The Future of Inflation Targeting: Policy Frameworks and Strategies for Open Economies

Pierre-Olivier Gourinchas
UC Berkeley, NBER & CEPR

Bank of England, London UK, January 2020

Strategies for Open Economies

Discussion will address two important points.

1. Implications of Dominant Currency Paradigm (DCP) for optimal monetary policy in the periphery and at the center

2. Implications of cross-border financial frictions and the Global Financial Cycle for monetary spillovers and monterary policy

In both cases, substantive but also subtle implications, sometimes misinterpreted.

Currency Invoicing and Optimal Monetary Policy

First a quick recap. Standard approach (under PCP and some restrictive assumptions). Monetary authorities solve (under discretion, non-cooperation) a variant of:

$$\begin{aligned} \min \mathbb{W} \quad &= \quad \frac{1}{2} y_t^2 + \frac{\sigma}{2\lambda_p} \pi_{Ht}^2 + t.i.p \\ \text{s.t.} \quad &\quad \pi_{H,t} = \lambda_p y_t + \beta E_t \pi_{H,t+1} \end{aligned}$$

Optimal discretionary non-cooperative policy:

- Leans against the wind: $y_t = -\sigma \pi_{H,t}$
- Targets domestic inflation: $\pi_{H,t} = 0$ delivers $y_t = 0$. Divine coincidence
- More generally, stabilization of domestic inflation is not optimal. Why? because movements in international prices introduce a wedge between MRS and MPN.
- Flexible exchange rates are optimal and the gains from coordination are typically small.

These results are well-known.

Currency Invoicing and Optimal Monetary Policy

- Standard approach assumes producer currency pricing. Often viewed as a best-case scenario for flexible exchange rates: there are no deviations from LOP (full passthrough of exchange rates to import prices). Friedman.

- Away from full FX pass-through (as relevant empirically), intuition suggests that currency misalignments would matter – pushing us away from domestic inflation targeting. Engel (2011), Corsetti et al (2010). Why? b/c deviations from LOP misallocate resources.

- This intuition is not always valid. In the case of Dominant Currency Pricing, optimal policy still involves targeting domestic inflation (under the same parameter constraints)

DCP and Optimal Monetary Policy

Consider how the problem of the planner changes (Casas et al 2019)

$$\begin{aligned} \min \mathbb{W} \quad &= \quad \frac{1}{2}y_t^2 + \frac{\sigma}{2\lambda_p}\pi_{Ht}^2 + \frac{\gamma(1-\gamma)}{2}m_t^2 + t.i.p \\ \text{s.t.} \quad &\pi_{H,t} = \frac{\lambda_p}{\gamma}[y_t - (1-\gamma)s_t] + \beta E_t \pi_{H,t+1} \\ &m_t = \frac{1}{\gamma}(y_t - s_t) \end{aligned}$$

Here s_t is the (log) terms-of-trade and m_t is the dollar deviation from LOP.
Optimal policy suggests a trade-off: $y_t + (1-\gamma)m_t = -\sigma\pi_{H,t}$

But this is illusory: under DCP *the terms of trade s_t are exogenous*. There is no way for the planner to affect them, & the best it can do is to target domestic price inflation:

$$\pi_{H,t} = 0 \quad \text{and} \quad y_t = (1-\gamma)s_t$$

Intuition: s_t becomes a 't.i.p' for the domestic planner. Contrast this with LCP or PCP where the planner can affect the terms-of-trade via movements in the exchange rate.

DCP and Optimal Monetary Policy

- Empirically robust fact: the passthrough from the (bilateral) exchange rate to the (bilateral) terms of trade is very low, at least in the short run.
- Both in Casas et al (2019) and the richer environment of Egorov and Mukhin (2019), optimal non-cooperative monetary policy of the small open economy targets domestic price inflation.
- It does not follow that optimal monetary policy ignores the exchange rate. The dollar exchange rate matters when there is a large share of imported intermediate inputs -whose price is sticky in dollars. Global supply chains.
- Domestic inflation targeting requires leaning against the dollar exchange rate: tightening when the dollar appreciates. Global Monetary Cycle.
- This has potential implications for post-Brexit UK.

Terms of Trade and Exchange Rates

	unweighted		trade-weighted	
	(1)	(2)	(3)	(4)
	$\Delta tot_{ij,t}$	$\Delta tot_{ij,t}$	$\Delta tot_{ij,t}$	$\Delta tot_{ij,t}$
$\Delta e_{ij,t}$	0.0369***	-0.00938	0.0813***	0.0218
	(0.00863)	(0.0130)	(0.0235)	(0.0317)
PPI	no	yes	no	yes
R-squared	0.008	0.011	0.028	0.042
Observations	24,270	19,847	24,270	19,847
Dyads	1,347	1,200	1,347	1,200

Table 1: Source: Gopinath et al (2020). The first (resp., last) two columns use unweighted (resp. trade-weighted) regressions. All regressions include two ΔER lags and time FE. S.e. clustered by dyad. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Can the ToT volatility be avoided? What about capital controls?

- It is tempting to interpret these results as creating some space for capital control interventions. (Blanchard 2017)
- General principle (Farhi and Werning 2017): in presence of either aggregate demand externalities or pecuniary externalities, optimal policy requires -potentially complex- macro-prudential intervention in addition to monetary policy.
- Here again, we have to be careful. Let's ignore pecuniary externalities for the time being (I will come back to them) and concentrate on aggregate demand externalities.
- In Egorov and Mukhin 2019, domestic inflation targeting is able to offset AD externalities, even under DCP. No scope for capital controls interventions. Flexible exchange rates do an incredible amount of heavy lifting.
- Stepping back from the model a bit: MacroPru and CFM more relevant when monetary policy is impaired (ZLB, external pressures to stabilize the currency...). Even then, it will have to trade-off offsetting AD externalities and insulating the economy against ToT shocks.

Periphery: More Volatility, Worse Trade-Off

- DCP for peripheral economies implies more output volatility
- Also: more adverse inflation-ouput trade-off (compared to PCP). Intuition: expenditure switching is muted on the export side. Yet, depreciation against the dollar still passes-through to import prices and CPI. Steeper Phillips Curve.
- These are short run effects. If prices don't adjust markups (and profit margins) do. Income effects must materialize, spurring entry/exit into exports etc.... (Tenreyro, 2019). But the evidence on these 'extensive margins' remains limited.

Center: Outward oriented optimal Monetary Policy

Optimal monetary policy at the center is also more complex.

- the US does not have to worry about LOP deviations. (a big benefit of being the center country)
- But it should internalize that it can influence global output , with a feedback effect on the US.
- So optimal policy in the center should be outward-oriented (deviates from domestic inflation targeting). Egorov and Mukhin 2019.
- Yet, scope for coordination gains beyond the Stackelberg equilibrium may be limited, since they would reduce welfare in the center, in exchange for higher welfare abroad.

DCP and Monetary Policy. Taking Stock

- 'Exogeneity' of ToT implies that optimal policy in periphery should put most weight on domestic inflation.
- Periphery exposed to volatility and adverse inflation-output tradeoff but there may be limited scope for monetary or Macro-pru policies to address these.
- Spillovers are asymmetric, so should optimal monetary policy be in the center and periphery.
- It may be difficult for monetary authorities to avoid responding to every disturbance...

Financial Spillovers and Monetary Policy

- The importance of dollar funding makes balance sheets worldwide sensitive to the dollar and indirectly to US monetary policy (Rey 2013)
- Question: Does this make flexible exchange rates less desirable (Dilemma)?
- Answer: it depends on the strength of cross border financial spillovers. (Gourinchas 2018)
  - **Weak financial spillovers**. Standard Mundell/Friedman world.
    Flexible exchange rate is desirable.
  - **Intermediate financial spillovers**: US tightening is contractionary abroad, but domestic easing is expansionary at home.
    Flexible exchange rate becomes more desirable.
  - **Strong financial spillovers**: US tightening is contractionary abroad, and so is domestic easing.
    Flexible exchange rate may become less desirable.
    Theoretically possible, but requires perverse transmission of domestic monetary policy

Financial Spillovers and Monetary Policy: A Simple Example

Two countries EM and U.S. (*):

$$
\begin{aligned}
Y &= A + NX && (1)\\
A &= -cR - fE + \xi && (2)\\
NX &= a(Y^* - Y) + bE && (3)\\
E &= d(R^* - R) + \chi(R^*) && (4)\\
Y^* &= A^* = -cR^* + \xi^* && (5)
\end{aligned}
$$

- ξ and ξ^* are aggregate demand shocks (fiscal policy...);
- $f > 0$ captures financial spillovers : an appreciation is expansionary. $f = 0$ is the Mundell-Fleming case.
- (4) is the UIP condition. $\chi(R^*) = gR^* + \chi$ is a risk-premium shock, possibly correlated with R^*. Global Financial Cycle.
- US is 'large' so $NX^* = 0$.

Financial Spillovers and Monetary Policy: A Simple Example

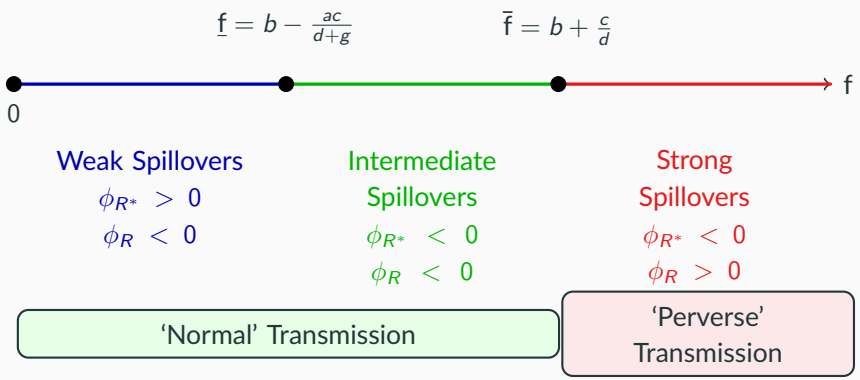
Solve the model to obtain:

$$(1+a)Y = (\xi + a\xi^*) + (b-f)\chi + ((b-f)(d+g) - ac)R^* + ((f-b)d - c)R$$

$$\begin{aligned}
\frac{\partial Y}{\partial R^*} &= \frac{(bd-ac) - f(d+g) + bg}{1+a} \equiv \phi_{R^*} \\
\frac{\partial Y}{\partial \chi} &= \frac{b-f}{1+a} \\
\frac{\partial Y}{\partial R} &= \frac{fd - bd - c}{1+a} \equiv \phi_R
\end{aligned}$$

- $bd - ac > 0$: Mundell-Fleming effect ('exp. switching' vs. 'exp. reducing').
- $-f(d+g) + bg$: financial spillovers from US monetary policy.
- effect of pure risk-premia (χ): depends on exp. switching (b) vs. spillovers (f).
- $\phi_R < 0$: 'normal' transmission, $\phi_R > 0$: 'perverse' transmission

Financial Spillovers and Monetary Policy: A Simple Example



$$\phi_{R^*} = \frac{d+g}{1+a}(\underline{f} - f) \quad ; \quad \phi_R = \frac{d}{1+a}(f - \bar{f})$$

Non-Monotonous Impact of Financial Frictions

Suppose the domestic central bank cares about output volatility and the trade balance (Bernanke, 2017): $\mathcal{L}^o \equiv \min \frac{1}{2}\mathbb{E}Y^2 - \alpha \mathbb{E}NX$

Proposition (Non-Monotonous Impact of Financial Frictions)

- *if financial frictions are weak* ($f < \underline{f}$): $\phi_{R^*} > 0, \quad \phi_R < 0, \quad 0 < \frac{\partial R^o}{\partial R^*} \leq 1$
- *if financial frictions are intermediate* ($\underline{f} < f < \bar{f}$): $\phi_{R^*} < 0, \quad \phi_R < 0, \quad \Longrightarrow \quad \frac{\partial R^o}{\partial R^*} < 0$
- *if financial frictions are strong* ($f > \bar{f}$): $\phi_{R^*} < 0, \quad \phi_R > 0, \quad \Longrightarrow \quad \frac{\partial R^o}{\partial R^*} > 1 \quad$ *and* $\quad \frac{\partial E^o}{\partial R^*} < 0$

Corr(R, R^*) non-monotonous with the strength of the financial spillovers.

Proposition

- *A pure float is preferred to a peg as long as monetary policy transmission is 'normal'*
- *A peg if preferred to a pure 'float' when monetary policy transmission if perverse*

Cross-border Financial Spillovers and Monetary Policy

Recent research has pushed back against the idea that flexible exchange rates may not be part of the optimal package. Yet, we need to know more....

- There is very little solid direct evidence on the transmission of monetary policy in EMEs (ϕ_R)
  - Few EMEs with asset markets trading the relevant instruments for a high-frequency identification
  - Few countries with credible 'narrative' (Romer and Romer) shocks
  - Giorgiadis and Jancokova (2018): 60 empirical studies of MP shocks in EMEs and SOEs, with only 5 using HFI and none using a narrative approach
- There is little credible direct evidence on the effect of R^* for EMEs (ϕ_{R^*})
  - R^* shocks are pre-determined for EMEs. But
  - R^* could reponse to global shocks (omitted variable)
  - the estimated IRF includes the (endogenous) response of domestic monetary authorities ($\partial R/\partial R^*$)

This should be a major objective for applied research (Gourinchas 2018,, Akinci & Queralto, 2019, Kalemli-Ozcan 2019)