

International sanctions and the Dollar: Evidence from trade invoicing

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International role of the US dollar

The international role of the US dollar has been important for decades :

- It represents about 40% of global trade (Gopinath, Jackson Hole 2016 ; Boz et al. JIE paper with European data)
- US dollar also dominates international reserves but declines from $\approx 70\%$ in 1999 to $\approx 60\%$ in 2021 (Arslanalp, Eichengreen, and Simpson-Bell, IMF WP 2022).

Among the factors that could undermine the international role of the US dollar :

- The declining share of the United States in global GDP
- International sanctions making it more risky to hold US dollar assets
- **International sanctions and its impact on US dollar invoicing**

Sanctions undermining the US dollar ?

Russia sanctions threaten to erode dominance of US dollar, says IMF

Ukraine war could cause more 'fragmentation' in global financial system, warns top official



Gita Gopinath, the IMF's first deputy managing director, says that currencies other than the US dollar may start to make up a greater share of countries' foreign reserves © AFP via Getty Images

Jonathan Wheatley in London and Colby Smith in Washington MARCH 31 2022



This paper explores the impact sanctions on Russia by 2014 on currency invoicing [Still very preliminary !]

International sanctions on Russia (2014-2020)

- Start in March 2014 after invasion of parts of Ukraine
- Progressively strengthened over time (especially by the US) : interference with US elections, poisoning of S. Skripal...

Nature of the sanctions on Russia by the US / EU since 2014 :

- Target foreign assets, entities (e.g. defense-related, energy, financial institutions), individuals or sectors (e.g. military, dual-use goods, extraction equipment)
- Restrictions on transactions ranging from goods to financial transactions.
- EU sanctions in 2014 did not prevent exporting dual-use goods to Russia : (i) if the contract was passed before 2014, or (ii) if the buyer is not military (Council regulation (EU) No 833/2014 of 31 July 2014)
- August 2018 : CBW (Chemical and Biological Weapons control act of 1991) triggered : terminates most export licenses for controlled goods and services

International trade impact ?

- **Russian import barriers** : restrictions / bans on imports of agriculture and agro-food products from sanctioning countries → evidence of negative impact on trade [Crozet and Hinz, 2020 ; Proskute et al. 2022]
- **EU and US export restrictions** : Military goods, military end-users in RU, dual-use goods, material for deep-water exploration → Restrictions are loose in first place but then strengthened over time
- **Other sanctions** : Sanctions on banks, travel bans... → Impact harder to identify, but some evidence that trade suffered more in trade finance “intensive” products [Crozet and Hinz, 2020]

Impact on USD invoicing by non-US firms ?

- **Demand for dollars in Russia** declines due to policies and the threat of foreign assets being seized [Demand-side channel]
- **Frictions on the use of US dollars due to the extra-territorial nature of US law** → expose third country financial and non-financial firms when using the US dollar for transactions with sanctioned countries [New transaction cost on USD denominated trade flows]

US congress report : “De-dollarization efforts in China and Russia” (Congressional Research Service, July 2021). *“The dominance of the US dollar in cross-border transactions allows the United States unique visibility and levers of influence through policy measures such as financial sanctions that impede access to the US financial system or use of US dollar in international trade. Sanctions, imposed for foreign policy or national security objectives , restrict access to US payments and financial system, which is generally needed to process dollar transactions.”* .

What this paper does

Provide a first evidence on the impact on international sanctions on currency invoicing.

- Empirical analysis based on detailed micro-level trade data
- French customs data that detail from 2011 to 2020 for each transaction the value in euros but also the currency of invoicing (Extra-EU only).
- Investigate the effects of sanctions on Russia starting in 2014 on trade and currency invoicing for transactions with Russia relative to control country (United States)
- Account for the important composition effects when looking at the change in the probability to invoice in US dollars due to firm selection
- **Mechanisms** : Use a European classification of dual-use goods (in HS codes) + credit register to link exporters to their banks

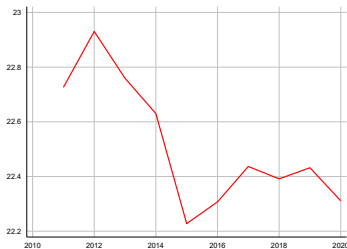
We find that (so far) :

- The probability of USD invoicing decreases after 2014 while the probability of rubles invoicing increases
- Part of this effect is explained by the changes in the composition of international reserves (demand-side mechanism)
- The reduction in the propensity to invoice in US dollars is more pronounced in dual-use goods (supply-side / transaction costs mechanism)
- Some evidence that the transmission is larger among clients of a large French bank that was previously sanctioned (supply-side / transaction costs mechanism)

Aggregate exports to Russia declined

- In 2020, French exports to Russia had declined by about 45% compared to the pre-sanctions period.

FIGURE : French total exports to Russia



(a) Ln total exports



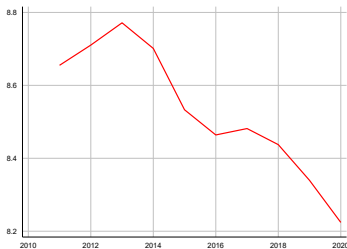
(b) Ln nb. transactions

Note : French customs data, extra-EU.

Changes in the composition of exporters

- Composition effect : The number of French exporters to Russia almost halved but the average size of exporters increased

FIGURE : The changing composition of exporters



(a) Ln nb. exporters

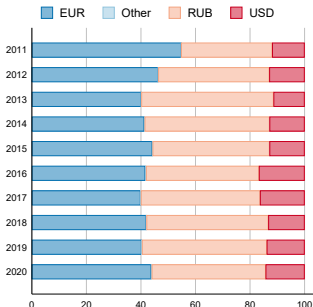


(b) Ln average exporter size

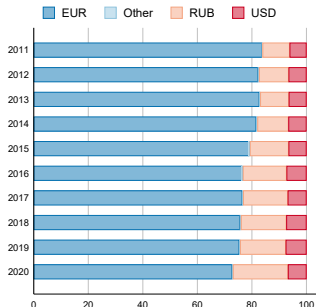
Note : French customs data, extra-EU.

Changes in the composition of currencies

FIGURE : Share of currencies in French exports to Russia



(a) % of total exports

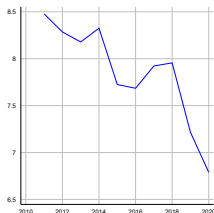


(b) % of transactions

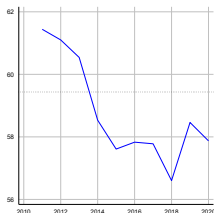
Note : French customs data, extra-EU.

Changes in the composition of currencies

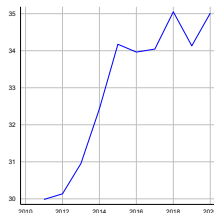
FIGURE : Share of currencies in French exports to Russia (continuing transactions)



(a) % of dollar



(b) % of euro



(c) % of ruble

Note : French customs data, extra-EU.

Sanctions impact on trade

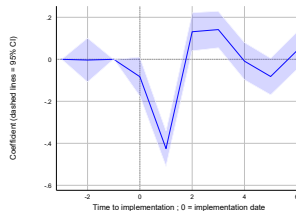
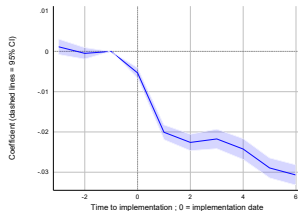
Three empirical models comparing the export performance of French firms in treated (Russia) versus non-treated (United States, robustness = OECD) countries over time.

$$Z_{fpjt} = \sum_{t=-2}^{t=6} Russia_{jt} + \gamma_{fpj} + \theta_{fpt} + \epsilon_{fpjt} \quad (1)$$

- Dimensions : firm = f, product = p, destination = j, year = t
- Dependent variable : $Z = [\mathbb{1}_{fpjt}^X$ (linear probability model), $\Delta \ln V_{fpjt}$ (export growth among continuing transactions), $Currency_{fpjt}$ (currency dummy)]
- Fixed effects : firm-product-destination (γ_{fpj}) and firm-product-time (θ_{fpt})

Sanctions impact on trade : event study

FIGURE : Event graph : Impact of 2014 sanctions on Russia on firm-level exports

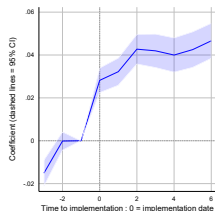
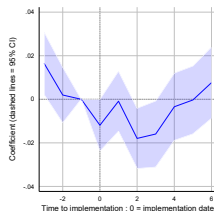
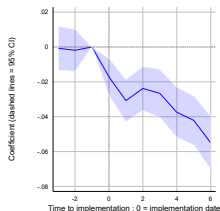


(a) Export probability (t) (b) Log change in exports (t / t-1)

Note : French customs data, extra-EU.

Sanctions impact on currency invoicing : event study

FIGURE : Event graph : probability to invoice in USD following sanctions in 2014 in Russia (continuing exporters)



(a) Event on dollar

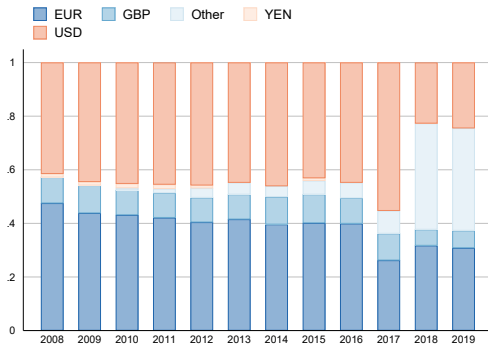
(b) Event on euro

(c) Event on ruble

Note : French customs data, extra-EU. Continuing exporters : We keep exporters exporting exactly 10 years in Russia

Controlling for international reserves

FIGURE : Russia : Composition of international reserves



Source : data collected by Ito, H., and R. McCauley. (2020) .

Controlling for international reserves

TABLE : Impact of sanctions : currency invoicing, controlling for reserves

Dep. var.	(1)	(2)	(3)	(4)	(5)	(6)
Exporters	Dollar		Euro		Ruble	
Period	All	Conti.	All	Conti.	All	Conti.
	2011-2019					
RU sanctions (2014)	-0.014 ^a (0.004)	-0.021 ^a (0.005)	-0.010 ^b (0.004)	-0.014 ^a (0.005)	0.025 ^a (0.002)	0.036 ^a (0.003)
International reserves in USD	0.049 ^a (0.012)	0.061 ^a (0.016)	-0.038 ^a (0.013)	-0.047 ^a (0.016)	-0.010 ^b (0.005)	-0.013 ^b (0.006)
International reserves in EUR	0.025 (0.027)	0.046 (0.032)	0.035 (0.027)	0.022 (0.034)	-0.054 ^a (0.011)	-0.059 ^a (0.015)
R ²	0.93	0.93	0.93	0.93	0.97	0.97
Obs.	121,178	76,674	121,178	76,674	121,178	76,674
<i>fpj</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>fpt</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes

Note : Significance levels : ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$. *Conti.* indicates exporters continuously exporting for 10 years in Russia.

Dual-use goods

1,272 Dual-use goods identified in Regulation (EU) No 428/2009 of the European Council of 5 may 2009

- Available concordance between Dual use goods classification and product-level classification in trade data (EU Combined nomenclature)
- In the United States, sanctions on dual-use goods are handled by the Bureau of Industry and Security of the US Department of Commerce. The list – Export Control Classification Number (ECCN) on the Commerce Control List (CCL) – has no mapping with product codes in the customs data and there is no easy match.
- Restrictions on dual-use goods exports were strengthened in 2018 after interference in US elections and 2019 by the US administration after the poisoning of Serguei Skripal and his Daughter.
- August 2018 : CBW (Chemical and Biological Weapons control act of 1991) triggered : terminates most export licenses for controlled goods and services

Dual-use goods : Export probability

- Interaction term between Russia Sanctions by 2014 and Dual use goods dummy

TABLE : Impact of sanctions : Export probability and dual use goods

	(1)	(2)	(3)	(4)
Dep. var.		Export dummy (fpjt)		
Destinations		RU+US		
Exporters	All	All	All	All
Products	All	Manuf.	All	Manuf.
Period	2011-2020			
RU sanctions (2014)	-0.021 ^a (0.004)	-0.018 ^a (0.002)	-0.023 ^a (0.001)	-0.023 ^a (0.001)
... × Dual use goods	-0.013 (0.010)	-0.021 ^a (0.005)	0.009 ^a (0.002)	0.008 ^a (0.002)
R ²	0.57	0.57	0.85	0.84
Obs.	11335544	10242634	8,151,726	7,257,560
<i>j</i> -FE	Yes	Yes	No	No
<i>fpj</i> -FE	No	No	Yes	Yes
<i>fpt</i> -FE	Yes	Yes	Yes	Yes

Note : Significance levels : ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$.

Dual-use goods : Firm-level exports

TABLE : Impact of sanctions : Firm-level exports and dual use goods

	(1)	(2)	(3)	(4)
Dep. var.	Ln Export (fpjt) - Ln Export (fpjt-1)			
Destinations	RU+US			
Exporters	All	All	Conti.	Conti.
Products	All	Manuf.	All	Manuf.
Period	2011-2020			
RU sanctions (2014)	-0.038	-0.006	-0.073 ^b	-0.075 ^b
	(0.034)	(0.034)	(0.036)	(0.038)
... × Dual use goods	-0.065	-0.097 ^c	-0.067	-0.065
	(0.058)	(0.058)	(0.059)	(0.060)
R ²	0.62	0.63	0.62	0.62
Obs.	80,894	76,094	57,490	55,634
<i>fpj</i> -FE	Yes	Yes	Yes	Yes
<i>fpt</i> -FE	Yes	Yes	Yes	Yes

Note : Significance levels : ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$.

Dual-use goods : Currency invoicing

TABLE : Impact of sanctions : Dual use goods, firms exporting 10 years in Russia

Dep. var.	(1) Dollar	(2)	(3) Euro	(4)	(5) Ruble	(6)
RU sanctions (2014)	-0.023 ^a (0.005)		-0.020 ^a (0.006)		0.042 ^a (0.004)	
... × Dual use goods	-0.027 ^b (0.011)	-0.026 ^b (0.011)	0.025 ^c (0.013)	0.024 ^c (0.013)	0.002 (0.007)	0.002 (0.007)
R ²	0.93	0.93	0.93	0.93	0.97	0.97
Obs.	87,172	87,172	87,172	87,172	87,172	87,172
<i>fjp</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>fpt</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>jt</i> -FE	No	Yes	No	Yes	No	Yes

Note : Significance levels : ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$.

Sanctioned banks

- Large French banking group sanctioned by the US administration in 2014 due to transactions in US dollars with sanctioned country (Sudan)
- Identify clients of this banking group with the credit register
- Interaction term between Russia sanctions in 2014 and sanctioned bank dummy

TABLE : Sanctions on Russia and currency invoicing : The role of firm heterogeneity (2012-16)

	(1)	(2)	(3)	(4)	(5)	(6)
Banks	Sanctioned	Not-sanctioned			All	Conti
Exporters		All				
Dep. var.			Dollar			
RU sanctions (2014)	-0.025 ^a (0.005)	-0.004 (0.007)	-0.004 (0.027)		-0.039 (0.044)	
... × Sanctioned Bank			-0.021 ^a (0.007)	-0.021 ^a (0.007)	-0.023 ^b (0.009)	-0.023 ^b (0.009)
... × In exporter size			-0.000 (0.002)	0.000 (0.002)	0.002 (0.002)	0.002 (0.002)
R ²	0.95	0.94	0.95	0.95	0.95	0.95
Obs.	32,070	18,010	62,010	62,010	39,056	39,056
<i>fjp</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>fpt</i> -FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>jt</i> -FE	No	Yes	No	Yes	No	Yes

Note : Significance levels : ^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$. French firm-level exports to Russia or the United States in 2012-2016.

Conclusion

- New transmission channel of the impact of international sanctions on trade through currency invoicing in US dollars
- US dollar invoicing in French exports to Russia declined by 2014 (on top of the decline of trade volume)

We find evidence for 3 transmission channels :

- Demand for dollars due to the currency composition of reserves in the sanctioned country
- Increasing transaction costs for using US dollars especially in dual-use goods (effect of US sanctions on exporters)
- Threat of financial sanctions on exporters' banks in the absence of compliance with US law and when USD is used (effect of US sanctions on banks)