The effectiveness of expansionary devaluation at different stages of economic development

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A brief overview

- A vast empirical literature suggests that the maintenance of a competitive currency propels economic growth (Cottani et al, 1990; Dollar, 1992; Gala, 2008; Ghura and Grennes, 1993; Vaz and Baer, 2014; Levy-Yeyati et al, 2013; Loayza et al, 2005; Razmi et al, 2012; Rodrik, 2008).

- Despite the different types of methods, samples of countries and time periods considered within this literature, it is possible to identify the emergence of certain patterns:
  - By and large, most studies suggest a positive relationship between currency undervaluation and growth;
  - This correlation is observed mostly in developing countries.

- In the present work we focus mostly on the second issue.

The question to be answered

- ‘Why a positive relationship between devaluation and growth holds almost exclusively for developing countries?’

- Rodrik (2008) provides a possible answer for this question from an orthodox standpoint: the existence of bad institutions and market failures affect disproportionately the tradables sector in relation to the non-tradables.

- In this context, the depreciation of the real exchange rate becomes a second-best solution to promote growth, since higher real exchange rate increases profitability of tradables relative to non-tradables.

The aims of the paper...

1. This study investigates empirically the impact of RER misalignments in distinct economic structures. It helps to identify to which extent undervalued domestic currencies are able to boost economic growth at different stages of the technological ladder.
2. The present work also adds to the existing literature by the use of heterogeneous regressions. Standard econometric models cannot fully assess differences, if there are any, in the effectiveness of expansionary devaluation at different stages of technological development.
3. This work proposes a brief, alternative theoretical explanation for the argument advanced by Rodrik (2008) relative to the differences in the impact of currency devaluation for developed and developing countries.

The model

The baseline model:

$$growth_{i,t} = \alpha + \delta\, growth_{i,t-1} + \beta\ \ln(UNDVAL_{i,t}) + \gamma\, Z_{i,t} + u_{i,t}$$

The long-term impact of RER undervaluation on growth is given by:

$$b = \frac{\beta}{1-\delta}$$

The model

Technological catching-up:

$$growth_{i,t} = \alpha + \delta\, growth_{i,t-1} + \beta_1\, \ln(UNDVAL_{i,t}) + \beta_2 \ln(UNDVAL_{i,t}) * \ln(GAP_{i,t=0}) + \gamma\, Z_{i,t} + u_{i,t}$$

Now, the interaction of RER undervaluation with countries' technological gap is a function, not a parametre. Thus, this impact is obtained, as follows:

$$b = \frac{\beta_1 + \beta_2 \ln(GAP_{i,t=0})}{1 - \delta}$$

The model

Outward orientation:

$$growth_{i,t} = \alpha + \delta\, growth_{i,t-1} + \beta_1 \ln(UNDVAL_{i,t}) + \beta_2 \ln(UNDVAL_{i,t}) * \ln(GAP_{i,t=0}) + \beta_3 \ln(UNDVAL_{i,t}) * OUT_{i,t=0} + \gamma\, Z_{i,t} + u_{i,t}$$

Once again, the impact is not a parameter, but a continuous function. In this case, however, it is a function of two variables. Thus, it is obtained, as follow:

$$b = \frac{\beta_1 + \beta_2 \ln(GAP_{i,t=0}) + \beta_3 OUT_{i,t=0}}{1 - \delta}$$

Results in the baseline model

Table 1 – Impact of undervaluation on growth – baseline model

	(1) $growth$	(2) $growth$	(3) $growth$
$growth_{t-1}$	0.0820	0.0830	0.0929
	(0.0584)	(0.0631)	(0.0723)
$\ln(UNDERV)$	0.0165***	0.0150***	0.0166***
	(0.00334)	(0.00405)	(0.00400)
G/GDP		-0.0259*	-0.0264
		(0.0150)	(0.0163)
$pop\ growth$		0.539**	0.541**
		(0.223)	(0.265)
$\ln(GAP)$			0.00171
			(0.00224)
OUT			0.00769
			(0.00828)
$Constant$	0.0235***	0.0205***	0.0158*
	(0.00355)	(0.00663)	(0.00833)
Long-term impact	0.0180***	0.0164***	0.0179***
	(0.00334)	(0.00405)	(0.00400)
Observations	1180	1180	1133
Number of code	167	167	166
Hansen test	13.64	17.50	17.31
Hansen p-value	0.0580	0.0144	0.0155

Standard errors in parenthesis; ***: p<0.01, **: p<0.05, *: p<0.1.
(1): no controls; (2) controlled by population growth and government expenditure as a share of GDP; (3) controlled by population growth, government expenditure as a share of GDP, technological gap and outward-orientation.
Long term impact: long-term impact of undervaluation on growth rate; calculated based on equation (4).

Heterogeneous analysis

Table 2 – Impact of undervaluation on growth – baseline model

	(1) $growth$	(2) $growth$	(3) $growth$
$growth_{t-1}$	0.182*	0.149	0.177*
	(0.0950)	(0.173)	(0.0956)
$\ln(UNDERV)$	0.00927*	0.0168***	-0.00144
	(0.00547)	(0.00496)	(0.00642)
$\ln(UNDERV) * \ln(GAP_{\bar{t}})$	-0.00314		-0.00622**
	(0.00260)		(0.00289)
$\ln(UNDERV) * OUT_{\bar{t}}$		-0.0298	0.0378**
		(0.0244)	(0.0164)
G/GDP	-0.0319*	-0.0321*	-0.0308*
	(0.0172)	(0.0180)	(0.0171)
$pop\ growth$	0.460***	0.713*	0.402***
	(0.150)	(0.391)	(0.151)
$\ln(GAP)$	0.00124	0.00255	0.00128
	(0.00203)	(0.00363)	(0.00209)
OUT	0.00937	0.0118	0.00523
	(0.00634)	(0.00841)	(0.00698)
$Constant$	0.0297***	0.0163	0.0311***
	(0.00552)	(0.0110)	(0.00573)
Observations	785	1061	785
Number of code	100	142	100
Hansen test	12,58	13,36	12,07
Hansen p-value	0.0831	0.0639	0.0982

Standard errors in parenthesis; ***: p<0.01, **: p<0.05, *: p<0.1.
(1): heterogeneity only from technological gap; (2) heterogeneity only from outward-orientation; (3) heterogeneity from technological gap and outward-orientation.

Heterogeneous analysis

Figure 1 – Impact of undervaluation on annual growth according to outward-orientation (in p.p.)

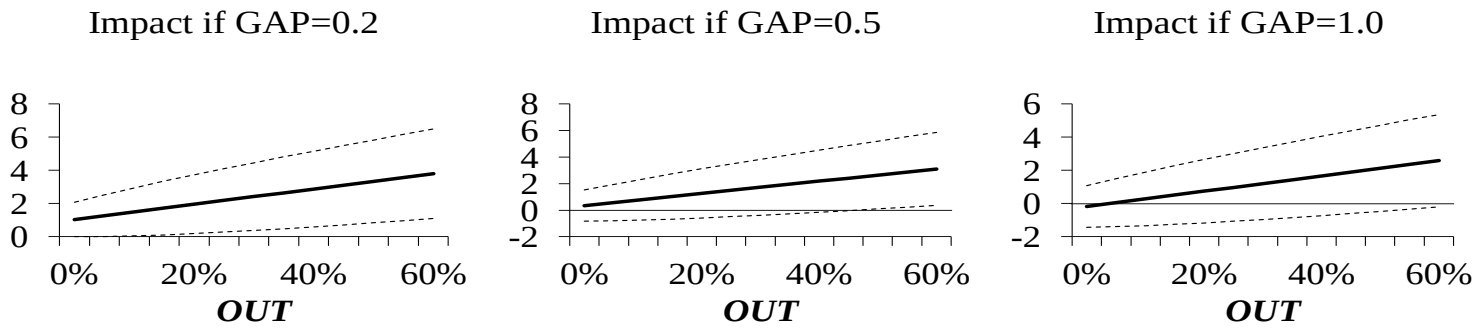
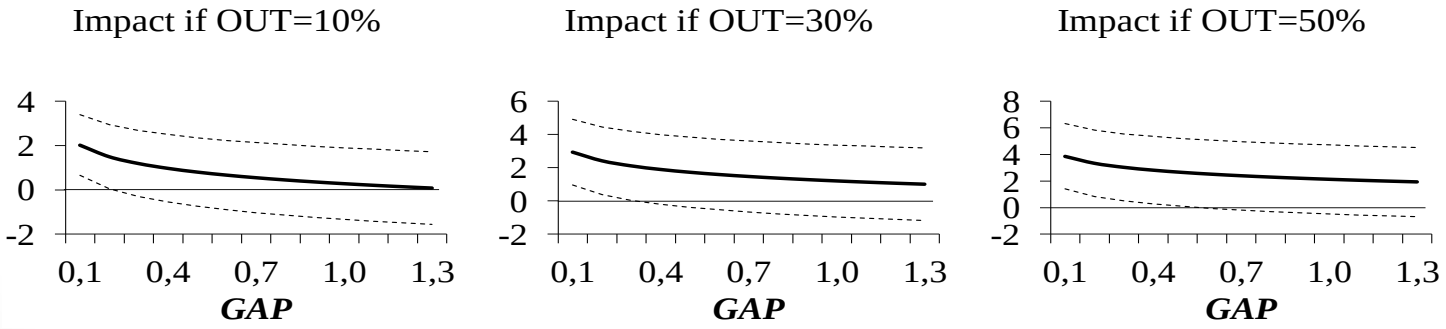


Figure 2 – Impact of undervaluation on annual growth according to technological gap (in p.p.)



A note on Rodrik's argument

- Rodrik states that the tradables sector is a special sector for economic growth and that bad institutions and market failures affect disproportionately this sector in developing countries; in this scenario, currency devaluation raises tradables profitability and propels economic growth.
- Alternatively, inspired by the Kaldorian tradition, the present work argues that the impact of expansionary devaluation on exports and output growth tends to be much more effective in low- and middle-income countries since the share of the manufacturing and high-technology sectors are relatively low if compared to the share of these sector in high-income economies. It is argued that, in the first stages of the economic development, the competition of domestic products in foreign markets takes place mostly through price mechanisms instead of cutting-edge products and processes, as in developed economies.
- However, this work only suggests an alternative explanation to Rodrik's argument and provides recommendation and guidelines to future research needed by policymakers.