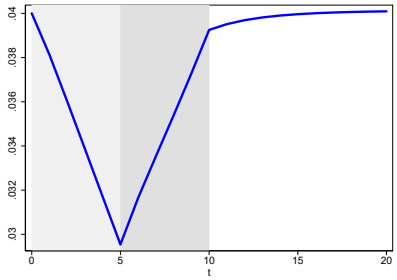
(a) *Exports / GDP*



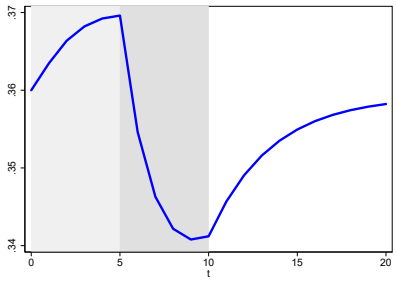
(b) *Imports / GDP*



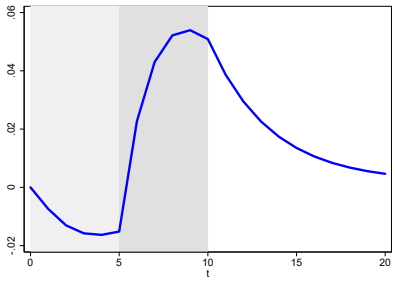
(c) *Imports of Inputs / GDP*



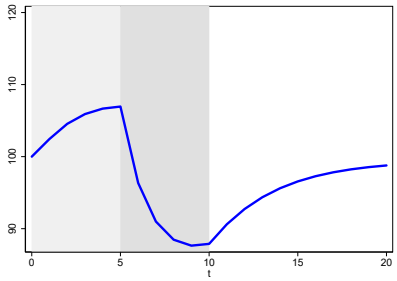
(d) *Imports of Final Goods / GDP*



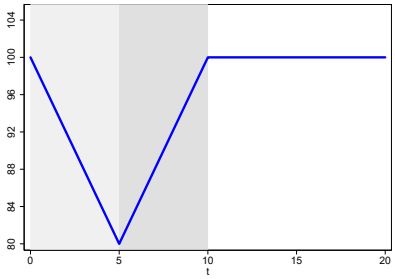
(e) *Trade Balance / GDP*



(f) *Price of Nontraded Good*



(g) *Firms' Borrowing Limit*



C. Sensitivity Analysis

We analyze the following additional simulations varying two important steady-state ratios used to calibrate the model's parameters: the share of imported intermediate inputs in total imports and the size (employment share) of the nontradable sector.

1. Figures 1 and 2 in Main Text and Appendix Figures A.1 and A.2:
    - Share of Imported Intermediate Inputs in Total Imports = 0.1
    - Employment Share of the Nontradable Sector = 0.6
2. Figures A.3 and A.4:
    - Share of Imported Intermediate Inputs in Total Imports = 0.1
    - Employment Share of the Nontradable Sector = 0.8
3. Figures A.5 and A.6:
    - Share of Imported Intermediate Inputs in Total Imports = 0.4
    - Employment Share of the Nontradable Sector = 0.6
4. Figures A.7 and A.8:
    - Share of Imported Intermediate Inputs in Total Imports = 0.4
    - Employment Share of the Nontradable Sector = 0.8

Discussion:

Consider first the case of the permanent shocks. When the size of the nontradable sector increases relative to the benchmark level in the main text (see Figures A.3 and A.4) there are no changes in the patterns observed.When the share of imported intermediate inputs in total imports increases relative to the benchmark level (see Figures A.5 and A.6) the response to the household deleveraging shock is very similar. In the case of the response to the firm deleveraging shock we see one difference: the ratio of imports to GDP falls in response to the shock (while it increases in the baseline case in the main text). It is still the case under both parametrizations that the ratio of imports of final goods to GDP rises, while the ratio of imports of intermediate inputs to GDP falls. The larger calibrated steady state share of imports of intermediate inputs to GDP leads to the decline in total imports to GDP. Importantly, this decline in imports to GDP is substantially *smaller* than the decline in

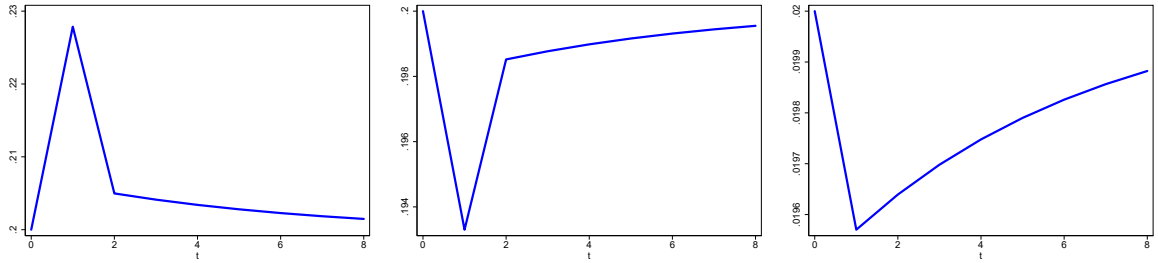
exports to GDP. In consequences, in *all* scenarios, the trade balance to GDP ratio declines in response to the firm deleveraging shock.

In the case of the temporary shocks, again we find no relevant differences between the baseline case in the main text and the simulations with alternative parameters in the response to the household deleveraging shock. In the case of the firm deleveraging shock, increasing the steady-state share of imported intermediate inputs in total imports or the share of the nontradable sector leads to a decline in the ratio of imports to GDP during the period when the borrowing limit falls. Once again, a key point is that in all cases the decline in imports to GDP is *smaller* than the decline in exports to GDP and consequently the trade balance to GDP ratio declines in response to the firm deleveraging shock in *all* scenarios.

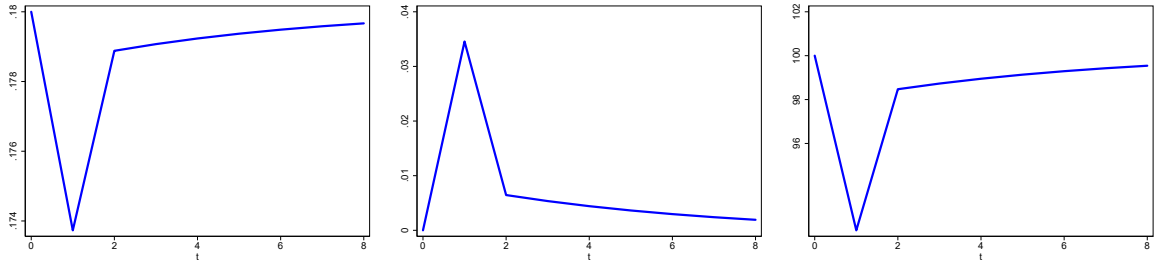
Figure A.3: *Adjustment in Response to a Household Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in impatient households' borrowing limit $\overline{D}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

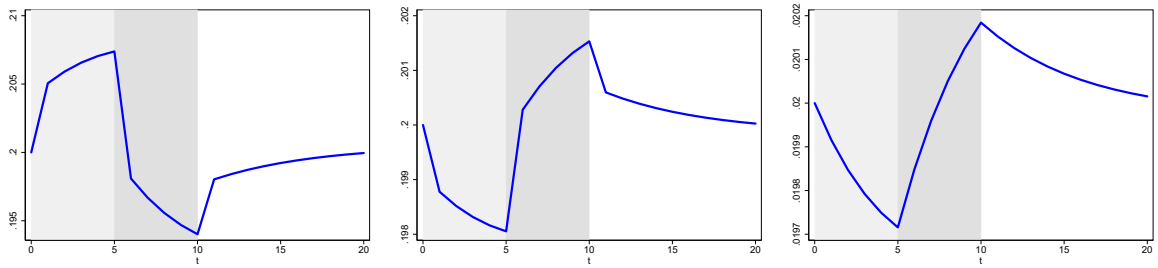


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*



Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in impatient households' borrowing limit $\overline{D}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*

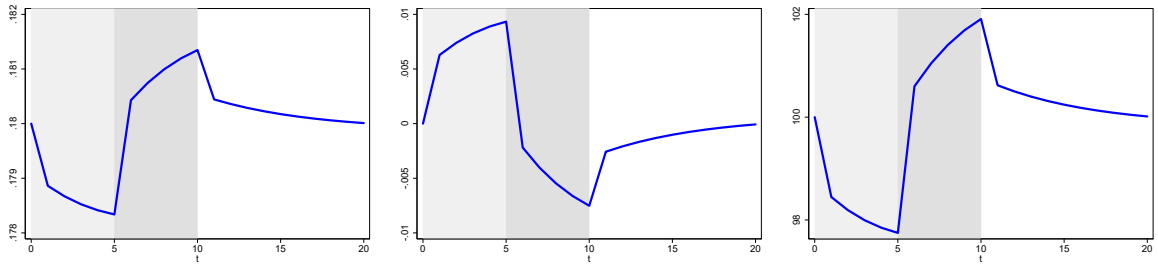
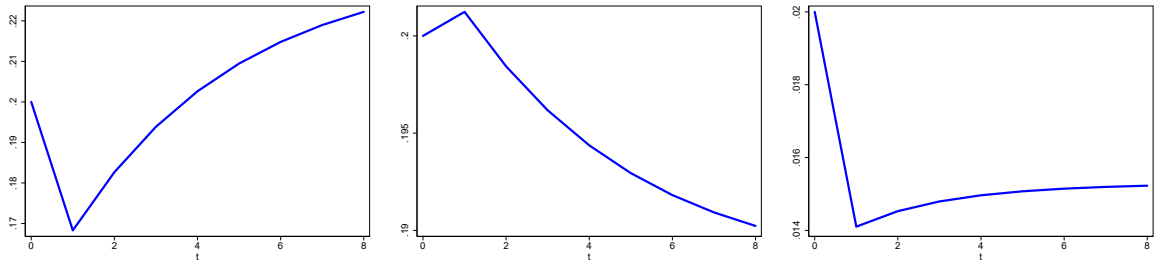


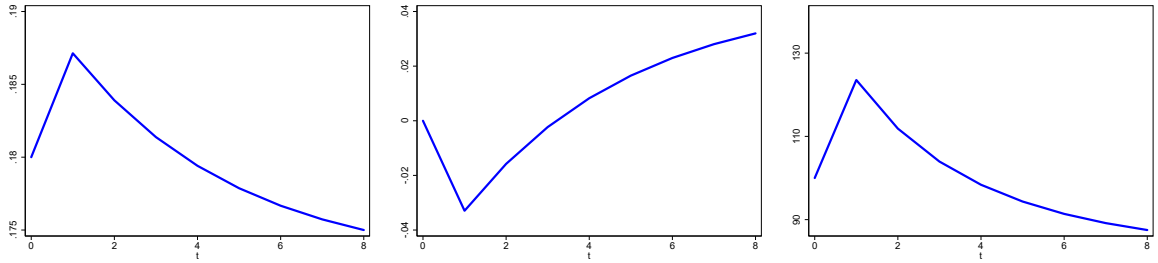
Figure A.4: *Adjustment in Response to a Firm Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in firms' borrowing limit $\overline{\delta}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

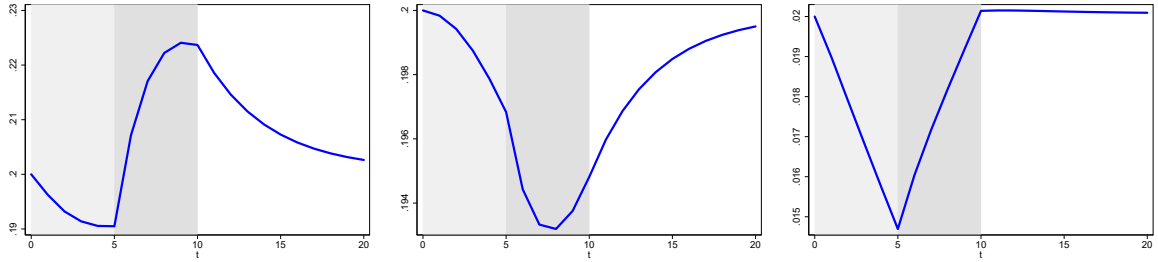


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*



Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in firms' borrowing limit $\overline{\delta}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*

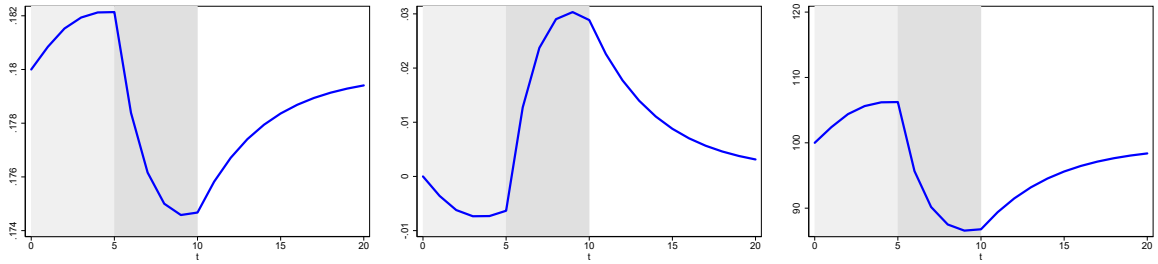
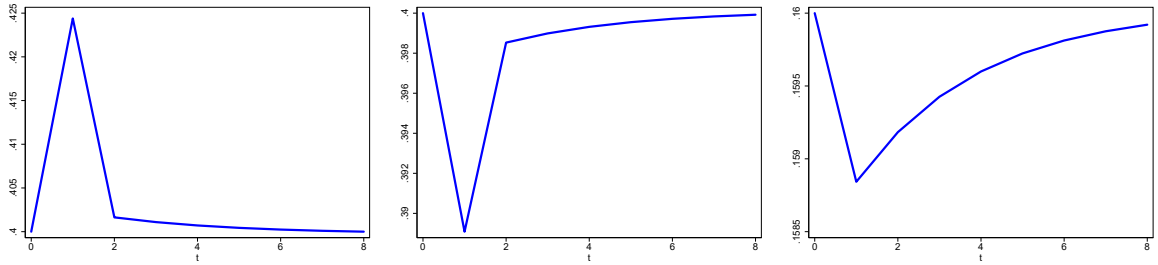


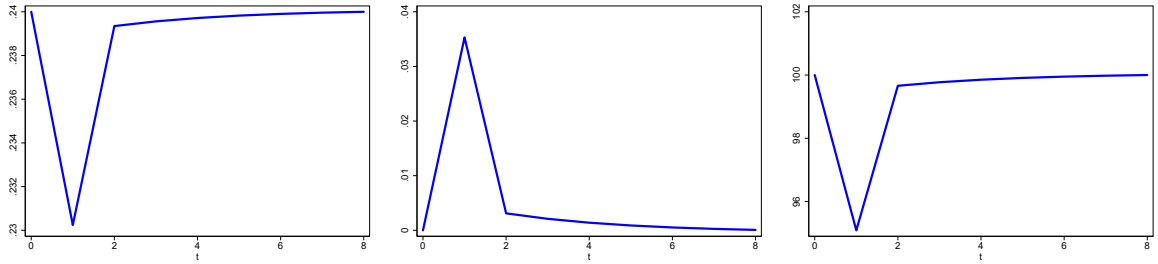
Figure A.5: *Adjustment in Response to a Household Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in impatient households' borrowing limit $\overline{D}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

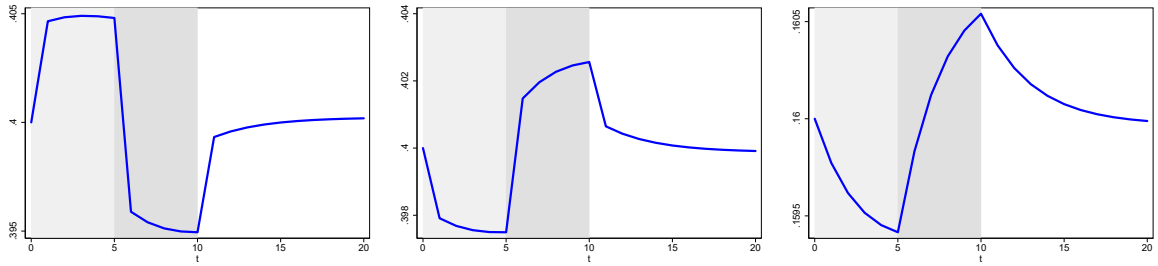


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*



Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in impatient households' borrowing limit $\overline{D}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*

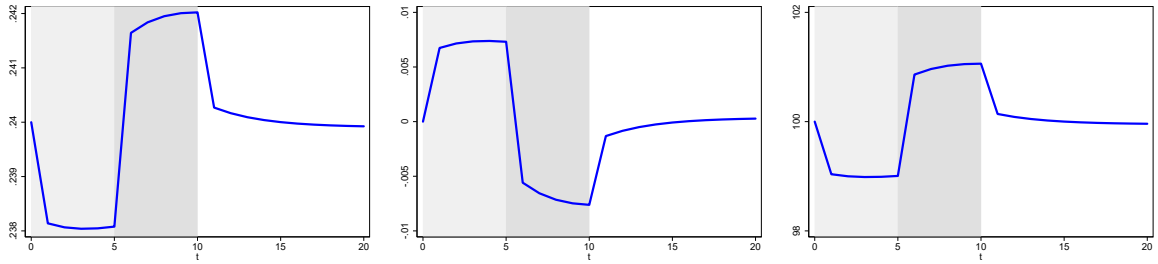
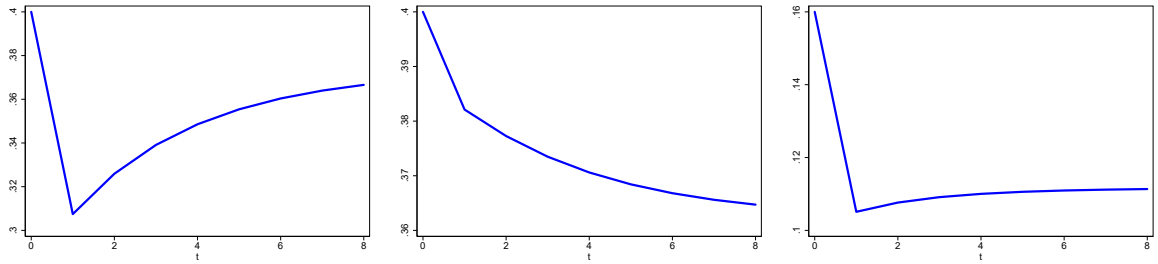


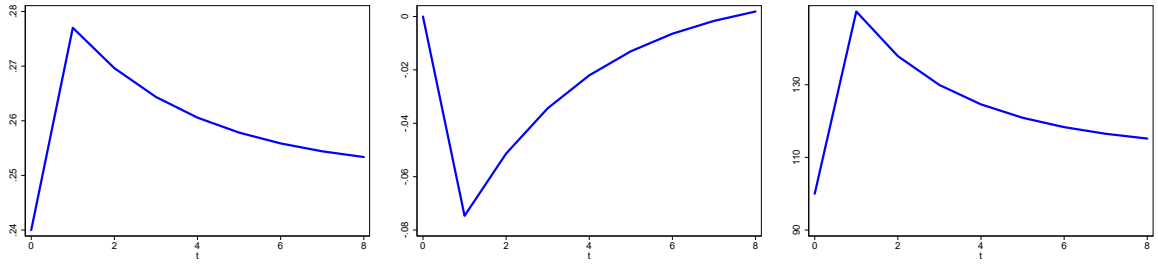
Figure A.6: *Adjustment in Response to a Firm Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in firms' borrowing limit $\overline{\delta}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

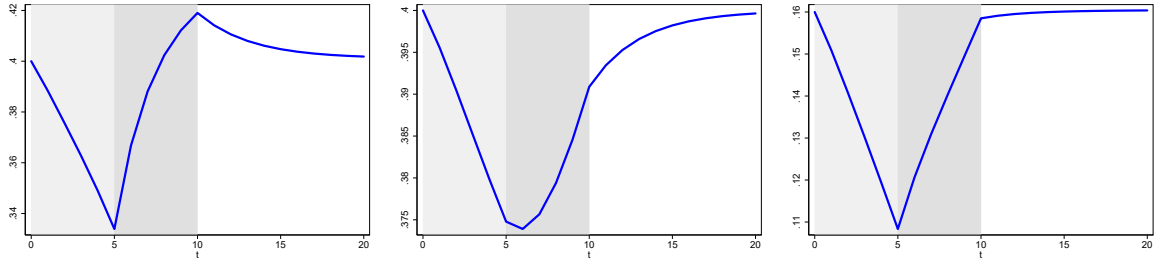


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*



Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in firms' borrowing limit $\overline{\delta}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*

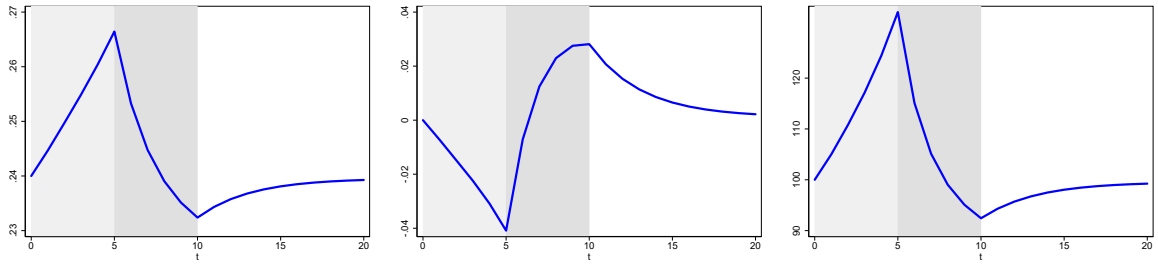
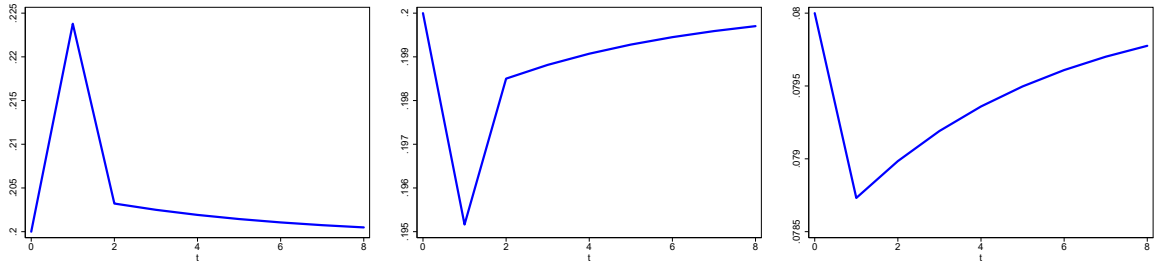


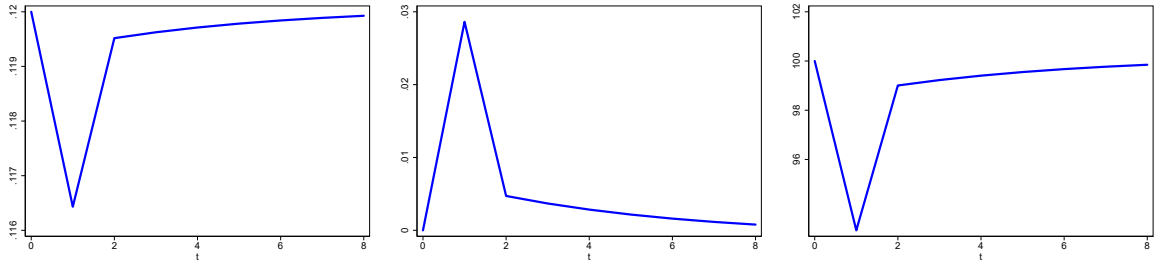
Figure A.7: *Adjustment in Response to a Household Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in impatient households' borrowing limit $\overline{D}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

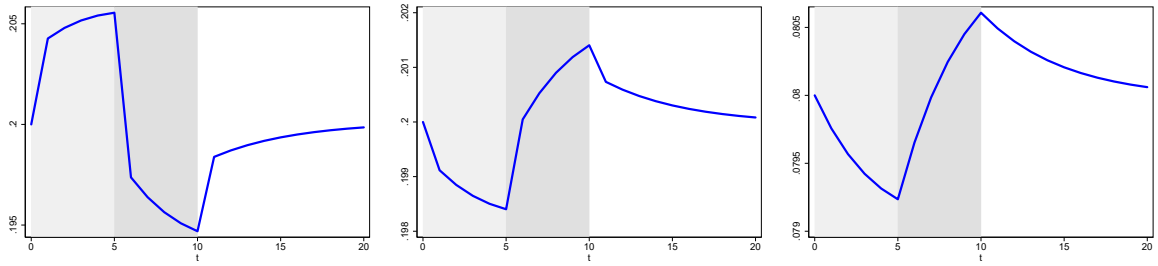


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*



Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in impatient households' borrowing limit $\overline{D}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*

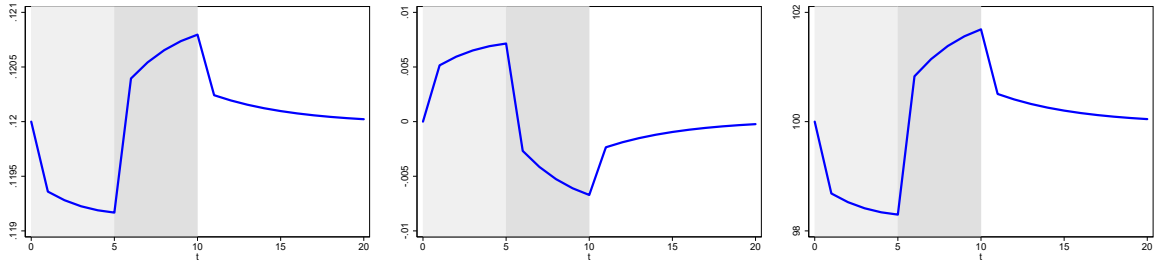
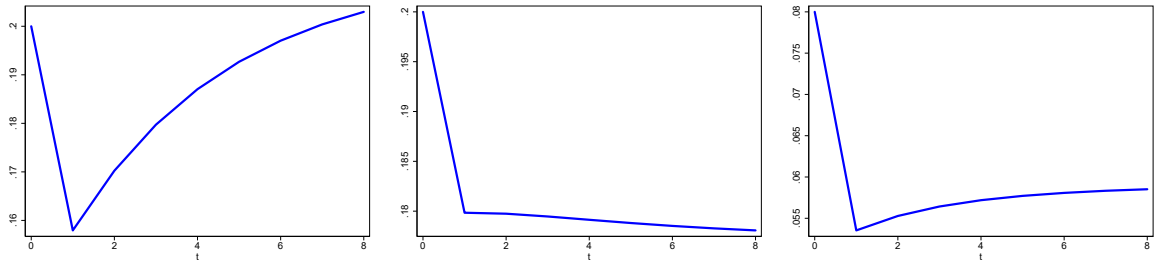


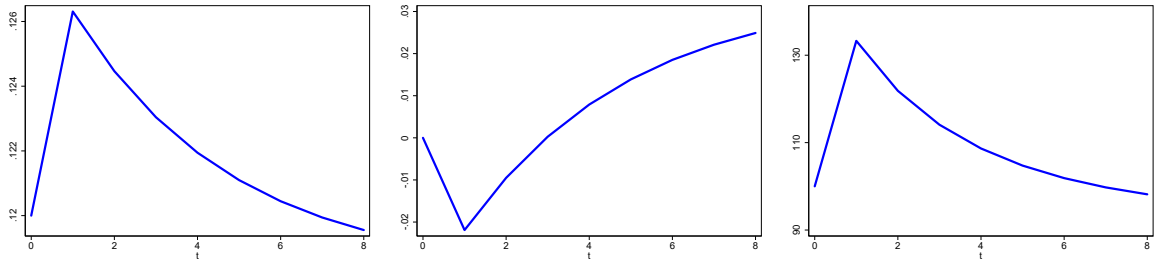
Figure A.8: *Adjustment in Response to a Firm Deleveraging Shock.*

Panel A: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a 20 percent permanent reduction in firms' borrowing limit $\overline{\delta}$. The shock occurs in period t = 1.

(a) *Exports / GDP* **(b)** *Imports / GDP* **(c)** *Imports of Inputs / GDP*

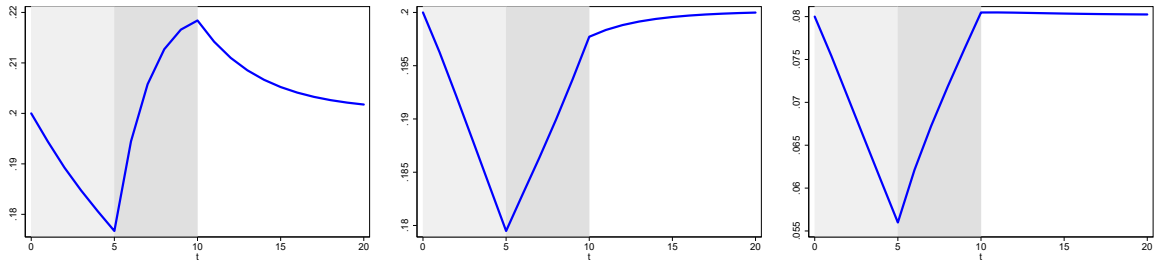


(d) *Imports of Final Goods / GDP* **(e)** *Trade Balance / GDP* **(f)** *Price of Nontraded Good*

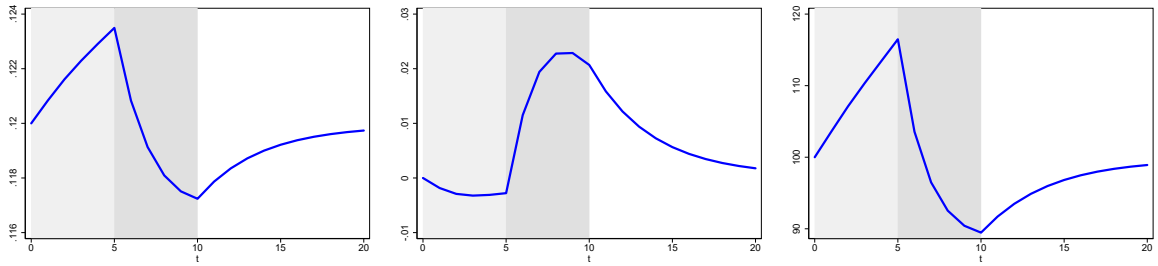


Panel B: This figure describes the adjustment of the trade balance, exports, imports, and the price of the non-traded good to a gradual 20 percent reduction and subsequent recovery in firms' borrowing limit $\overline{\delta}$. The shock starts in period t = 1, with a 4 percent decline in the borrowing limit in the first five periods (marked by the lighter shaded area) and a 4 percent increase in the following five periods (marked by the darker shaded area).

(g) *Exports / GDP* **(h)** *Imports / GDP* **(i)** *Imports of Inputs / GDP*



(j) *Imports of Final Goods / GDP* **(k)** *Trade Balance / GDP* **(l)** *Price of Nontraded Good*



B. Data: Trade and Financial Crises

A. Data Sources

Trade in Final Goods and Intermediate Inputs We construct a dataset of bilateral trade flows by product type spanning the period 1962–2014. These data are restricted to the post-WW2 period as product-level data are not systematically available for earlier decades. Broadly, our procedure involves obtaining data by product, by year, and by exporter-importer pair from the United Nations' COMTRADE database and assigning each individual product into final goods, intermediate inputs, or capital goods categories. The coding of products into these aggregate groups is standard and follows Hummels, Ishii, and Yi (2001).[15] We exclude from our data fuels, which at times represent a relevant share of world trade, and a small set of unmatched products.

B. Descriptive Statistics

Table A.1 shows the mean and standard deviation of the exports to GDP and imports to GDP ratio across countries for different time periods in our sample.

Table A.1: *Summary Statistics for Trade Flows.*

	All			Advanced			Developing		
	Mean	St. Dev.	N	Mean	St. Dev.	N	Mean	St. Dev.	N
Post WW2									
Exports to GDP	0.25	0.20	4393	0.24	0.15	924	0.25	0.21	3469
Imports to GDP	0.27	0.23	4383	0.25	0.14	924	0.28	0.25	3459
Interwar									
Exports to GDP	0.17	0.08	424	0.17	0.07	176	0.17	0.08	248
Imports to GDP	0.19	0.11	420	0.20	0.10	176	0.18	0.11	244
Pre WW1									
Exports to GDP	0.16	0.15	1610	0.18	0.17	906	0.14	0.11	704
Imports to GDP	0.20	0.18	1600	0.22	0.21	889	0.16	0.10	711

Notes: The data on trade flows are obtained from CEPII TRADHIST database for the pre-WW2 period and from the IMF's *Direction of Trade Statistics* for the post-WW2 period.

[15] We match SITC revision 1 product codes in COMTRADE to BEC codes used by Hummels, Ishii, and Yi (2001) using a concordance obtained from the United Nations' Statistics Division.

C. List and Frequency of Financial Crises

Table A.2: *List of financial crises.*

This table lists all financial crisis episodes in our dataset. See text.

Country	Crisis years
Algeria	1990
Angola	1992
Argentina	1890, 1931, 1980, 1989, 1995, 2001
Australia	1828, 1843, 1893, 1931, 1989
Austria	1924, 1929, 2008
Belgium	1848, 1870, 1925, 1931, 2008
Bolivia	1986, 1994
Brazil	1890, 1897, 1923, 1963, 1985, 1990, 1994
Canada	1873, 1906, 1923, 1983
Central African Republic	1976, 1988
Chile	1890, 1899, 1907, 1926, 1976, 1982
China	1897, 1923, 1931, 1992
Colombia	1982, 1998
Costa Rica	1987, 1994
Denmark	1857, 1877, 1885, 1902, 1907, 1931, 1987, 2008
Dominican Republic	1996, 2003
Ecuador	1981, 1998
Egypt	1981, 1990
El Salvador	1989
Finland	1931, 1991
France	1881, 1889, 1907, 1930, 1994, 2008
Germany	1880, 1891, 1901, 1925, 1931, 1977, 2008
Ghana	1982, 1997
Greece	1931, 1991, 2008
Guatemala	1990, 2001, 2006
Honduras	1999
Hungary	1931, 1991, 2008
India	1993
Indonesia	1992
Ireland	2007
Italy	1866, 1887, 1891, 1907, 1930, 1990
Japan	1901, 1907, 1923, 1927, 1992
Kenya	1985
Korea	1983, 1997
Malaysia	1985, 1997

Notes: The data on financial crisis dates are obtained from Reinhart and Rogoff (2011).

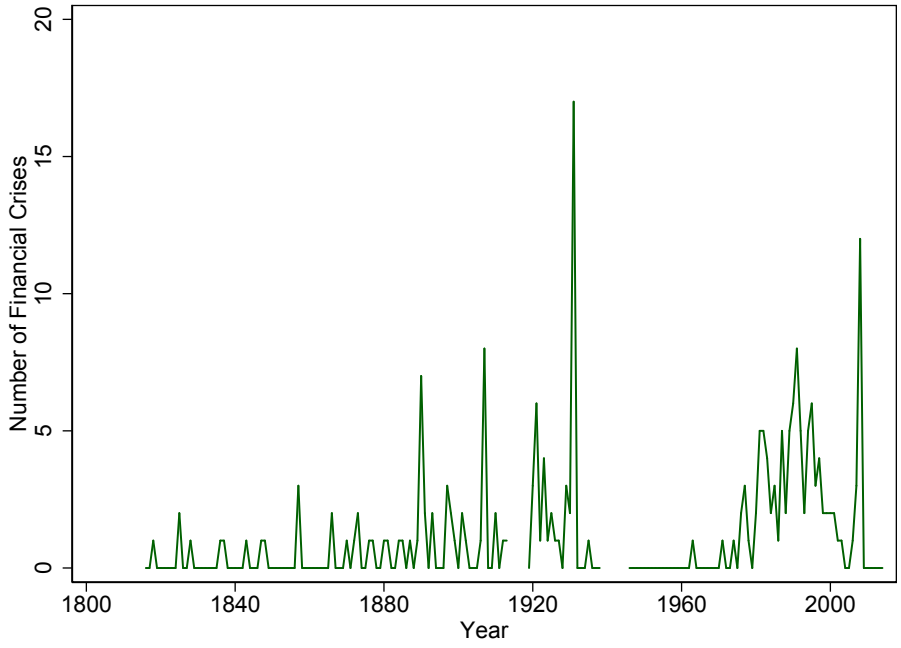
Table A.2: *List of financial crises, CONTINUED.*

Country	Crisis years
Mexico	1907, 1929, 1981, 1994
Morocco	1983
Myanmar	1996
Netherlands	1897, 2008
New Zealand	1890, 1987
Nicaragua	1987, 2000
Nigeria	1992
Norway	1898, 1931, 1987
Panama	1988
Paraguay	1995
Peru	1872, 1983, 1999
Philippines	1981, 1997
Poland	1931, 1991
Portugal	1890, 1931, 2008
Romania	1931, 1990
Russia	1995, 2008
Singapore	1982
South Africa	1977, 1989
Spain	1931, 1977, 2008
Sri Lanka	1989
Sweden	1876, 1907, 1922, 1931, 1991
Switzerland	1931, 2008
Thailand	1980, 1996
Tunisia	1991
Turkey	1931, 1982, 1991, 2000
United Kingdom	1825, 1837, 1847, 1857, 1866, 1890, 1974, 1984, 1991, 1995, 2007
United States	1818, 1825, 1836, 1857, 1873, 1884, 1890, 1907, 1929, 1984, 2007
Uruguay	1893, 1898, 1971, 1981, 2002
Venezuela	1978, 1993
Zambia	1995
Zimbabwe	1995

Notes: The data on financial crisis dates are obtained from Reinhart and Rogoff (2011).

Figure A.9: *Frequency of financial crises*

This figure shows the number of financial crises per year. See text.



Notes: The data on financial crisis dates are obtained from Reinhart and Rogoff (2011).

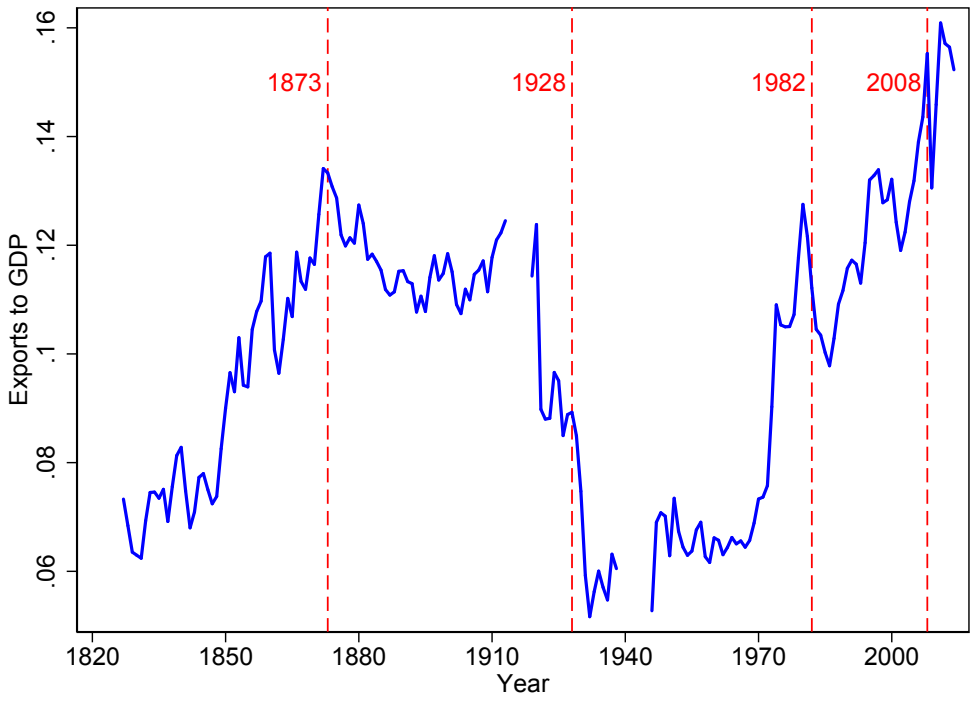
D. World Trade and Major Crises

To motivate our analysis, we note that what was witnessed after the global financial crisis in 2008 was nothing new, especially not the so-called Great Trade Collapse, meaning the fall in trade volumes relative to GDP.

Figure A.10 shows the trajectory of world exports/GDP after all the major global financial crises between 1827 and the present. We aggregate total exports and GDP over this period for a constant set of countries. This limits our world-trade figure to 10 countries with continuously available trade and GDP data over the 1827–2014 period. We exclude years of world wars in which trade or GDP data are missing for many countries. Figure A.11 shows the results are very similar based on a broader group of 20 countries over the period 1868–2014.

Figure A.10: *World Trade and Major Crises.*

This figure is constructed aggregating exports and GDP for a constant sample of the following 10 countries: Australia, Chile, Denmark, Spain, France, United Kingdom, Netherlands, Portugal, Sweden, and the United States. Vertical dashed lines indicate the starting year of four major world financial crises: the Panic of 1873 episode, the 1930s Great Depression episode, the 1980s LDC Sovereign-Financial Crises episode, and the 2008 Great Recession episode.



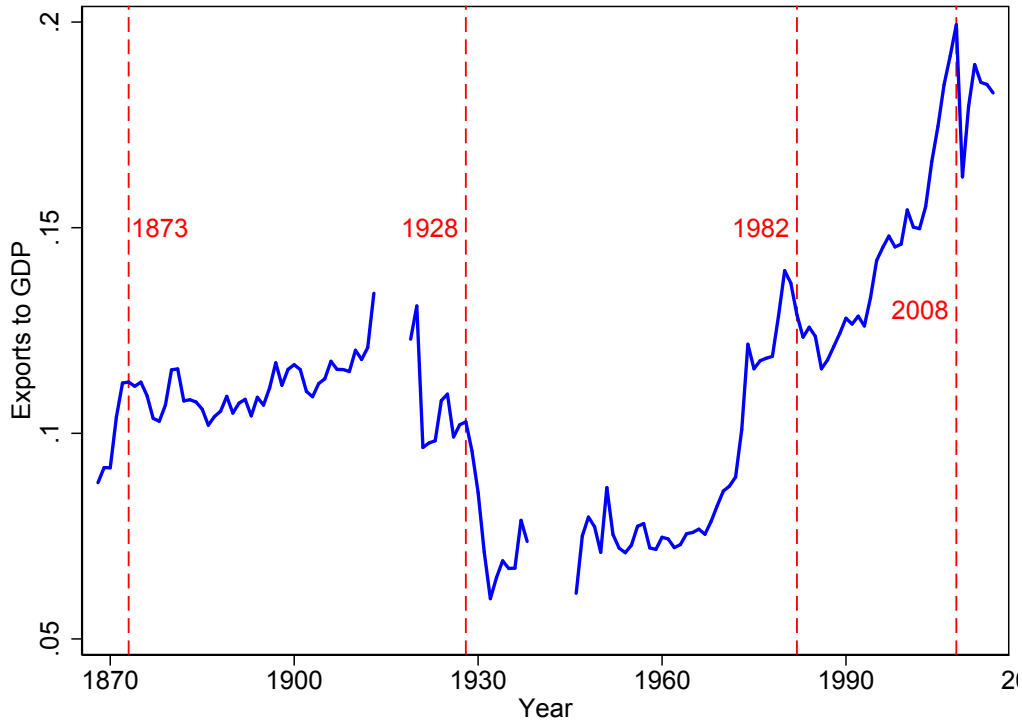
From this graph, the trade collapse following the recent 2008–2009 financial crisis is unsurprising. Our figure also shows, with vertical dashed lines, the starting dates of the Panic of 1873 episode, the 1930s Great Depression episode, the 1980s LDC Sovereign-Financial Crises episode, and the 2008 Great Recession episode. Similar declines in world trade can be seen to have occurred after each of these crisis events. Two years following the start of the Great Recession in 2008, world exports to GDP in our data had fallen by 0.93 percentage points. This is a similar decline to that in the early 1980s, when the trade to GDP fell ratio fell by 0.86 percentage points. The impact of the Great Depression, however, was almost twice as large, with a 1.45 percentage point fall in world trade to GDP.

However, the recovery of trade after the recent "trade collapse" was faster — compared to output — than that seen in previous episodes. Five years following the start of the Great Recession the exports-to-GDP ratio was 0.1 percentage points higher than in the year prior to the start of the crisis, while in the 1980s debt crisis and the Panic of 1873 it was still one percentage point lower. The Great Depression stands out in this regard. Due perhaps to rising protectionist measures adopted by the U.S. and other countries during this period (and other rising frictions, such as the collapse of the gold standard) exports-to-GDP were still more than 3 percentage points lower than in the year prior to the start of the crisis.

This figure nicely motivates our study by revealing an enduring link between crisis events and trade outcomes. What is obscured in this figure, however, is the uneven impact of financial crises on imports and exports, and the correlation between those shocks and the location of the underlying financial frictions. Our empirical analysis in sections III and IV focuses on those issues with a granular empirical analysis.

Figure A.11: *World Trade and Major Crises.*

This figure is constructed aggregating exports and GDP for a constant sample of the following 20 countries: Australia, Belgium, Brazil, Canada, Chile, China, Colombia, Denmark, Spain, Finland, France, the United Kingdom, Greece, Italy, Japan, Netherlands, Norway, Portugal, Sweden, and the United States. Vertical dashed lines indicate the starting year of four major world financial crises: the Panic of 1873 episode, the 1930s Great Depression episode, the 1980s LDC Sovereign-Financial Crises episode, and the 2008 Great Recession episode.



C. Total Trade

A. Table Corresponding to Figure 3 in Main Text

Table A.3 shows the coefficients from the estimation of equation 1.

Table A.3: *Local projections: response of total exports and imports to financial crisis*

This table shows the response of the level of total GDP-normalized exports or imports $\ln T_i - \ln Y_i$ to financial crisis in country i (in year 0). See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	0.4	0.2	0.3	0.1	-0.6
	(0.9)	(1.3)	(1.3)	(1.7)	(1.7)
N	6419	6273	6127	5981	5838
Total imports	-4.9**	-6.6**	-4.6**	-5.1*	-6.2*
	(1.2)	(1.4)	(1.4)	(2.1)	(2.4)
N	6395	6248	6100	5953	5811

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

B. Additional Results

Here we discuss additional results regarding the response of total exports and total imports to financial crises splitting the sample by subperiods and between developed and developing countries. We also examine the impact of financial crises at various percentiles of the distribution of the dependent variable.

Different Time Periods. If we exclude the Great Recession, as in Figure A.12a, the results are similar to those for the full sample. In the post-WW2 sample (shown in A.12b), which includes 55% of the crisis episodes, the decline in imports relative to GDP is even larger than in the full sample. On impact, the normalized trade flow declines -5.9% at a two-year horizon in the full sample and -8.9% in the post-WW2 era. In both cases, normalized exports rise but the impact is not statistically significant. Our estimates for the pre-WW2 period (in Figure A.12c) are blurrier. Imports still fall relative to GDP (-4.1% change) on impact, but recover faster than in the full sample baseline. Normalized exports climb susbtantially over time. In both cases, standard errors are wider, due perhaps primarily to the smaller sample size. The estimated coefficients corresponding to Figure A.12 are shown in Table A.4.

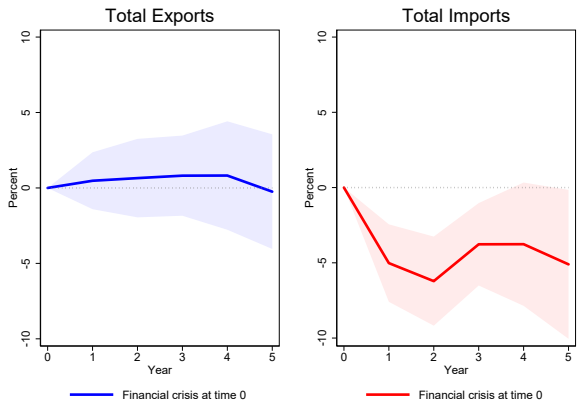
Advanced vs. Developing Economies. We also examine the response of exports and imports in developed and developing countries separately, as shown in Figures A.13a and A.13b, respectively. (The estimated coefficients corresponding to Figure A.13 are shown in Table A.5.) We denominate 14 countries in our sample as developed and the remaining 55 as developing. Out of the 195 crisis episodes considered, 39% occur in the developed group, and the remaining 61% in developing countries. While our main messages outlined earlier largely remain valid for both samples, we do find some differences. In the developing-country sample, normalized imports decline more than in the full sample, reaching the largest decline at a two year horizon (-8.2% change, compared to -5.9% for the full sample). In the developed-country sample we loose precision, perhaps due to the small number of countries, but the main message—that imports tend to fall, and exports tend to stay stay constant or rise, relative to GDP—still stands.

Quantile Regressions In the main text we analyzed the response of (GDP-normalized) exports and imports to financial crises. Here we show that the impact of financial crises is fairly similar at different percentiles of the distribution of exports or imports. We do so using quantile regressions for the 10th, 25th, 50th, 75th and 90th percentiles. The results are shown in Figure A.14

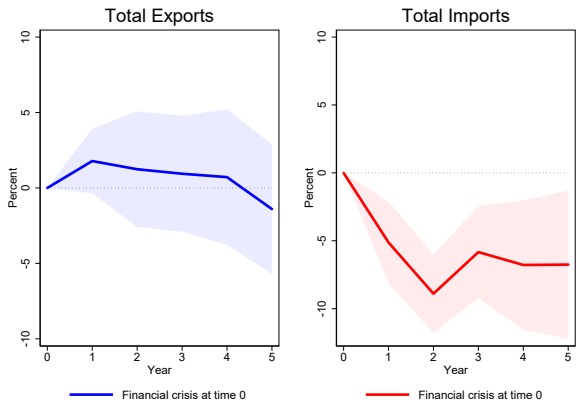
Figure A.12: *Local projections: response of total trade in goods to financial crisis*

This figure shows the response of the level of total GDP-normalized exports ($\ln X_i - \ln Y_i$) and imports ($\ln M_i - \ln Y_i$) to financial crisis in country i. See text.

(a) *Excluding Great Recession*



(b) *Post-WW2*



(c) *Pre-WW2*

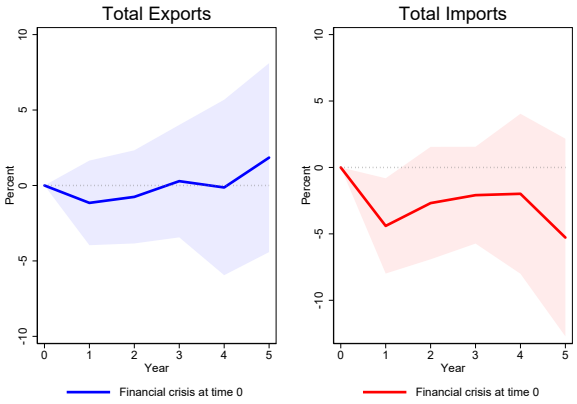


Figure A.13: *Local projections: response of total trade in goods to financial crisis*

This figure shows the response of the level of total GDP-normalized exports ($\ln X_i - \ln Y_i$) and imports ($\ln M_i - \ln Y_i$) to financial crisis in country i. See text.

(a) *Advanced Economies - All Years* **(b)** *Developing Economies - All Years*

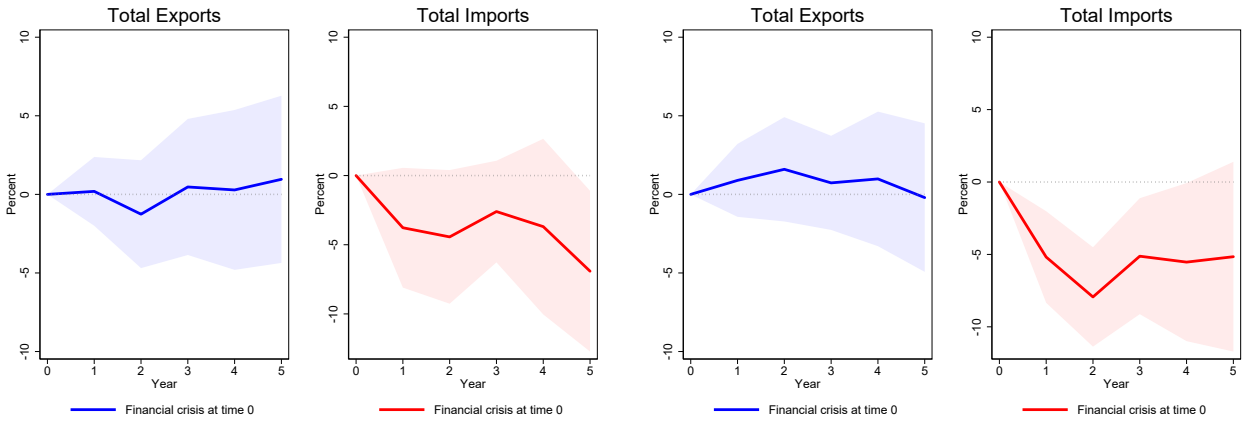


Table A.4: *Local projections: response of total exports and imports to financial crisis*

This table shows the response of the level of total GDP-normalized exports or imports $\ln T_i - \ln Y_i$ to financial crisis in country i (in year 0). See text.

Panel A: Excluding Great Recession.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	0.5	0.7	0.8	0.8	-0.2
	(0.9)	(1.4)	(1.4)	(1.6)	(1.7)
N	5957	5877	5797	5717	5640
Total imports	-5.0**	-6.2**	-3.8*	-3.8	-5.1*
	(1.4)	(1.6)	(1.5)	(2.0)	(2.3)
N	5933	5852	5770	5689	5613

Panel B: Post-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	1.8	1.2	0.9	0.7	-1.4
	(1.1)	(2.0)	(2.0)	(2.3)	(2.2)
N	4258	4191	4124	4057	3990
Total imports	-5.1**	-8.9**	-5.8**	-6.8**	-6.8**
	(1.5)	(1.5)	(1.7)	(2.4)	(2.8)
N	4247	4179	4111	4043	3977

Panel C: Pre-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	-1.2	-0.8	0.3	-0.1	1.8
	(1.4)	(1.9)	(2.1)	(2.6)	(2.8)
N	2161	2082	2002	1924	1848
Total imports	-4.4*	-2.7	-2.1	-2.0	-5.3
	(2.1)	(2.6)	(2.4)	(3.5)	(4.0)
N	2148	2069	1988	1910	1834

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.5: *Local projections: response of total exports and imports to financial crisis*

This table shows the response of the level of total GDP-normalized exports or imports $\ln T_i - \ln Y_i$ to financial crisis in country i (in year 0). See text.

Panel A: Advanced Economies.

	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	0.2	-1.3	0.5	0.3	1.0
	(1.0)	(1.9)	(2.1)	(2.1)	(2.0)
N	1946	1904	1861	1819	1777
Total imports	-3.8	-4.4	-2.6	-3.7	-6.9*
	(2.3)	(2.5)	(1.7)	(3.2)	(2.9)
N	1930	1889	1847	1805	1763

Panel B: Developing Economies.

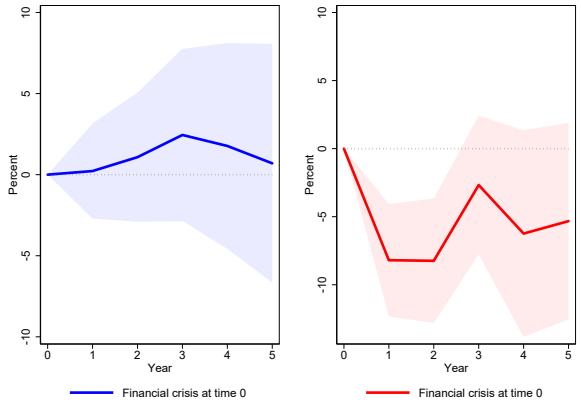
	Year 1	Year 2	Year 3	Year 4	Year 5
Total exports	0.9	1.6	0.7	1.0	-0.2
	(1.2)	(1.7)	(1.8)	(2.0)	(2.2)
N	4472	4368	4265	4161	4060
Total imports	-5.2**	-7.9**	-5.1**	-5.5*	-5.2
	(1.8)	(1.9)	(1.9)	(2.4)	(2.9)
N	4464	4358	4252	4147	4047

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

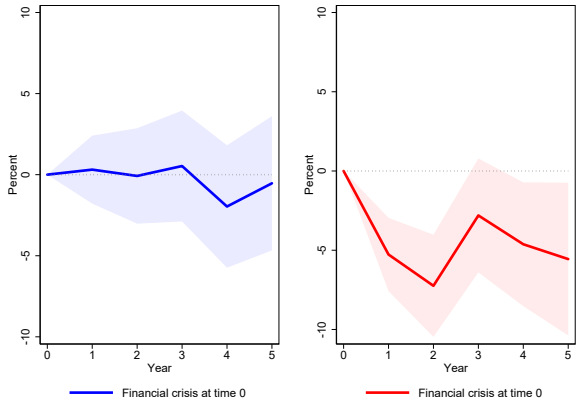
Figure A.14: *Local projections: response of total trade in goods to financial crisis*

This figure shows the response of the level of total GDP-normalized exports ($\ln X_i - \ln Y_i$) and imports ($\ln M_i - \ln Y_i$) to financial crisis in country i. See text.

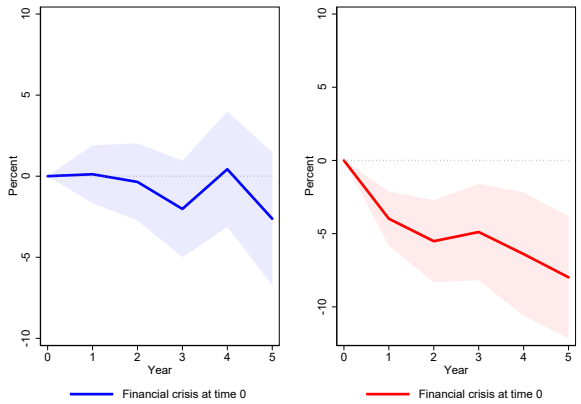
(a) *10th percentile*



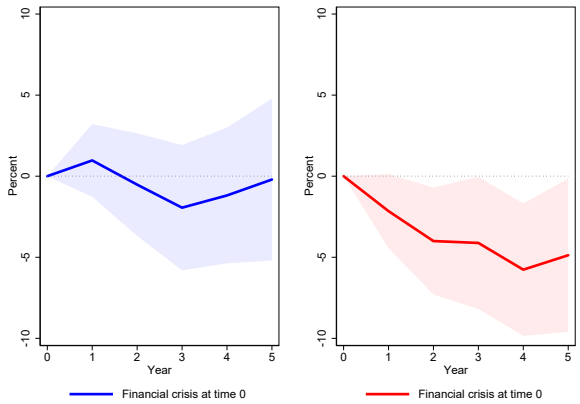
(b) *25th percentile*



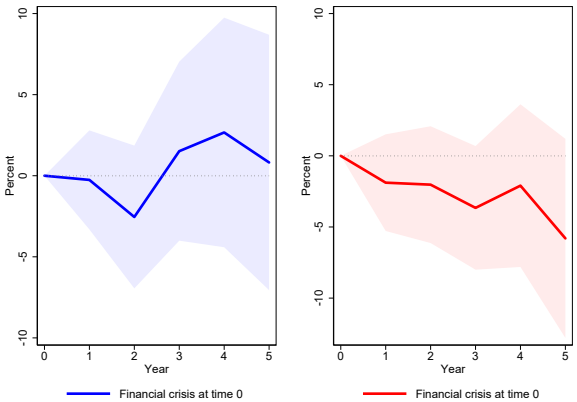
(c) *50th percentile*



(d) *75th percentile*



(e) *90th percentile*



D. Response of Bilateral Trade Flows to Financial Crises

A. Table Corresponding to Figure 4 in Main Text

Table A.6 shows the coefficients from the estimation of equation 2. Table A.7 shows the coefficients from the estimation of equation 3. These coefficients correspond to Figure 4 in the main text.

B. Additional Results

The Post-WW2 Era versus The Pre-WW2 Era. Our dataset spans two centuries, a period over which there have been many changes in economic regimes and institutions. We wonder, then, whether the financial-crisis-as-demand-shocks view that emerges from our analysis so far is valid throughout this long period, or whether different eras are systematically different in this regard. It seems natural to split our sample into before and after World War 2, leaving a similar number of crisis episodes in both subsamples. These results are illustrated by Figure A.15 and Tables A.8 and A.10. In the post-WW2 era, the results are very similar to those documented earlier for the entire two centuries. During the pre-WW2 period, however, our estimates for the impact of crises on trade flows lack precision. The results for the RER, on the other hand, are much the same as those reported earlier.

Advanced versus Developing Economies. We also divide the sample between advanced and developing economies, with 14 countries in the former group and 55 in the latter. We report four sets of results, corresponding to: advanced exporter, advanced importer, developing exporter, and developing importer. Figure A.16 and Tables A.9 and A.11 show that the patterns seen earlier do not differ much across these groups. The main difference is a more pronounced decline in normalized imports when the importer is a developing country instead of an advanced economy.

Table A.6: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.2*	1.1	1.9	4.4**	3.4*
	(1.1)	(1.3)	(1.4)	(1.4)	(1.5)
Financial crisis in importer (year 0)	-5.9**	-7.5**	-5.9**	-7.9**	-5.3**
	(1.1)	(1.3)	(1.4)	(1.5)	(1.5)
N	195273	189378	183695	178261	172990

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.7: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

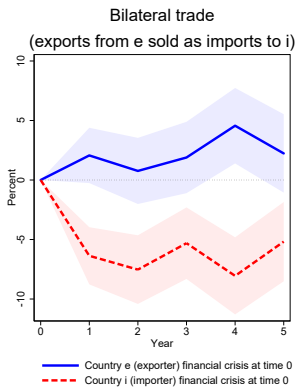
	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.7**	0.3	1.1**	0.9*	0.6
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-2.6**	-0.7*	-1.0**	-0.7*	-0.5
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
N	202927	196849	190993	185125	179317

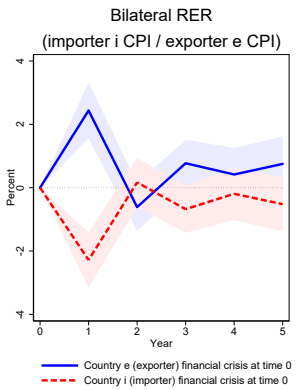
Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Figure A.15: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

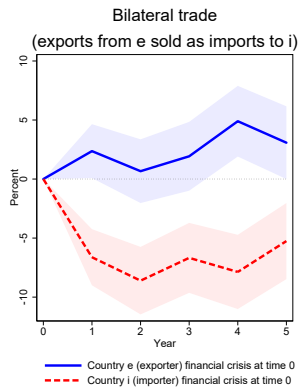
This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

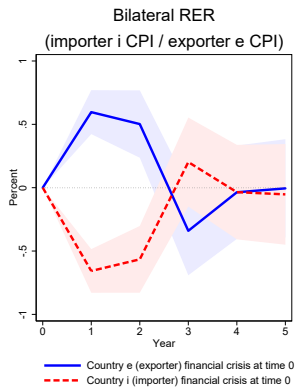
(a) *Excluding Great Recession*



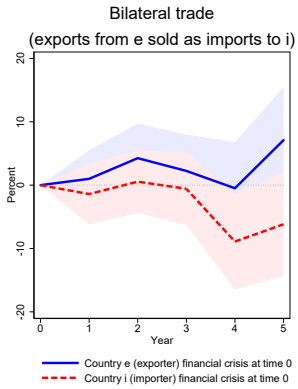


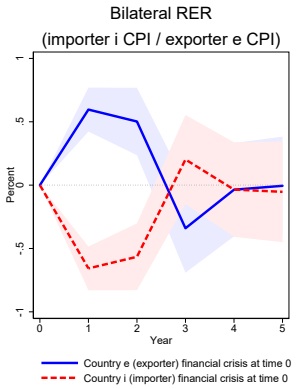
(b) *Post-WW2*





(c) *Pre-WW2*



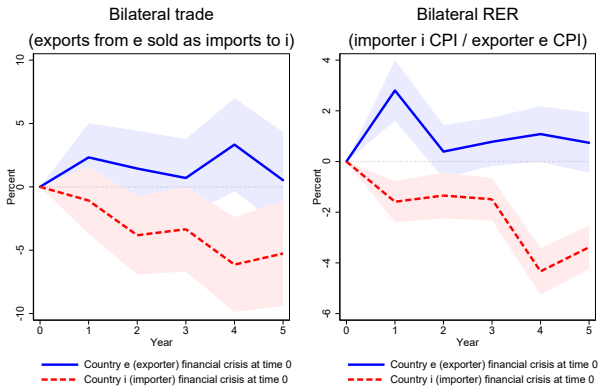


Notes: Shaded regions indicate 95% confidence intervals.

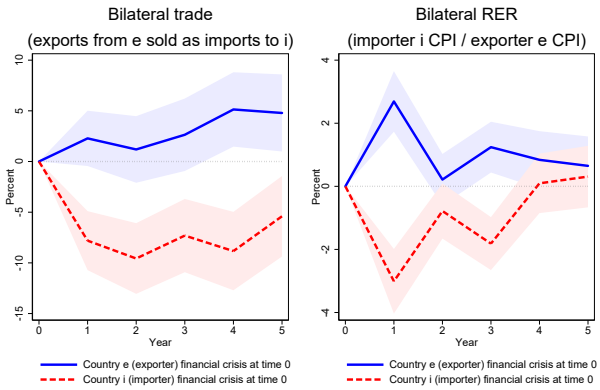
Figure A.16: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

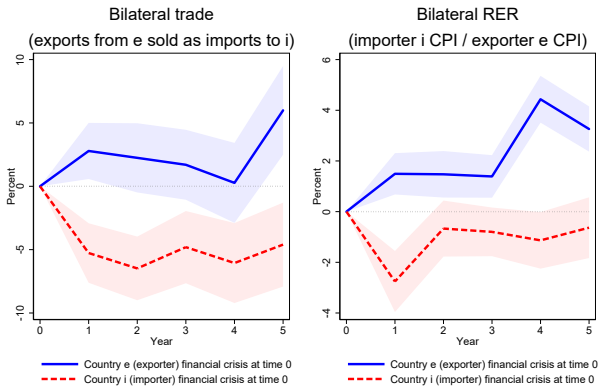
(a) *Advanced Importer - All Years*



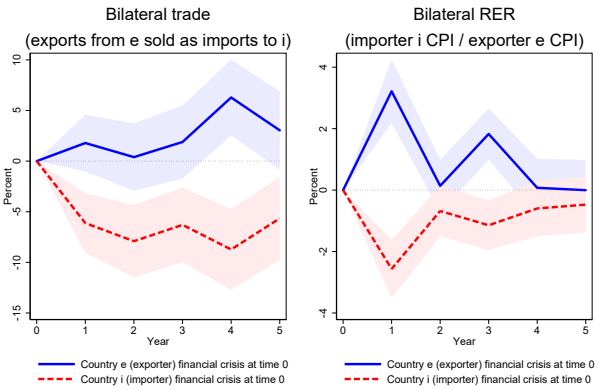
(b) *Developing Importer - All Years*



(c) *Advanced Exporter - All Years*



(d) *Developing Exporter - All Years*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.8: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

Panel A: Excluding Great Recession.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.1	0.8	1.9	4.6**	2.2
	(1.2)	(1.4)	(1.5)	(1.6)	(1.7)
Financial crisis in importer (year 0)	-6.4**	-7.5**	-5.3**	-8.1**	-5.2**
	(1.2)	(1.5)	(1.5)	(1.7)	(1.7)
N	168638	166596	164768	163164	161705

Panel B: Post-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.4*	0.7	1.9	4.9**	3.1*
	(1.2)	(1.4)	(1.5)	(1.5)	(1.6)
Financial crisis in importer (year 0)	-6.6**	-8.6**	-6.7**	-7.9**	-5.3**
	(1.2)	(1.5)	(1.5)	(1.6)	(1.6)
N	178963	174294	169843	165575	161426

Panel C: Pre-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.0	4.3	2.2	-0.5	7.1
	(2.3)	(2.8)	(2.9)	(3.7)	(4.3)
Financial crisis in importer (year 0)	-1.4	0.5	-0.6	-8.9*	-6.2
	(2.4)	(2.5)	(2.9)	(3.8)	(4.2)
N	16310	15084	13852	12686	11564

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.9: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

Panel A: Advanced Importer.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.3	1.4	0.7	3.3	0.5
	(1.4)	(1.5)	(1.6)	(1.9)	(1.9)
Financial crisis in importer (year 0)	-1.1	-3.8*	-3.3*	-6.1**	-5.3*
	(1.3)	(1.6)	(1.7)	(1.9)	(2.1)
N	60243	58602	56978	55419	53879

Panel B: Developing Importer.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.3	1.2	2.6	5.1**	4.8*
	(1.4)	(1.7)	(1.8)	(1.9)	(1.9)
Financial crisis in importer (year 0)	-7.8**	-9.6**	-7.3**	-8.8**	-5.4**
	(1.5)	(1.8)	(1.8)	(2.0)	(2.0)
N	135030	130776	126717	122842	119111

Panel C: Advanced Exporter.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.8*	2.2	1.7	0.3	6.0**
	(1.1)	(1.4)	(1.4)	(1.6)	(1.8)
Financial crisis in importer (year 0)	-5.3**	-6.5**	-4.8**	-6.1**	-4.6**
	(1.2)	(1.3)	(1.5)	(1.6)	(1.7)
N	61226	59566	57932	56361	54824

Panel D: Developing Exporter.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.8	0.4	1.9	6.3**	3.0
	(1.4)	(1.7)	(1.8)	(1.9)	(2.0)
Financial crisis in importer (year 0)	-6.1**	-7.9**	-6.3**	-8.7**	-5.7**
	(1.5)	(1.8)	(1.9)	(2.0)	(2.1)
N	134047	129812	125763	121900	118166

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.10: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

Panel A: Excluding Great Recession.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.7**	-0.3	0.9*	0.9**	1.2**
	(0.3)	(0.3)	(0.4)	(0.3)	(0.3)
Financial crisis in importer (year 0)	-2.5**	0.2	-0.7	-0.6*	-0.8*
	(0.3)	(0.3)	(0.4)	(0.3)	(0.3)
N	174245	172347	170675	168973	167307

Panel B: Post-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.5**	1.1**	1.9**	1.4**	1.0**
	(0.3)	(0.2)	(0.3)	(0.3)	(0.3)
Financial crisis in importer (year 0)	-3.2**	-1.3**	-1.7**	-1.2**	-0.7*
	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
N	185198	180533	176038	171557	167106

Panel C: Pre-WW2.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	0.6**	0.5**	-0.3	-0.0	0.0
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)
Financial crisis in importer (year 0)	-0.7**	-0.6**	0.2	-0.0	-0.1
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)
N	16162	14812	13464	12127	10874

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.11: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

Panel A: Advanced Importer.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.8**	0.4	0.8	1.1*	0.7
	(0.5)	(0.5)	(0.5)	(0.5)	(0.6)
Financial crisis in importer (year 0)	-1.6**	-1.3**	-1.5**	-4.3**	-3.4**
	(0.4)	(0.5)	(0.4)	(0.5)	(0.4)
N	60684	58964	57286	55604	53945

Panel B: Developing Importer.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.7**	0.2	1.2**	0.8*	0.6
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-3.0**	-0.8*	-1.8**	0.1	0.3
	(0.5)	(0.4)	(0.4)	(0.4)	(0.5)
N	142243	137885	133707	129521	125372

Panel C: Advanced Exporter.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.5**	1.5**	1.4**	4.4**	3.3**
	(0.4)	(0.5)	(0.4)	(0.5)	(0.5)
Financial crisis in importer (year 0)	-2.8**	-0.7	-0.8	-1.1*	-0.6
	(0.5)	(0.5)	(0.5)	(0.5)	(0.6)
N	61651	59922	58240	56548	54870

Panel D: Developing Exporter.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.2**	0.1	1.8**	0.1	-0.0
	(0.5)	(0.4)	(0.4)	(0.4)	(0.5)
Financial crisis in importer (year 0)	-2.6**	-0.7	-1.1**	-0.6	-0.5
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
N	141276	136927	132753	128577	124447

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

C. Robustness

Controlling for All Other Types of Crises. The possible coincidence of financial crises with other types of crisis constitutes a potential challenge to our empirical strategy. We first ask, then, what is the degree of overlap between financial crises and various other types of crises. Secondly and more important, we show that extending our regressions to control for the occurrence of crisis episodes of a different nature leaves our earlier results unscathed.

We obtain data on the dates of various crises types from Reinhart and Rogoff (2011). This is also the source of our data on financial crises dates used in our analysis so far. Reinhart and Rogoff (2011) have created a comprehensive historical record coding dates for currency and inflation crises, stock market crises, and external and domestic sovereign debt crises. With this data as a starting point, we define the first year of a crisis as the relevant shock event, in the same way we have defined financial crisis episodes.

How much of an overlap of various crises types within a country is there? One fifth of our financial crisis events coincide with other crisis events. One half of our financial crises fall within a 5-year window of other crisis events. This degree of overlap merits controlling for coincident crisis events in our regressions. We augment our local projections method that estimates the impact of financial crises on bilateral trade flows or bilateral real exchange rates, with dummy variables marking the various other types of crises described above occuring in either the exporting or the importing country.

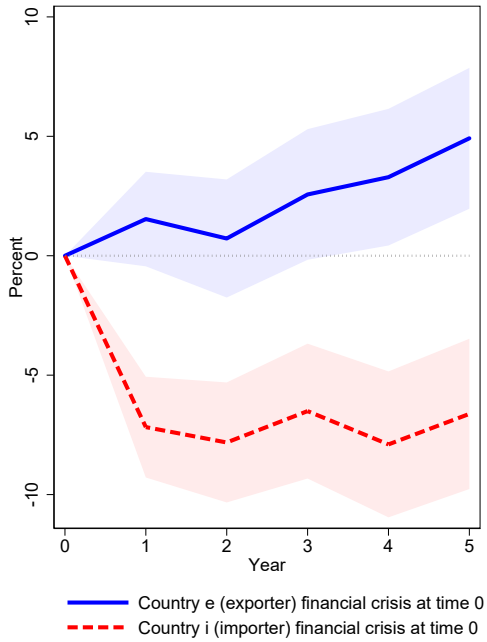
The results in Figure A.17 and Tables A.12 and A.13 show our main message remains true. Financial crises in the exporting country *increase* trade flows, while financial crises in the importing country *decrease* trade flows. Bilateral real exchange rates *appreciate* in response to crises in the exporter, and *depreciate* in response to crises in the importer. While we have significantly expanded the number of regressors, we loose little precision in our estimates.

Controlling for Sudden Stops. In addition we control for sudden stop episodes (i.e. abrupt reductions in capital inflows) in the period from 1970 onwards. We code sudden stops following Cavallo and Frankel (2008), who define these as situations in which "at a year t, the financial account surplus of a country (prevailing at year $t-1$) falls at least two standard deviations below the sample mean." The results in Figure A.18 and Tables A.14 and A.15 show our results to controlling for sudden stops. Note that in these figures we simultaneously control for other types of crises as above.

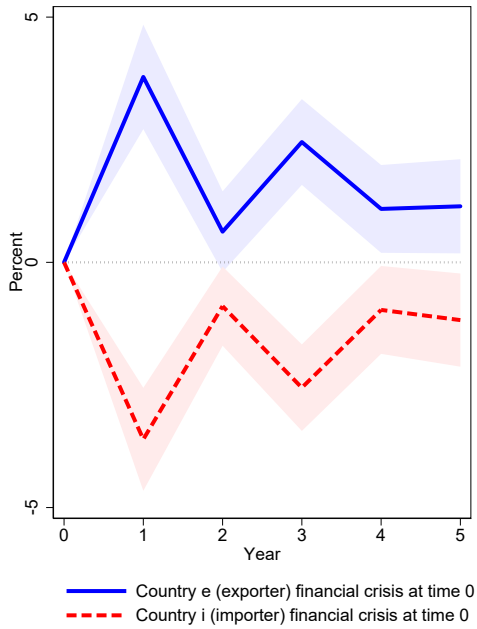
Figure A.17: *Local projections controlling for other crises types: response of bilateral trade and RER to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.12: *Local projections controlling for other crises types: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.5	0.7	2.6	3.3*	4.9**
	(1.0)	(1.3)	(1.4)	(1.5)	(1.5)
Financial crisis in importer (year 0)	-7.2**	-7.8**	-6.5**	-7.9**	-6.6**
	(1.1)	(1.3)	(1.4)	(1.6)	(1.6)
N	137670	132229	125495	121892	118732

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.13: *Local projections controlling for other crises types: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

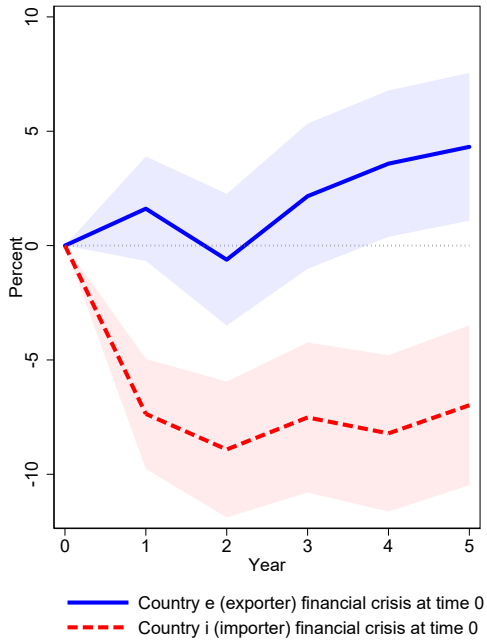
	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.8**	0.6	2.5**	1.1*	1.1*
	(0.5)	(0.4)	(0.4)	(0.5)	(0.5)
Financial crisis in importer (year 0)	-3.6**	-0.9*	-2.6**	-1.0*	-1.2*
	(0.5)	(0.4)	(0.4)	(0.5)	(0.5)
N	119600	115383	109545	107130	105083

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

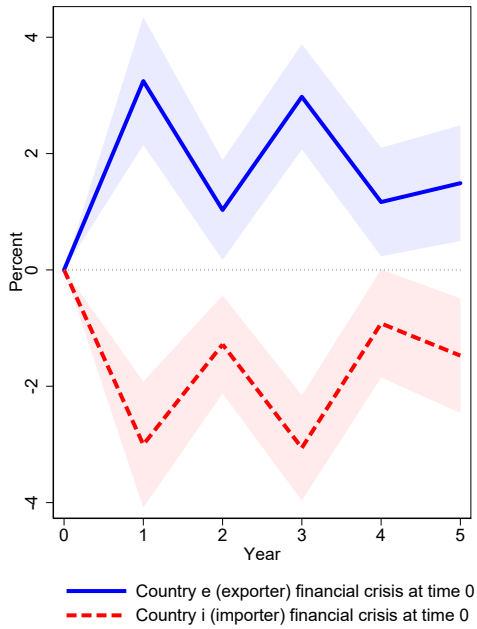
Figure A.18: *Local projections controlling for sudden stops: response of bilateral trade and RER to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.14: *Local projections controlling for sudden stops: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.6	-0.6	2.2	3.6*	4.3**
	(1.2)	(1.5)	(1.6)	(1.6)	(1.6)
Financial crisis in importer (year 0)	-7.4**	-8.9**	-7.5**	-8.2**	-7.0**
	(1.2)	(1.5)	(1.7)	(1.7)	(1.8)
N	99094	95009	89616	87177	85113

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.15: *Local projections controlling for sudden stops: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.2**	1.0*	3.0**	1.2*	1.5**
	(0.6)	(0.4)	(0.5)	(0.5)	(0.5)
Financial crisis in importer (year 0)	-3.0**	-1.3**	-3.1**	-0.9	-1.5**
	(0.6)	(0.4)	(0.5)	(0.5)	(0.5)
N	99976	95759	89921	87506	85459

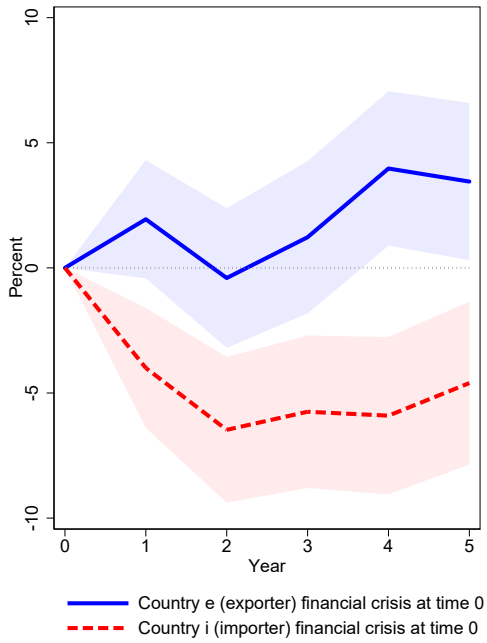
Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Controlling for Changes in TFP. We also control for changes in TFP. Data on TFP comes from Feenstra et al. (2015) for all countries in our sample during the period from 1960 onwards. We augment equations (2) for bilateral trade and (3) for bilateral exchange rates adding the change in log TFP between time t (the occurrence of a crisis) and $t + h$. The results in Figure A.19 and Tables A.12 and A.13 show our results to controlling for changes in TFP.

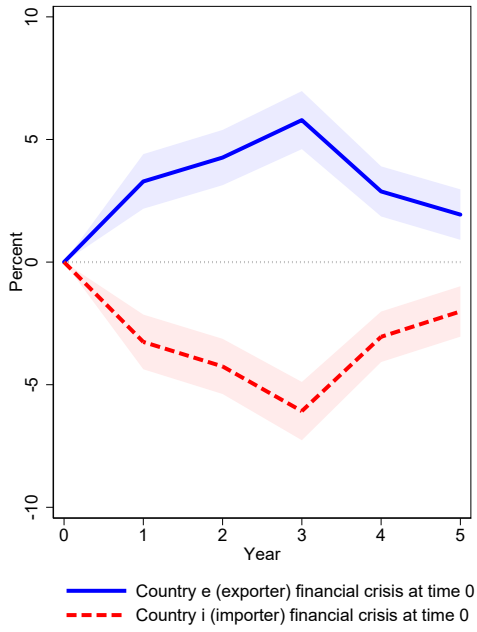
Figure A.19: *Local projections controlling for changes in TFP: response of bilateral trade and RER to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.16: *Local projections controlling for changes in TFP: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.9	-0.4	1.2	4.0*	3.4*
	(1.2)	(1.4)	(1.6)	(1.6)	(1.6)
Financial crisis in importer (year 0)	-4.0**	-6.5**	-5.8**	-5.9**	-4.6**
	(1.2)	(1.5)	(1.6)	(1.6)	(1.7)
N	128588	124807	121134	117499	113917

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.17: *Local projections controlling for changes in TFP: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.3**	4.3**	5.8**	2.9**	1.9**
	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)
Financial crisis in importer (year 0)	-3.3**	-4.3**	-6.1**	-3.0**	-2.0**
	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)
N	98159	94298	89141	86806	84829

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Controlling for Multilateral Resistance Terms. In standard gravity equations, exclusion of multilateral resistance terms biases estimates of the elasticity of trade flows to trade costs (typically captured by distance). While this is not the case here, and we include exporter-importer fixed effects, it could be possible that changes over time in trade from flows e to i could depend on changes in GDP in other countries, which could be correlated with the ocurrence of crises in e or i.

While these effects are probably very small, we control for changes in multilateral resistance terms of e and i. These multilateral resistance terms can be proxied by countries' remoteness (Wei (1996), Baldwin and Harrigan (2011)). Following Baldwin and Harrigan (2011) we define country e's remoteness as the inverse of the sum of all other countries' GDP Y_{it} weighthed by the inverse of distance d_{ei} to each of them

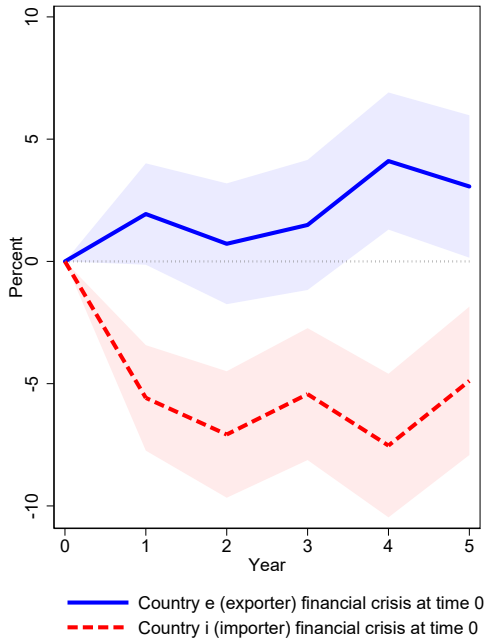
$$R_{et} = \frac{1}{\sum_i \frac{Y_{it}}{d_{ei}^{\nu}}}, \tag{4}$$

and choose $\nu = 1$. We then estimate equation 2 for bilateral trade including the change over time in the remoteness of the exporter ($R_{e,t+h} - R_{et}$) and the importer ($R_{i,t+h} - R_{it}$). The results, shown in Figure A.20 and Tables A.18 and A.19, are very similar to our baseline results. For the same reason, we include these terms in equation 3 for bilateral real exchange rates. Again, results are unchanged, as seen in the right panel of Figure A.20.

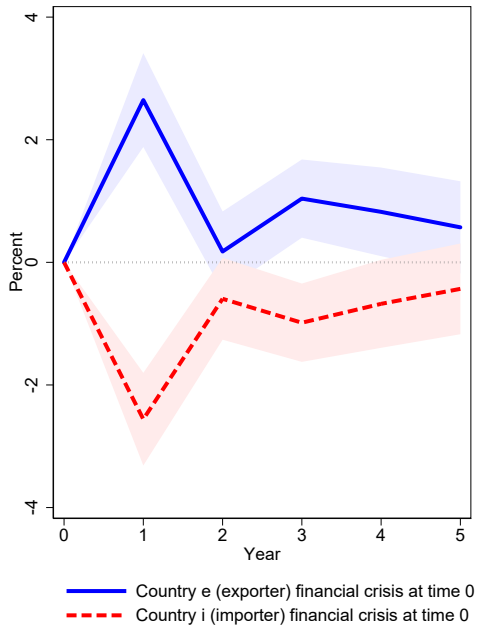
Figure A.20: *Local projections controlling for change in multilateral resistance terms: response of bilateral trade and RER to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.18: *Local projections controlling for change in multilateral resistance terms: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.9	0.7	1.5	4.1**	3.1*
	(1.1)	(1.3)	(1.4)	(1.4)	(1.5)
Financial crisis in importer (year 0)	-5.6**	-7.1**	-5.4**	-7.5**	-4.9**
	(1.1)	(1.3)	(1.4)	(1.5)	(1.5)
N	195273	189378	183695	178261	172990

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.19: *Local projections controlling for change in multilateral resistance terms: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.6**	0.2	1.0**	0.8*	0.6
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-2.6**	-0.6	-1.0**	-0.7	-0.4
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
N	202927	196849	190993	185125	179317

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Alternative Specification The preferred specification for equation 2 in the main text includes two lags of the dependent variable and controls for changes in the real exchange rate, $\ln RER_{ei,t+h} - \ln RER_{ei,t}$. We show in Table A.20 and the left panel in Figure A.21 the results of estimating this equation without these controls.

In addition, the preferred specification for equation 3 in the main text includes two lags of the dependent variable. Table A.21 and the right panel in Figure A.21 the results of estimating this equation without any controls.

Table A.20: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.7	1.6	1.9	4.8*	4.2
	(1.4)	(1.9)	(2.0)	(2.3)	(2.4)
Financial crisis in importer (year 0)	-6.0**	-7.5**	-6.4*	-8.4**	-5.7
	(2.0)	(2.5)	(2.6)	(3.0)	(3.1)
N	242180	235093	228794	222709	216985

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.21: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

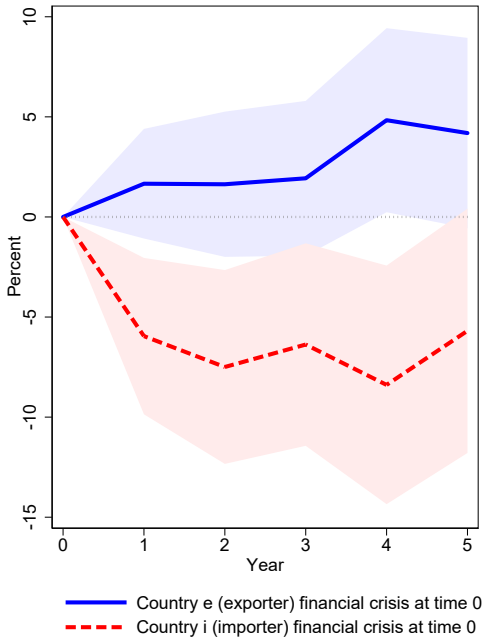
	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.3**	3.3**	4.3**	2.2**	0.9*
	(0.4)	(0.5)	(0.5)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-3.1**	-3.4**	-4.3**	-2.3**	-0.9*
	(0.4)	(0.5)	(0.5)	(0.4)	(0.4)
N	213389	208436	203452	198561	193602

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

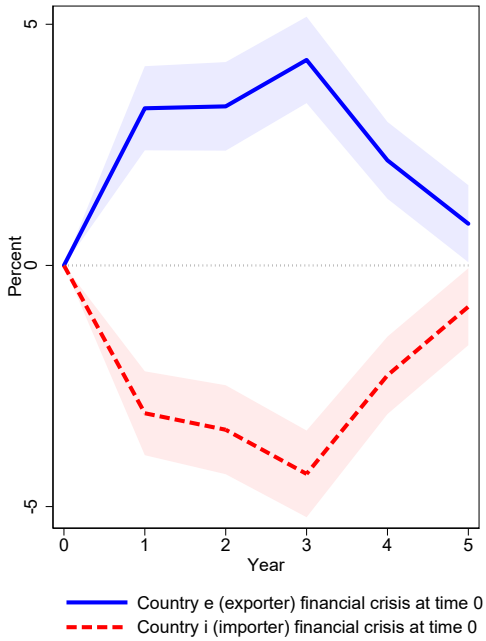
Figure A.21: *Local projections: response of bilateral trade and RER to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Ruling Out Pre-Existing Trends We address the potential existence of pre-existing trends by plotting the response of pre-crisis changes in bilateral trade or bilateral real exchange rates to financial crises. To this end we estimate equation 2 for bilateral trade and equation 3 for the bilateral RER not only for positive horizons h up to 5, but also for negative horizons $h = -1$ and $h = -2$. The results are shown in Tables A.22 and A.23. The coefficients for pre-crisis changes in bilateral trade or bilateral real exchange rates are small and not statistically different from zero, indicating the abscence of pre-existing trends.

Table A.22: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. See text.

	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	-1.6	-1.4	2.2*	1.1	1.9	4.4**	3.4*
	(1.0)	(1.0)	(1.1)	(1.3)	(1.4)	(1.4)	(1.5)
Financial crisis in importer (year 0)	-0.9	-1.1	-5.9**	-7.5**	-5.9**	-7.9**	-5.3**
	(1.1)	(1.1)	(1.1)	(1.3)	(1.4)	(1.5)	(1.5)
N	199712	201771	195273	189378	183695	178261	172990

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.23: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. See text.

	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	0.2	-0.2	2.7**	0.3	1.1**	0.9*	0.6
	(0.4)	(0.4)	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-0.1	0.2	-2.6**	-0.7*	-1.0**	-0.7*	-0.5
	(0.4)	(0.4)	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
N	201685	205488	202927	196849	190993	185125	179317

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

D. Trade by Product Type

This section reports the results of estimating 2 using each component of bilateral trade flows (trade in final goods, trade in intermediate inputs, and trade in capital goods) as the dependent variable. The results are shown in Figures A.22 and A.23 and Table A.24.

Table A.24: *Local projections: response of bilateral trade in final consumption goods, intermediate inputs and capital goods to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. See text.

Panel A: Trade in Final Goods.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	0.3	1.0	-0.8	3.4	4.1*
	(1.6)	(1.8)	(2.0)	(2.0)	(2.1)
Financial crisis in importer (year 0)	-4.0*	-6.7**	-5.5**	-6.7**	-7.6**
	(1.6)	(1.9)	(2.0)	(2.0)	(2.2)
N	122040	118296	114654	111340	108218

Panel B: Trade in Intermediate Inputs.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	7.1**	5.6**	5.0**	8.1**	10.3**
	(1.5)	(1.7)	(1.8)	(1.9)	(1.9)
Financial crisis in importer (year 0)	-3.9**	-2.6	-1.4	0.2	-0.9
	(1.5)	(1.7)	(1.8)	(1.9)	(2.0)
N	127323	123422	119708	116241	112953

Panel C: Trade in Capital Goods.

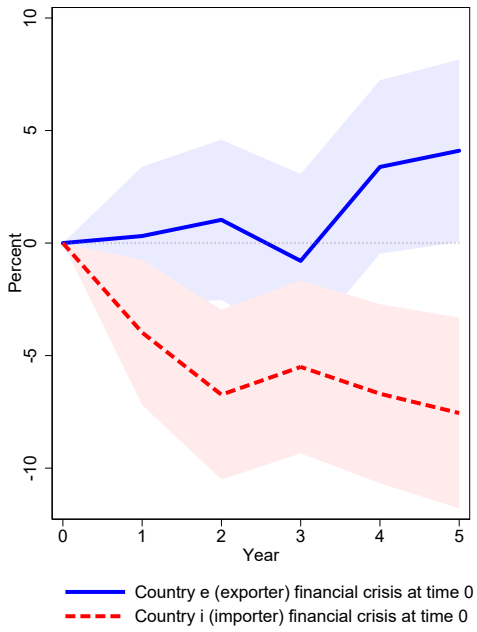
	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	3.0	4.2	10.2**	15.2**	13.6**
	(2.3)	(2.5)	(2.5)	(2.6)	(2.7)
Financial crisis in importer (year 0)	-8.6**	-12.6**	-13.8**	-11.7**	-10.3**
	(2.1)	(2.3)	(2.4)	(2.5)	(2.5)
N	101190	98026	95054	92203	89503

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

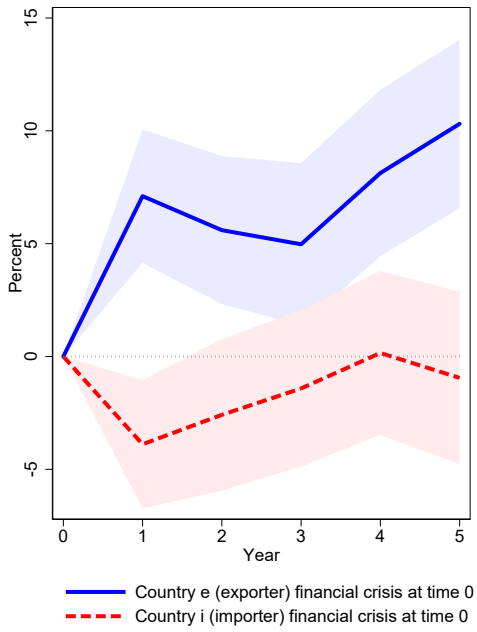
Figure A.22: *Local projections: response of bilateral trade in final consumption goods, intermediate inputs and capital goods to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Final Consumption Goods*



(b) *Intermediate Inputs*

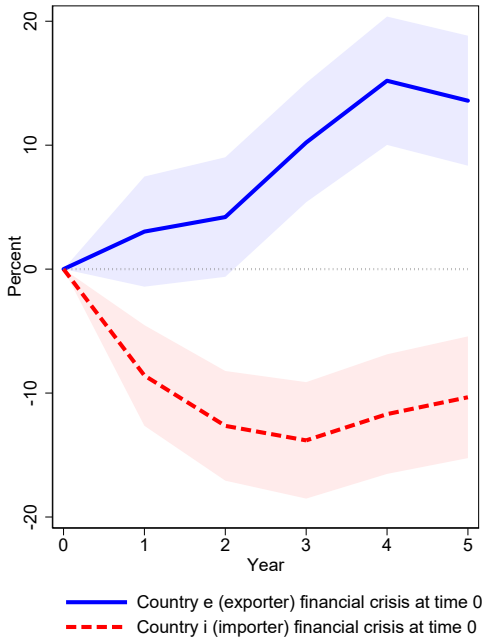


Notes: Shaded regions indicate 95% confidence intervals.

Figure A.23: *Local projections: response of bilateral trade in capital goods to financial crisis in exporter or importer*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. See text.

(a) *Capital Goods*



Notes: Shaded regions indicate 95% confidence intervals.

E. Crisis Endogeneity and Inverse Probability Weighting

We address the concern that financial crisis episodes might be endogenous using the method of inverse probability weighting. This procedure assigns less weight in our bilateral trade and RER regressions to observations that more likely to occur based on prior macroeconomic conditions. This correction for selection bias has been discussed in a time series context by Angrist, Jordà, and Kuersteiner (2018) and applied to the study of financial crises (Jordà, Schularick, and Taylor, 2011, 2016) and to the study of fiscal policy (Jordà and Taylor, 2016).

To start, we construct a first-stage estimator of the probability that country c has a financial crisis at time t. As a predictor of crises, we use credit growth over the five-year period leading to each crisis (between years $t-6$ and $t-1$). This choice follows Schularick and Taylor (2012) who show that credit growth is a powerful predictor of financial crises.[16]

We fit logit models for the probability of experiencing a financial crisis including either country or country and year fixed effects. A successful predictor will maximize the rate of true positives and minimize the rate of false positives. A Receiver Operating Characteristic (ROC) curve reflects the trade-off between these two goals. The AUROC (Area under the ROC curve) statistic summarizes the predictor's quality in this regard.[17] This statistic ranges from 0.5 (for a predictor not different than a random guess) to 1 (for a perfect predictor), and is independent of the cutoff value used to predict an outcome.

We report the first-stage results in Table A.25. Column 1 corresponds to the benchmark case with only country fixed effects, against which we assess the usefulness of credit growth as a crisis predictor. In column 2 we add credit growth, and in column 3 we add year fixed effects.

As shown by Schularick and Taylor (2012), positive credit growth has a statistically significant impact on the probability of experiencing a financial crisis. Further, the AUC statistic in columns 2 and 3 is higher—and statistically different—than in our benchmark case in column 1, showing the contribution for credit growth as a financial crisis predictor.

Let us denote by $\hat{p}_{ct}$ the predicted probability that country c experiences a crisis at time t, and $1-\hat{p}_{ct}$ the probability it does not. We construct weights for our bilateral trade and RER regressions based on these predicted probabilities as follows. We weight observations in which both the exporter e and the importer i experience a financial crisis by $\frac{1}{\hat{p}_{et}\cdot\hat{p}_{it}}$. In cases where both exporter and importer do not face a crisis, we assign weights $\frac{1}{(1-\hat{p}_{et})\cdot(1-\hat{p}_{it})}$. Finally, we assign weights $\frac{1}{\hat{p}_{et}\cdot(1-\hat{p}_{it})}$ for cases with a crisis in the exporter only, and $\frac{1}{(1-\hat{p}_{et})\cdot\hat{p}_{it}}$ for cases with a crisis in the importer only.

[16] Credit is measured as domestic credit to GDP from the World Bank's WDI dataset. Credit data is only available for our wide sample of developed and developing countries for the post-WW2 period.

[17] See Jordà and Taylor (2011) for a detailed explanation of these concepts.

We then re-estimate our bilateral trade regression using these weights. As shown in Table A.26, the results are largely unchanged and our main message still holds. For example, we find (in panel (b)) a similar decrease by -6.6% in the normalized trade flow when the financial crisis event takes place in the importer country, while we had found a -5.9% change in the initial, unweighted results. As before, this impact is highly persistent.

Finally, we also repeat the estimation of the bilateral RER equation using IPW in table A.27, also finding results similar to the baseline ones. The weighted results in panel (b) of table A.27 show a +2.0% change when the financial crisis event takes place in the exporter country and a -1.8% change when it hits the importer country, where these impacts are very similar to the baseline unweighted results of table A.7 (a +2.7% change on impact following crises in the exporter and a -2.6% change on impact following crises in the importer).

Table A.25: *First Stage: Financial Crisis Prediction*

This table shows the results of the logit model of the probability of a financial crisis at time t on credit growth between $t-6$ and $t-1$. See text.

	(1)	(2)	(3)
Credit Growth		0.0194**	0.0198**
		(0.0051)	(0.0055)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes
N	3740	2916	1934
AUC	0.619	0.655	0.735
	(0.0263)	(0.0278)	(0.0221)

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.26: *Local projections: response of bilateral trade to financial crisis in exporter or importer*

This table shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ to financial crisis in either exporter country e or importer country i. This measures deviations in trade relative to the scaled economic size of home and foreign, as in the gravity model. Regressions are weighted using IPW. See text.

Panel A: IPW with country fixed-effects.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.1*	0.3	3.3*	4.0**	1.6
	(1.0)	(1.3)	(1.4)	(1.5)	(1.5)
Financial crisis in importer (year 0)	-4.8**	-7.4**	-5.5**	-8.8**	-7.8**
	(1.0)	(1.3)	(1.3)	(1.4)	(1.4)
N	122330	118768	115328	111768	108232

Panel B: IPW with country and year fixed-effects.

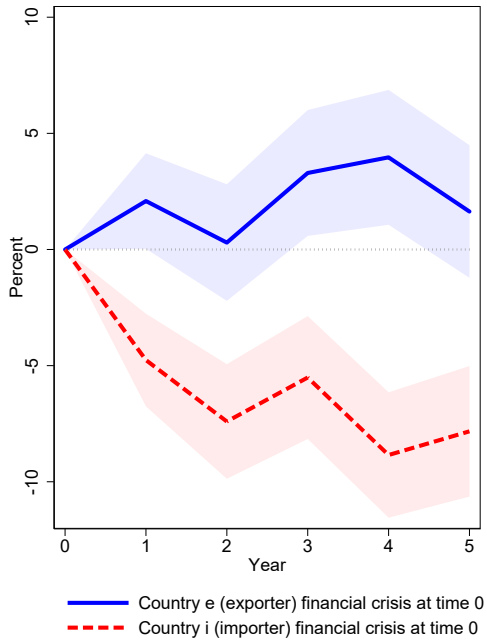
	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	1.9	0.6	3.2*	4.9**	2.7
	(1.1)	(1.3)	(1.4)	(1.5)	(1.5)
Financial crisis in importer (year 0)	-6.6**	-9.6**	-7.2**	-9.3**	-8.1**
	(1.1)	(1.4)	(1.4)	(1.5)	(1.6)
N	84244	83899	83689	83423	83175

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

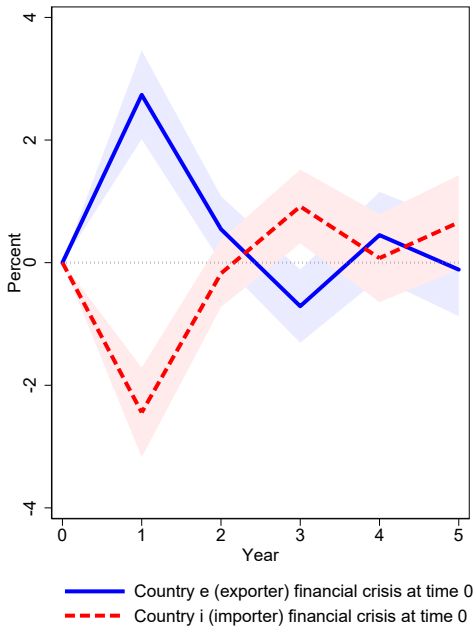
Figure A.24: *Local projections with IPW: response of bilateral trade and RER to financial crisis in exporter or importer with country fixed effects*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. The local projections include country fixed effects. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*

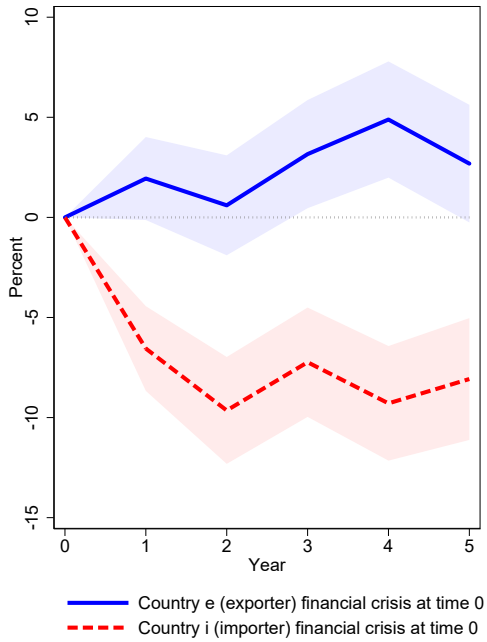


Notes: Shaded regions indicate 95% confidence intervals.

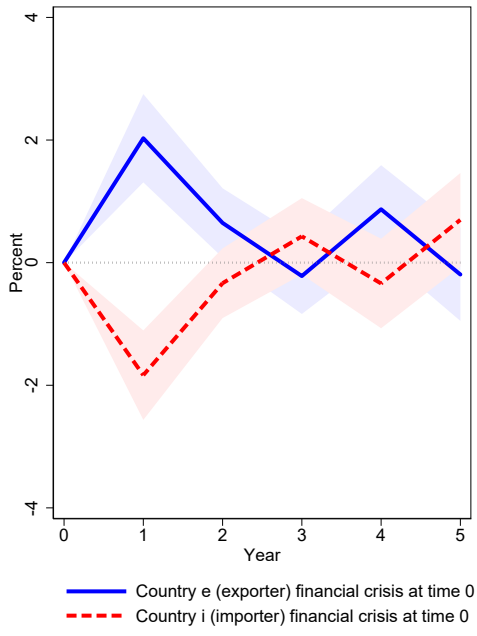
Figure A.25: *Local projections with IPW: response of bilateral trade and RER to financial crisis in exporter or importer with country fixed effects and year effects*

This figure shows the response of the level of bilateral GDP-normalized trade $\ln T_{ei} - \ln Y_e - \ln Y_i$ and the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. The local projections include country fixed effects and year effects. See text.

(a) *Bilateral Trade (exports from e sold as imports to i)*



(b) *Bilateral RER (importer i CPI / exporter e CPI)*



Notes: Shaded regions indicate 95% confidence intervals.

Table A.27: *Local projections: response of bilateral RER to financial crisis in exporter or importer*

This table shows the response of the level of the bilateral real exchange rate $\ln E_{ei} + \ln P_i - \ln P_e$ to financial crisis in either exporter country e or importer country i. In the standard convention, this is the exporter side RER, so an increase is an exporter depreciation, a decrease is an importer depreciation. Regressions are weighted using IPW. See text.

Panel A: IPW with country fixed-effects.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.7**	0.5*	-0.7*	0.4	-0.1
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-2.4**	-0.2	0.9**	0.1	0.7
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
N	130446	126656	123000	119229	115470

Panel B: IPW with country and year fixed-effects.

	Year 1	Year 2	Year 3	Year 4	Year 5
Financial crisis in exporter (year 0)	2.0**	0.6*	-0.2	0.9*	-0.2
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
Financial crisis in importer (year 0)	-1.8**	-0.3	0.4	-0.3	0.7
	(0.4)	(0.3)	(0.3)	(0.4)	(0.4)
N	89717	89631	89542	89301	89058

Notes: Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

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