

# Can large trade shocks cause crises? The case of the Finnish-Soviet trade collapse

Adam Gulan   Markus Haavio   Juha Kilponen  
Bank of Finland<sup>1</sup>

AEA, January 2021

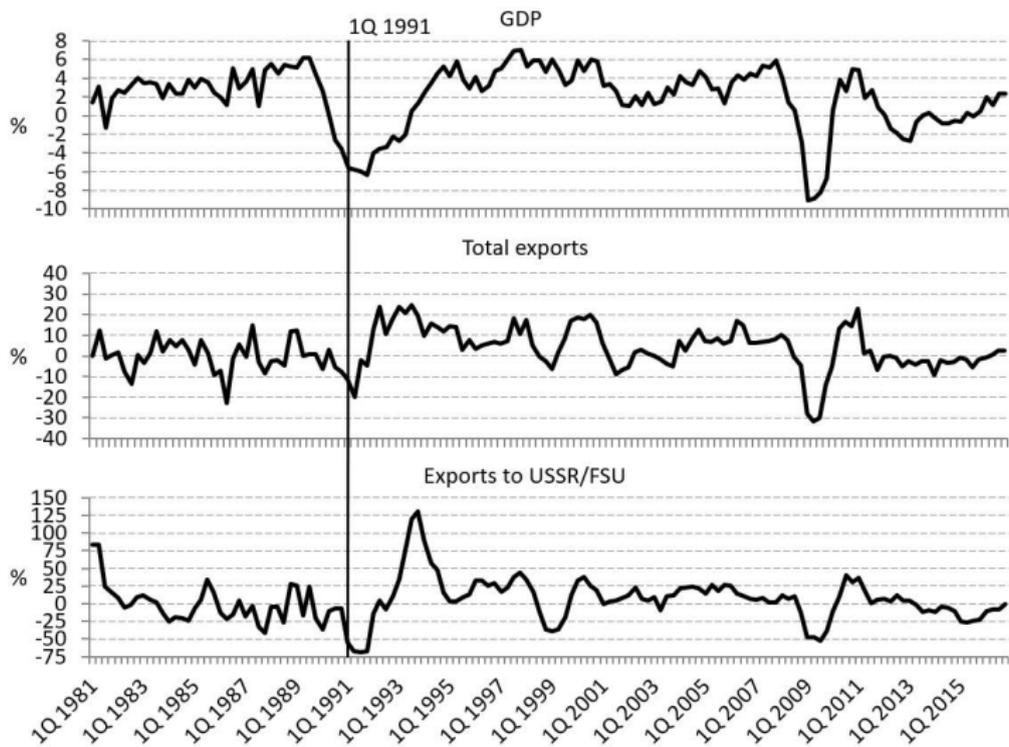
---

<sup>1</sup>The views expressed are those of the authors and do not necessarily reflect the views of the Bank of Finland

# Introduction

- ▶ We study the macroeconomic consequences of a major trade disruption using the example of the Finnish-Soviet trade collapse in 1991.
- ▶ This is a rare case of a well-identified large trade shock in a developed economy.
- ▶ Did the trade collapse cause the Finnish Great Depression of the early 1990s (Gorodnichenko et al. 2012, AER)?

# Finnish GDP, total exports and exports to the USSR/FSU (annual growth rates)



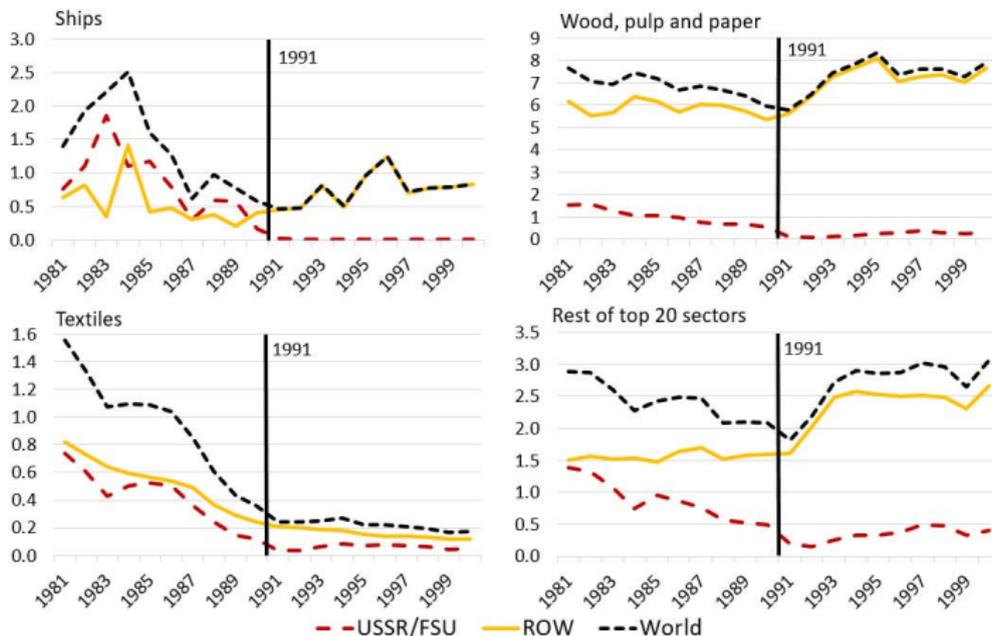
# Finnish trade with the USSR

- ▶ Finland was the only western market economy with substantial trade with the USSR (up to 10 – 15% of exports, peaked at 25% after 2nd oil shock)
  - ▶ Geographical proximity and historical ties.
- ▶ Finland importing predominantly oil, exporting manufactured goods (wood and paper, ships, textiles, machines, chemicals)
- ▶ Bilateral clearing arrangement, cleared in transfer rubles.
- ▶ Eastern trade was considered profitable and secure by Finnish businesses.

## Finnish-Soviet trade collapse: well-identified exogenous shock

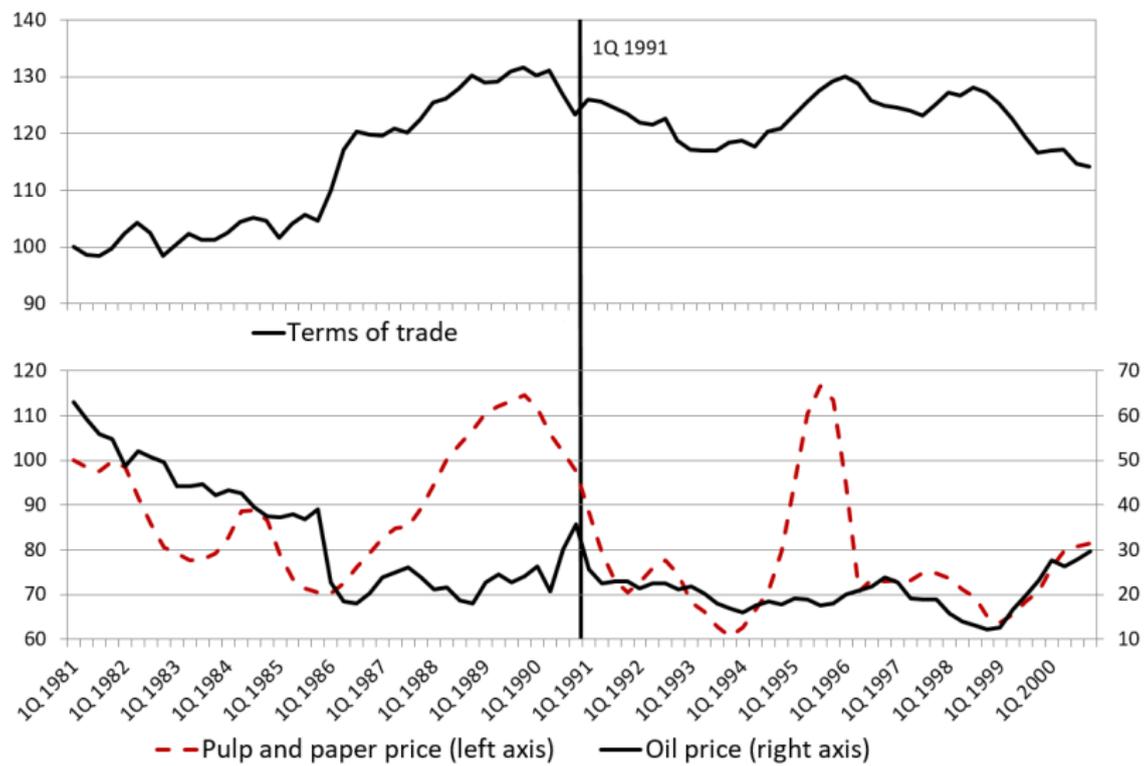
- ▶ In December 1990 the Soviets canceled the trading agreement, with no transition period, effective as of January 1, 1991.
- ▶ This "hard exit" came as a surprise to Finnish businesses, policy-makers and economic forecasters.
- ▶ Immediate collapse of Finnish-Soviet trade (by 67% within two quarters).
  - ▶ Many of the existing business networks were suddenly broken and the payment agreements ceased to hold.
- ▶ Finnish exports to Soviet successor states started to recover in 1992 and reached their pre-collapse level in 1994.
  - ▶ New trade agreements with the Russian Federation and with the Baltic states were signed in 1992.

# Structure of Finnish exports to USSR/FSU, 1981 – 2000



Note: the Y axis measures Finnish exports to the USSR, ROW and World as percentage points of Finnish GDP.

# Commodity prices and Finnish terms of trade, 1981 – 2000



# Model specification

Estimate VAR(3) model of 8 variables (1985Q1-2016Q4)

The model consists of three blocks

1. **External (euro area) block:**

- real GDP
- inflation (GDP deflator)
- interest rate (3-month policy rate)

2. **Finnish-Soviet trade block:**

- Finnish exports to the USSR/FSU
- Finnish ToT (price of exports over price of imports)

3. **Domestic (Finland) block:**

- real GDP
- inflation (GDP deflator)
- interest rate spread (lending rate for NFCs - deposit rate)

# Identification

- ▶ Block exogeneity restrictions:

$$A^i = \begin{bmatrix} A_{1,1}^i & 0 & 0 \\ A_{2,1}^i & A_{2,2}^i & 0 \\ A_{3,1}^i & A_{3,2}^i & A_{3,3}^i \end{bmatrix} \quad \forall i = 1 \dots p \quad (1)$$

- ▶ These exogeneity restrictions are sufficient to block-identify three groups of shocks.
- ▶ Our main focus is on innovations stemming from the Soviet block as only these can be associated with the Soviet trade collapse.
- ▶ Innovations in the two other blocks capture European and global shocks (block 1), and purely domestic Finnish shocks (block 3).

# Cumulative GDP loss due to the Soviet trade shock

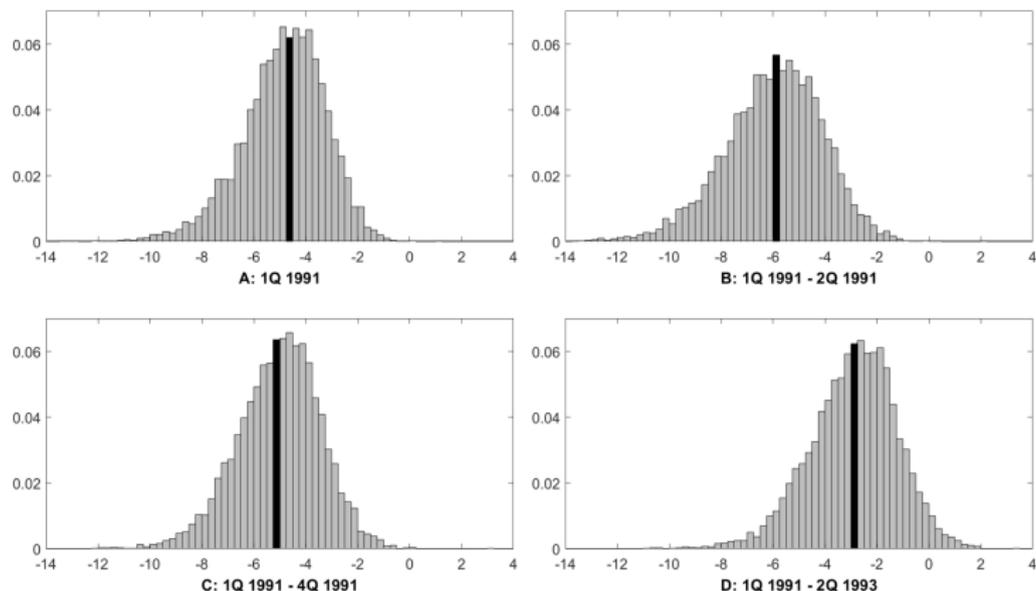


Figure 4: Cumulative GDP loss due to the Soviet trade shock.

*Notes:* Black bars correspond to MLE-estimated model. Histograms capture model uncertainty. X axis measures cumulative GDP loss in percent as of 2Q 1993, due to the Soviet shock occurring in 1Q 1991 (panel A), from 1Q 1991 to 2Q 1991 (B), from 1Q 1991 to 4Q 1991 (C) and from 1Q 1991 to 2Q 1993 (D). Y axis measures probability (the sum of bars is normalized to 1).

# Impulse responses to the Soviet shock in 1Q 1991

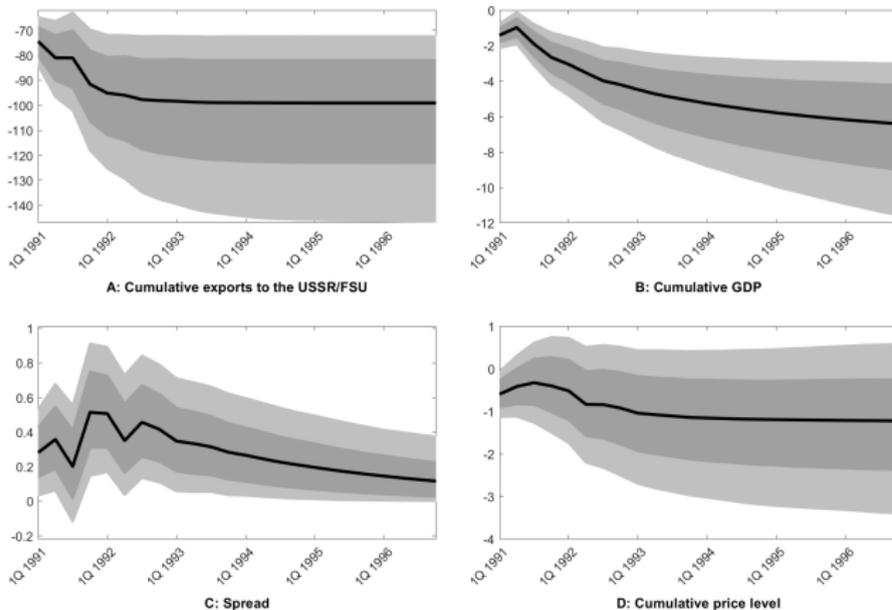


Figure 5: Impulse response reactions to the Soviet shock in 1Q 1991.

*Notes:* Responses are cumulative (in percent), except for the spread which is non-cumulative (in percentage points). Units are percent. Black line corresponds to MLE model. Shaded areas indicate period-wise 66 and 90 percent impulse responses.

# Cumulative GDP loss due to domestic and European/global shocks

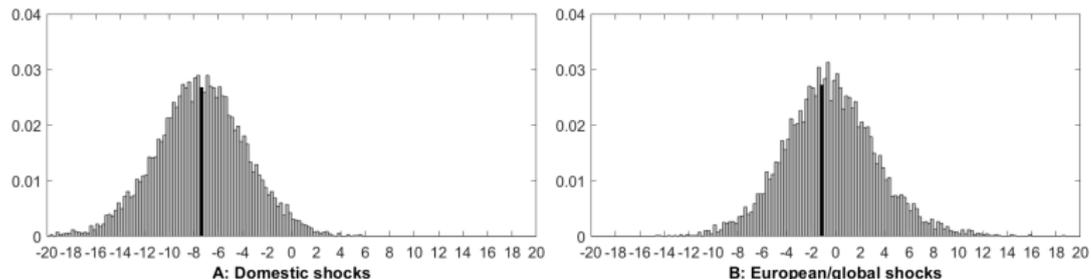


Figure 6: Cumulative GDP loss due to domestic and European/global shocks.

*Notes:* Black bars correspond to MLE-estimated model. Histograms capture model uncertainty. X axis measures cumulative GDP loss in percent as of 2Q 1993, due to domestic (panel A) and European/global shocks (panel B) occurring between 3Q 1989 and 2Q 1993. Y axis measures probability (the sum of bars is normalized to 1).

# Robustness: Cumulated GDP loss (contribution shares of different shocks)

Table 1: Share of shocks in total cumulative GDP loss, in percent.

Specification	Soviet				Domestic	European and Global
	1Q91	1-2Q91	1-4Q91	1Q91-2Q93		
Benchmark	27.10	33.66	28.69	16.54	42.61	6.81
until 2Q2007	10.49	15.81	15.37	10.78	30.85	14.20
since 2Q1981	23.15	29.41	27.10	16.41	30.04	14.40
2Q1970-4Q1990	16.16	20.36	21.52	18.65	70.30	9.36
with paper	24.82	29.76	22.63	10.12	47.35	20.08
with oil	27.57	35.77	28.21	13.35	47.57	1.93
with global oil market	22.04	25.85	19.00	9.59	44.67	12.17
total imports	8.14	7.84	3.27	3.58	50.53	8.47
instrument	29.46	28.46	18.79	14.95	44.63	7.00
with labor market	22.13	26.48	21.98	11.34	41.86	0.12

*Notes:* In a given row, the results come from the same MLE-estimated model. Together with all other shocks (see Footnote 9) the rows add up to the total cumulative loss over the depression period (which is 100 percent). Positive signs of shares means that the shocks had overall a contractionary impact.

- Total cumulative GDP loss, relative to the trend, is 17.4 percent.
- with global oil market: Soviet/FSU and OPEC oil production, as well as oil prices included in the global block
- total imports: total Soviet/FSU imports, instead of Finnish exports to the USSR/FSU
- instrument: Finnish exports to the USSR/FSU instrumented
- labor market: real wages and total hours worked included in the domestic block
- A number of further robustness checks are reported in the Appendix of the paper.

## Summary of main findings

- ▶ The Finnish-Soviet trade collapse provides a good laboratory to study a well-identified exogenous trade shock and its propagation and amplification.
- ▶ The initial drop of exports equivalent to 1.6 percent of GDP resulted in the overall loss of 4.7 - 5.9 percentage points, indicating a rather large multiplier of around 3.
- ▶ The Soviet trade collapse can explain between 1/4 and 1/3 of the cumulative loss in GDP, relative to the trend, during the Finnish Great Depression.
- ▶ Shocks originating domestically, unrelated to the trade shock, were another, at least as important driver of the Finnish Great Depression.
  - ▶ Financial liberalization in the 1980s, triggering a financial boom-bust cycle.