Capital Flows across Developing Countries: Is there an Allocation Puzzle?

Josef Schroth | Bank of Canada

23 November 2018

disclaimer: any views presented are my own and not necessarily those of the Bank of Canada

Capital flows across developing countries

- foreign direct investment (FDI) and growth positively related
  - Dollar-Kraay (2006), Alfaro et al. (2014)
- but so are savings in excess of investment
  - Gourinchas-Jeanne (2013), Benhima (2013)
- 'puzzle' has been related to financial frictions
  - but literature offers only partial explanation (shuts down FDI)
  - Song et al. (2011), Sandri (2014), Buera-Shin (2017)

Can we account for changes in NFA composition?

- literature tends to emphasize frictions on firm side
  - savings cannot reach all domestic investment opportunities
  - some savings fund foreign consumption instead

  account for changes in net foreign assets (NFA), need to shut down FDI
- FDI is quantitatively important, e.g. in developing Asia (UNCTAD, 2015)
- this paper allows for friction on consumer side as well
  - savings cannot reach all domestic 'consumption opportunities'
  - some savings fund foreign consumption instead

  account for changes in NFA composition as well (safe assets+FDI)

Preview of results

- two observations
  - consumers in developing countries face tighter credit conditions
  - growth in developing countries increases their share in world GDP

  self insurance motives interacts with general equilibrium effects
- growth increases foreign safe assets holdings of a developing country
  - interest rate falls, other developing countries save less
- as a result, growth and foreign safe assets are positively related
  - FDI flows in opposite direction only partially offset this

Model

- time is infinite $t = 0, 1, 2, \ldots$
- three regions:
  - slow-growing developing countries (D)
  - fast-growing developing countries (E)
  - developed countries (U)
- growth refers to exogenous changes in TFP across steady states
  - i.e., productivity catch-up as in Gourinchas-Jeanne (2013)
- no aggregate risk, compare steady states
  - use model to examine relation between changes in TFP and NFA

- measure one of consumers in each region $j = D, E, U$
  - idiosyncratic labor (ξ) and investment productivity (z) risk
- rent out labor in region of residence, labor not mobile
- able to invest capital anywhere, but only worth it if productive enough
- can borrow, pledge fraction θ_1^j of wage and fraction θ_2^j of physical capital
- borrowing and saving via non-contingent bonds (incomplete markets)

How do regions differ?

- developed region has deeper financial markets
  - residents of U can pledge more, $\theta_i^U \geq \theta_i^j$
- growth does not improve region's financial development
  - residents of D and E can pledge the same, $\theta_i^D = \theta_i^E$
- developed region is at productivity frontier, high TFP throughout
- developing regions start out below frontier
  - region D does not improve relative to frontier, low TFP throughout
  - but E improves relative to frontier and catches up partially

Calibration

- calibrate to 2010 data, call this 'new steady state'

	Population share	Output share
D	0.45	0.15
E	0.40	0.23
U	0.15	0.62

- TFP: normalize $A^D = 1$ and obtain $A^E = 1.43$, $A^U = 5.14$
- target NFA position of region U (Lane-MilesiFerretti, 2007)
  - safe assets are negative 10 percent of GDP
  - FDI is positive 2.5 percent of GDP

Parameter	Explanation	Value	Target
σ	CRRA coefficient	2	within range of literature
δ	depreciation rate	0.067	replacement investment
α	capital share	0.35	average capital income share
P_ξ	labor productivity process	$\begin{pmatrix} 0.95 & 0.05 \\ 0.05 & 0.95 \end{pmatrix}$	autocorrelation log earnings
ξ	values labor shock	$(\,0.71\;\;1.29\,)$	Std deviation log earnings
P_z	investment productivity process	$\begin{pmatrix} 0.97 & 0.23 \\ 0.03 & 0.77 \end{pmatrix}$	overall fraction and exit rate of entrepreneurs
z	values investment shock	$(\,0\;\;1\,)$	normalization
β	discount factor	0.94	capital-output ratio of 2.8
θ_1^D	borrowing limit	0	net worth of poor in U
θ_2^D	collateral parameter	0.88	net external physical capital U
θ_1^U	borrowing limit	0.41	net external debt U
θ_2^U	collateral parameter	0.89	risk-free rate of 4 percent

note: use allocation in region U to target moments of US economy

- difference between U and D, E is consumer borrowing limit, $\theta_1^D < \theta_1^U$

Results – comparing steady states

- compare new steady state to 'old steady state' in which $A^E = A^D$
  - region E has higher TFP in new steady state, effects on NFAs
  - E buys safe assets from D, U, attracts FDI from D, U
- calibration: safe asset positions dominate FDI positions in \$ terms
  - changes in safe asset positions dominate changes in FDI positions
- net effect is NFA increase in E and decrease in D, U
- growth and capital inflows negatively related across developing countries
  - even though growth and FDI inflows positively related

	Old steady state			New steady state		
	D	E	U	D	E	U
Return on risk-free asset		3.98			3.96	
Return on productive capital		5.92			5.91	
Net foreign asset positions	13.63	13.63	-6.23	12.31	12.31	-7.54
risk-free assets	18.04	18.04	-8.23	16.36	16.36	-10.03
productive capital	-4.44	-4.44	2.01	-4.06	-4.06	2.49
Change in NFA positions				-1.32	7.61	-1.32
risk-free assets				-1.67	10.2	-1.79
productive capital				0.35	-2.59	0.47

- region E exports 7.61 percent of initial GDP
- region D imports 1.32 percent of initial GDP

Transition dynamics

- growth and capital inflows negatively related in cross-section
- for a given developing country over time:
  - capital flows in as long as exog. TFP keeps increasing (FDI!)
  - immediately afterwards, as K/Y increases, capital starts flowing out
- welfare implication from sudden emerging market growth?
  - growth in E lowers average welfare in D and U...

    ...and specifically redistributes from poor to wealthy
  - driven by initial FDI to E, depresses wages in D and U
  - welfare implication opposite those from financial liberalization!!

Conclusion

- 'South-South' flows result from existing 'North-South' imbalances
- consumer financial frictions play key role
- differences in financial frictions faced by firms seem to play smaller role
- this sheds light on reason for global imbalances
- and may explain why China-Africa capital flows are debt rather than FDI