

# Determinants of Capital Flow Dynamics for Russia

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# Outline

- Factors of capital flows to emerging markets: pull versus push
- Estimates for Russia: methodology and results
- Discussion

# Pull and Push Factors of Capital Flows

- **Pull factors** reflect traditional neoclassical view: capital flows to countries with low capital intensity (reflected in high growth potential and high national interest rates). Internal factors related to financial vulnerabilities (e.g. adequacy of international reserves) and other determinants of risk/return profile (financial account openness, financial/institutional development etc.) are also included into pull factors
- **Push factors** are external factors such as global/US interest rates and other global liquidity indicators, international investors' risk aversion, commodity prices, global/US GDP growth, crises in other countries of the region

# Pull versus Push: Why is Distinction Important?

- If pull factors dominate, a country could shield itself from capital flow volatility by pursuing prudent macroeconomic policies (which reduce risks) and structural reforms (which increase growth potential)
- Otherwise, it may be beneficial to include capital flow management measures in the policy toolkit

Cross-country empirical studies do not give clear answer which factors dominate. In addition, their results may be of limited value for Russia given certain country-specific issues (net capital exporter status, sanctions, “round-tripping” of investment through offshore centres)

# Capital Flow Factors for Russia: Literature Review

- (Drobyshevsky, Trunin, 2004): regression analysis of financial account components in 1994-2004. Both pull (GDP growth, budget deficit) and push factors (oil prices, OECD GDP growth) significant, but the former dominate
- (Karev, 2009): Neo-Keynesian model calibrated for Russia; low sensitivity of net capital flow to uncovered interest rate disparity noted
- (Yudaeva, 2010): external debt refinancing opportunities and bank liquidity affect capital flows; important role of “round-tripping” underlined
- (Polbin, Drobyshevsky, 2014): according to the DSGE model of the Russian economy, a 1 percentage point shock of risk premium leads to an increase in net foreign assets at 3% of GDP within 3 years

# Methodology

- OLS regression analysis for capital flow components and aggregates (in percent of GDP) based on 1994-2018 quarterly data
- Lagged independent variables used to reduce endogeneity problem if present
- Robustness checks:
  - exclude the period up to 1998 crisis (economic transition)
  - include dummies for 2008-09 and 2014-15 recessions
  - normalize capital flows and independent variables by US CPI

# Dependent Variables

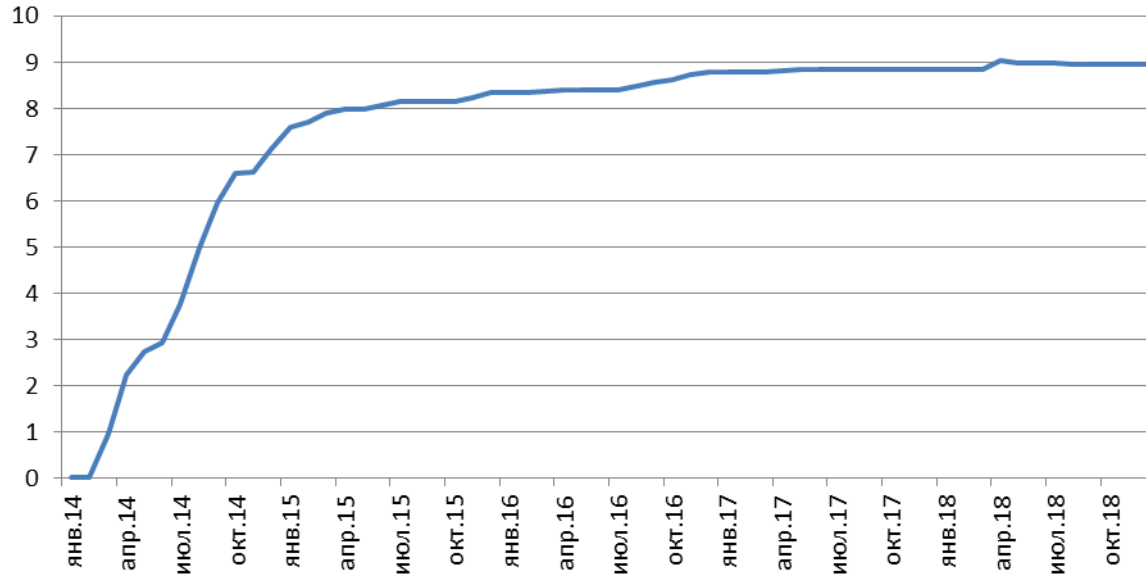
	Inflow	Outflow	Net
Foreign direct investment	FDI_IN	FDI_OUT	
-//-, excluding transactions with offshore centres	FDI_IN_NONOFFSH	FDI_OUT_NONOFFSH	
Portfolio investment	P_IN	P_OUT	
Other capital flows	OTHER_IN	OTHER_OUT	
Capital flight			CAP_FLIGHT
Other capital flows excluding capital flight		OTHER_OUT-CAP_FLIGHT	
Aggregate private capital flows	PRIV_IN	PRIV_OUT	PRIV_NET
Aggregate private capital flows excluding capital flight		PRIV_OUT-CAP_FLIGHT	PRIV_NET-CAP_FLIGHT

# Independent Variables

Push Factors		Pull factors	
REAL_OIL	Urals price deflated by US CPI	RU_GR	Russia's GDP growth rate (for the year ending with current quarter)
VIX	S&P 500 expected volatility index	RU_GR_F	IMF forecast for Russia's average GDP growth rate (5 years ahead)
US_REER	US dollar real effective exchange rate	RU_GAC_GR	Russia's gross capital accumulation growth rate (for the year ending with current quarter)
G7_M2	G7 monetary aggregate M2 (in US dollars)	RU_REER	Ruble real effective exchange rate
US_RATE	US Federal funds rate	RU_RATE	Interbank interest rate
US_CORPSPREAD	US corporate paper spread	TR_OPEN	Trade openness (foreign trade turnover to GDP ratio)
US_YIELDGAP	US treasury bond spread (10- and 3- year maturity)	KA_OPEN	Chinn-Ito <i>de jure</i> financial account openness index (0 – fully closed, 1 – fully open)
AE_GR	Advanced economies' GDP growth rate (for the year ending with current quarter)	ICRG	Country risk index (0 – highest, 1 – lowest)
G20_GR	G20 GDP growth rate (for the year ending with current quarter)	RES	International reserves to GDP ratio
I	Sanctions' intensity index	P_DEBT	Public debt to GDP ratio
<b>Auxiliary variables</b>		X	Exports of goods and services to GDP ratio
CRISIS0809	Dummy variable for the 2008-09 recession	ER_REG	Exchange rate regime (1 – fixed, 2 – intermediate, 3 – flexible)
CRISIS1415	Dummy variable for the 2014-15 recession	ER_VOL	Ruble exchange rate volatility
F_DEBT	Russia's foreign debt to GDP ratio		



# Sanctions' Intensity Index



- Introduced in (Omelchenko, Khrustalev, 2018)
- Expert estimates of sanctions' intensity (1 to 3, from lowest to highest) weighted by the shares of sanctions' source countries in Russian trade, shares of their currencies in the foreign debt of sanctioned companies, and the shares of sanctioned companies in the Russian economy

# Estimation Results (1)

	FDI_IN	FDI_IN_NONOFFSH	FDI_OUT	FDI_OUT_NONOFFSH	P_IN
D(Ln(REAL_OIL))	<b>2.77***</b>	<b>1.21***</b>	1.56*	<b>1.03***</b>	<b>2.63***</b>
D(Ln(US_REER))					<b>-17.1*</b>
G20_GR			0.35	<b>0.16***</b>	
I	<b>-0.30***</b>	<b>-0.36***</b>	<b>-0.14**</b>	<b>-0.07***</b>	
I(-2)	<b>0.25***</b>	<b>0.30***</b>			
RU_GR_F(-1)	<b>0.37***</b>	<b>0.21**</b>			
KA_OPEN	<b>2.09***</b>	0.70	<b>3.25***</b>	-3.52	
CRISIS0809					-0.79**
No. of observations	96	42	92	42	96
Estimation period	1994–2018	2008–2018	1995–2018	2008–2018	1994–2018
Adjusted R <sup>2</sup>	0.31	0.30	0.47	0.57	0.25

\*\*\*, \*\*, \* represent significance at 1%, 5%, 10% level respectively. Estimates in bold retain significance (at 10% level) under robustness checks. Here and thereafter, ADF tests point at absence of unit root in the residuals. Estimation period for FDI\_IN\_NONOFFSH, FDI\_OUT\_NONOFFSH is shorter due to data availability issues.

# Estimation Results (2)

	OTHER_IN	OTHER_OUT	OTHER_OUT-CAP_FLIGHT	CAP_FLIGHT
Ln(VIX)	<b>-6.02***</b>			
D(Ln(US_REER))	<b>-39.6*</b>	45.3**	26.7	18.4*
G20_GR		<b>1.26***</b>	<b>1.62***</b>	-0.36
I		<b>-0.65***</b>	<b>-0.33**</b>	<b>-0.40***</b>
I*F_DEBT(-1)	<b>-0.0125***</b>			
I(-1)*F_DEBT(-1)	<b>0.0097***</b>			
RU_GR_F(-1)	<b>0.70**</b>			
X		0.00	-0.15*	<b>0.16***</b>
CRISIS0809		<b>3.66***</b>	<b>3.90***</b>	
No. of observations	96	92	92	92
Estimation period	1994–2018	1995–2018	1995–2018	1995–2018
Adjusted R <sup>2</sup>	0.28	0.28	0.14	0.54

X was instrumented by oil prices and trade-weighted GDP of Russia's trading partners

# Estimation Results (3)

	PRIV_NET	PRIV_NET-CAP_FLIGHT	PRIV_IN	PRIV_OUT	PRIV_OUT-CAP_FLIGHT
D(Ln(REAL_OIL))			5.31*		
Ln(VIX)	<b>-7.38***</b>	<b>-5.02**</b>	<b>-5.47***</b>		
D(Ln(US_REER))	<b>-106.6***</b>	<b>-89.5***</b>	<b>-55.5***</b>	36.0***	21.9*
G20_GR				<b>1.07***</b>	<b>1.16***</b>
I	<b>-0.45**</b>	<b>-1.31***</b>	<b>-0.89**</b>	<b>-0.99***</b>	<b>-0.46***</b>
I(-2)	<b>0.68**</b>	<b>1.16***</b>	<b>0.63**</b>		
RU_GR_F(-1)	0.94***	<b>1.04***</b>	<b>1.71***</b>		
KA_OPEN			2.64		
CRISIS0809		<b>-4.45***</b>		<b>2.28***</b>	<b>3.40***</b>
No. of observations	97	97	97	92	92
Estimation period	1994–2018	1994–2018	1994–2018	1995–2018	1995–2018
Adjusted R <sup>2</sup>	0.38	0.44	0.67	0.44	0.26

# Discussion (1)

- FDI inflow: significant positive impact of both push (oil price) and pull (growth forecast) factors. Sanctions' negative impact also significant, but weakens somewhat over time
- FDI outflow: significant positive impact of oil prices and global growth, persistent negative effect of sanctions
- Portfolio inflow: positive impact of oil prices, negative impact of dollar strength (financial channel of exchange rate?) No significant factor of portfolio outflows identified
- Other investment inflow: push (VIX, dollar strength) and pull (growth forecast) factors both significant. Evidence of sanctions' negative effect decreasing over time (index / multiplied by outstanding foreign debt to reflect the impact of debt refinancing operations)

## Discussion (2)

- Other investment outflow : significant positive impact of global growth, persistent negative impact of sanctions
- Capital flight: positive impact of exports, negative impact of sanctions
- Gross inflow: evidence for significant impact of pull (growth forecast) and push (VIX, dollar strength) factors. Negative impact of sanctions decreases over time
- Gross outflow: only push factors significant; negative impact of sanctions persistent; strong positive effect of 2008-09 recession
- Net inflow: the same factors are significant as for the gross inflow, plus strong negative effect of 2008-09 recession

## Discussion (3)

- Overall, push factors dominant: they account for 65% of explained variation for gross inflow; 100% for gross outflow; 76% for net inflow
- After controlling for push factors' influence on growth forecast,

$$d(RU - GR - F_t) = 0,007 + 1,34 d(\ln(REAL - OIL_t)) - 0,16 d(I_t),$$

(0,106)      (2,88)                      (3,13)

the following decomposition of factor contributions to net capital flows may be performed (\$billion):

	Oil prices	Sanctions	Growth forecast
2014	-1	-84	-18
2015	-14	-59	-18
2016	-18	-34	-3
2017	-17	-39	8
2018	-12	-42	6

- The dominance of push factors (in contrast to the results of (Drobyshevsky, Trunin, 2006)) may be explained by the fact that only private capital flows are studied here, as well as by stronger integration of Russia in the global economy.

# Concluding Remarks

- While some of the factors of capital flow dynamics are common for Russia and other emerging markets (VIX, dollar strength, expected growth rate), there are substantial differences. No evidence was found for significant impact of interest rate/current growth differentials in the Russian case. On the other hand, effects of oil prices and sanctions are specific for Russia
- Push factors dominate in explaining capital flows' variation; capital flow decomposition for 2014-18 also demonstrates the prevailing role of oil prices and sanctions
- However, this should not be read as an unambiguous point in favour of capital flow management measures, given the need for prudent and predictable macroeconomic policies



Thank you for your attention!