

BENEATH THE SURFACE: TRACING THE HISTORICAL ROOTS OF RUSSIA'S RESOURCE DEPENDENCE (1880–2022)

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Research Question

When did Russia become a natural-resource-dependent economy?

Context and Research Gap

Context: Fuels account for **55% of exports** (2024) [1] and **19% of GDP** (oil and gas rents, 1995–2015 average) [2].

Existing explanations: The literature locates the origins of dependence in either the 1970s oil shocks (historical accounts) or the 2000s commodity boom (econometric studies).

Critique: Harmonised macroeconomic and trade series – especially for resources – largely begin in the 1970s; data limitations may be mistaken for structural change.

Research gap: The timing of Russia's shift toward resource dependence remains unclear due to the lack of consistent historical data.

Theoretical Framework

Resource dependence: A structural condition in which resource extraction is the primary source of external earnings.

Measurement: Under Soviet foreign-exchange constraints, export structure serves as a key indicator of resource dependence.

Economic effects: Limited export diversification and resource-curse dynamics constrain long-run growth.

Origins matter: Resource dependence is **endogenous, persistent, and path dependent**; the conditions of its emergence shape long-run trajectories.

Methodology and Data

Historical data reconstruction: 1880–2022 (see reconstruction pipeline below)

Structural break identification: Bai and Perron [3, 4]

Data Collection & Digitisation

Russian Empire (1880–1917): Ministry of Finance of the Russian Empire [5], Central Statistical Committee of the Ministry of Internal Affairs [6], Ministry of Finance of the Russian Empire [7, 8], Tsentral'noe statisticheskoe upravlenie (TsSU) SSSR [9], and Federico and Tena Junguito [10]

USSR territory (1918–1991): TsSU SSSR [11, 12], TsSU SSSR and Goskomstat SSSR [13], and Uegaki [14]

Russia (1992–2022): State Committee on Statistics of Russia [15], Federal State Statistics Service (Rosstat) [16], and United Nations [1]



Series Alignment & Splicing & Cross-Source Validation

Export data:

Export shares are ratio-based → no unit alignment required.
Total exports (nominal USD): modern data + Soviet conversion using official ER from Uegaki [14] + Imperial Federico and Tena Junguito [10] values (overlap 1918–1938 used for splicing).

Production data:

Conversion factors: 1 t = 7.33 barrels; 1 t = 61.05 poods

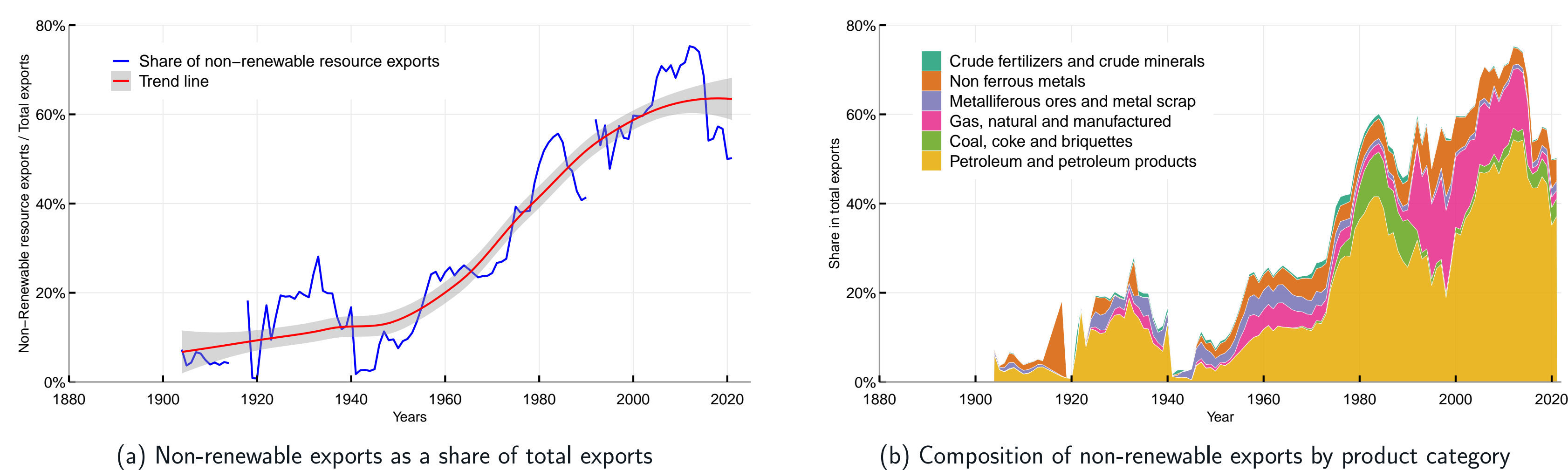


Reconstructed Series

Share of non-renewables in total exports (1904–2022);
Non-renewable exports (nominal USD, 1904–2022);
Total exports (nominal USD, 1880–2022);
Oil extraction (metric tons, 1880–2022).

Results

Figure 1. Share of non-renewables in total exports: Russian Empire, USSR, and Russia (1904–2022)

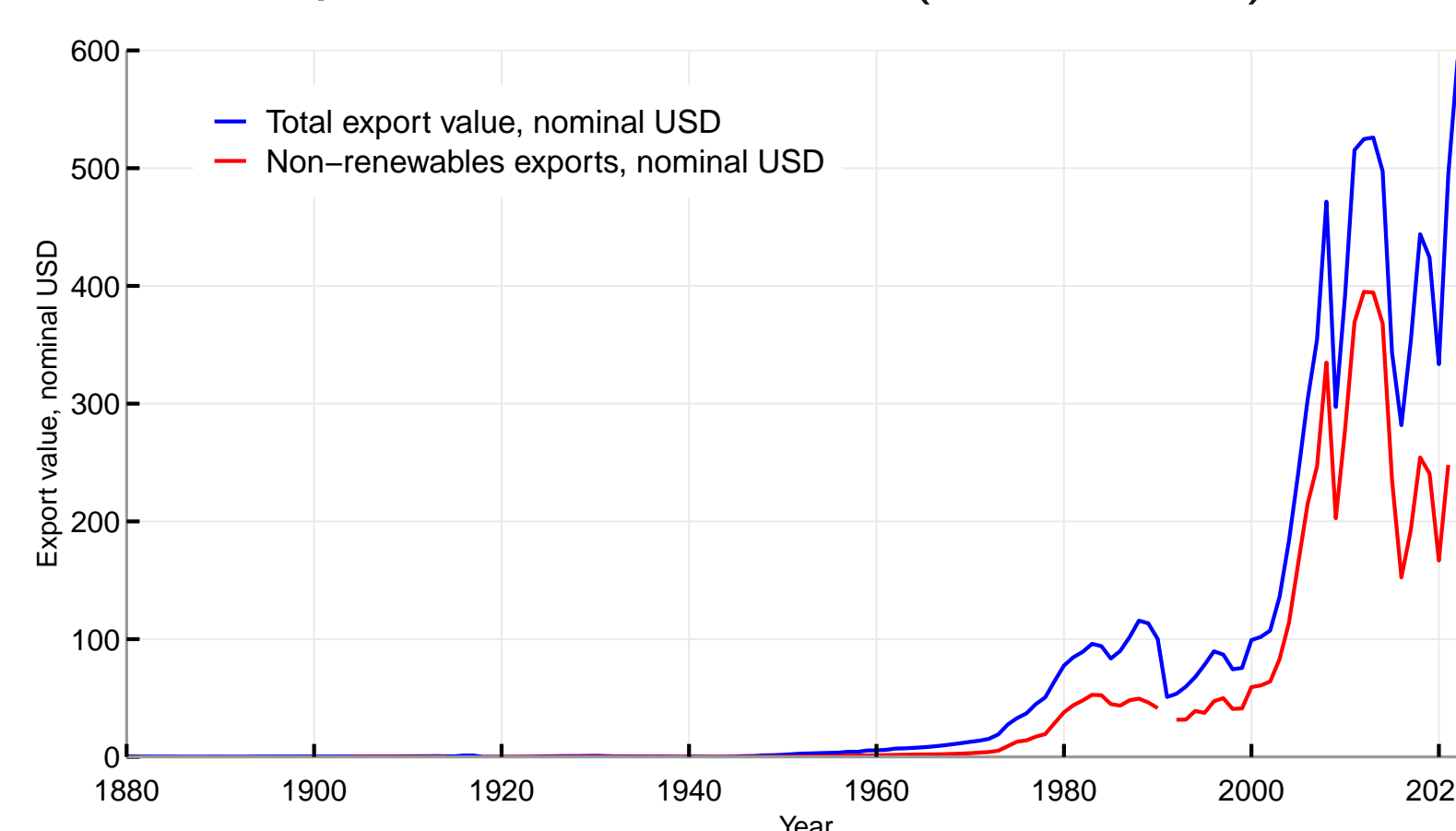


(a) Non-renewable exports as a share of total exports

(b) Composition of non-renewable exports by product category

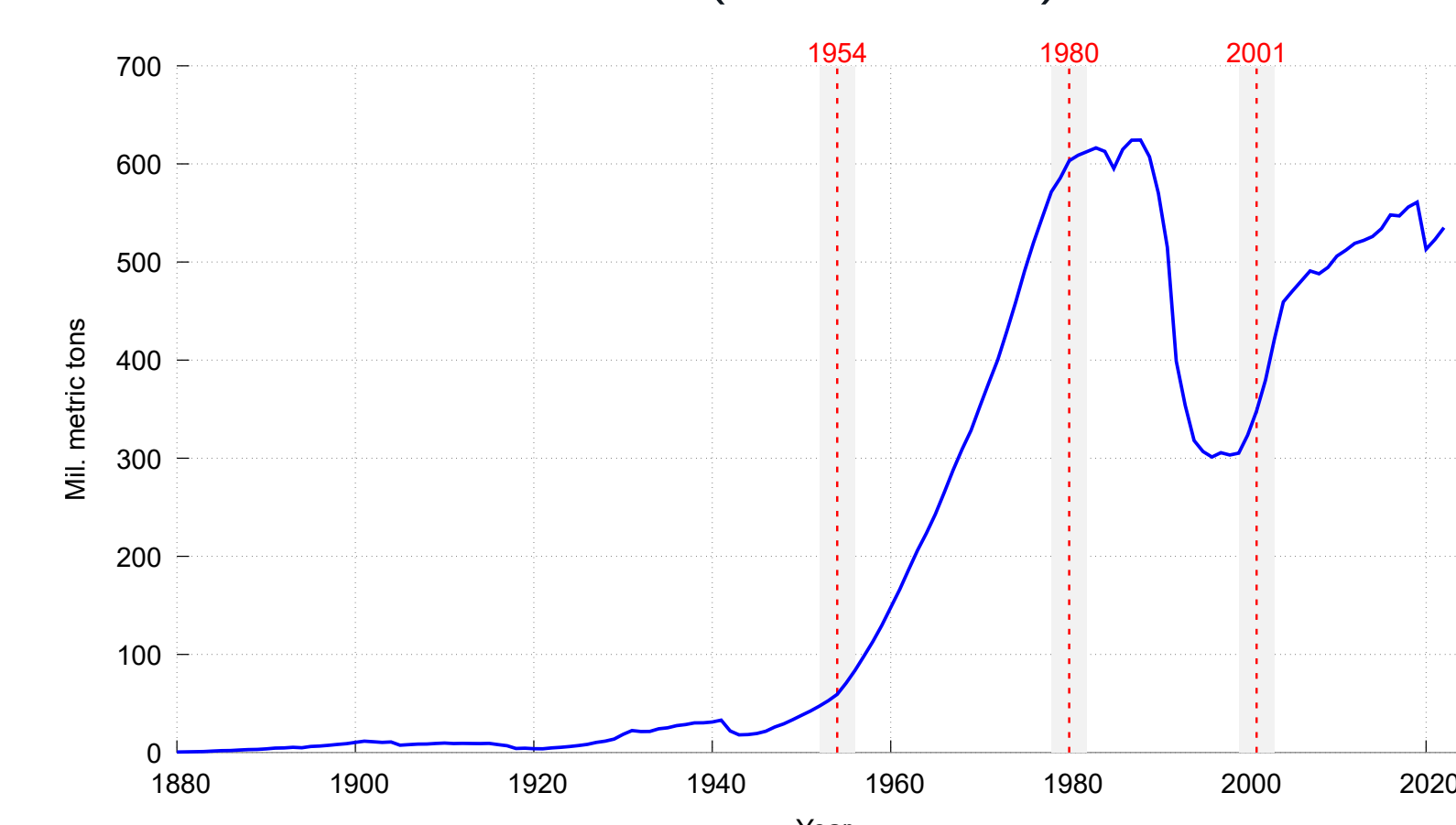
An upward break occurs in the 1950s. By the late 1960s, non-renewables reach 25–30% of exports, indicating that resource dependence was already taking shape before the 1970s oil shocks.

Figure 2. Non-Renewable export values and total exports, nominal USD (1880–2022)



The increase in non-renewable export shares reflects faster growth in their export values rather than a contraction of total exports.

Figure 3. Oil production and identified structural breaks (1880–2022)



Structural breaks in 1954, 1980, and 2001 reflect turning points in oil production, the first initiating a prolonged expansion phase.

Summary of findings: The results indicate a structural shift toward non-renewables in Russia's export structure from the mid-1950s onward. Rising non-renewable export shares reflect faster growth in their export values, ruling out a shrinking export base. Structural break tests on oil production (allowing one to five breaks [3, 4]) identify three statistically significant breaks in 1954, 1980, and 2001, with the 1954 break marking the onset of sustained growth in oil extraction. Together, the evidence suggests that resource dependence began to take shape in the late 1950s, well before the 1970s oil crises.

Conclusions

The results indicate that Russia's dependence on non-renewables, particularly oil, intensified in the mid-1950s, challenging the conventional focus on the 1970s oil crises. This earlier shift suggests the roots of Russia's resource dependence lie in the structural transformations of the mid-20th century, which continue to shape its export structure today.

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Author and Project

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