Monetary-Fiscal-Capital Account Interactions in Small Open Economies

12th Economic Research Colloquium

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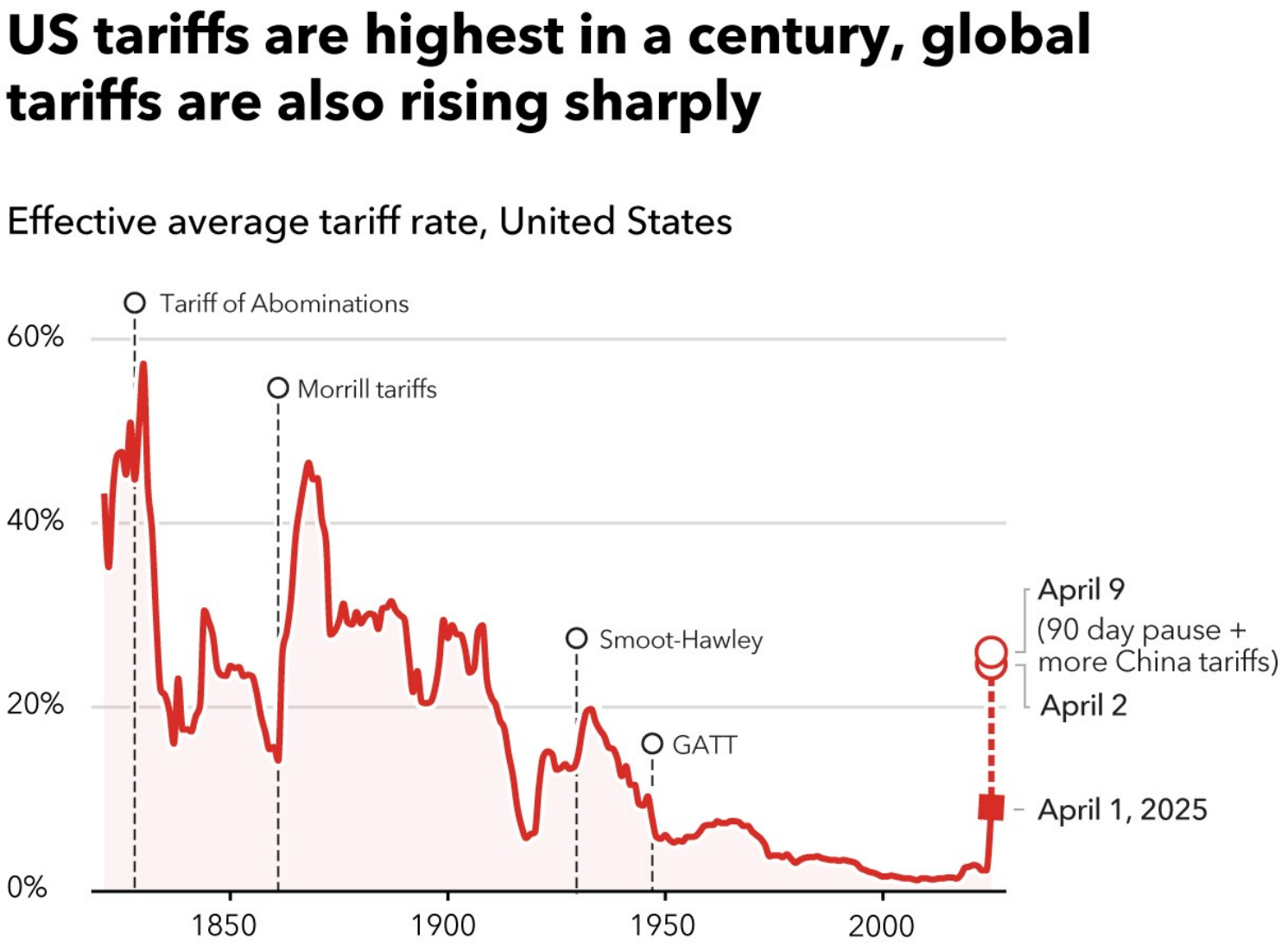
April 30, 2025

Highest US Tariff Rate in a Century



Source: IMF, World Bank

Motivation

- → Trade policy (tariffs) are at the center of current policy discussion
- → Consensus is that tariffs will be inflationary. What's the story?

$$P_t = \left[(1-\gamma)P_{Ht}^{1-\theta} + \gamma((1+T)P_{Ft})^{1-\theta}\right]^{\frac{1}{1-\theta}}$$

- → What about P_{Ht}?
- → GE effects of higher tariffs include:
  - → how households respond, how firms respond
  - → how M and F polices respond
- → We are missing a clear transmission mechanism between trade policy and M-F policies

Motivation

→ Tariffs are just another form of **capital account policy**

$$KA = -CA$$

→ **KA policies**: broad type of policies related to the flow of capitals in and out of the country
e.g. capital controls, FX interventions, capital account regulations

→ A MFK framework of price determination useful to understand π and ER dynamics under a very broad class of policies

→ Well-established welfare consequences of price instability
Benigno and Woodford, 2003; De Paoli, 2009; Gali and Monacelli, 2005

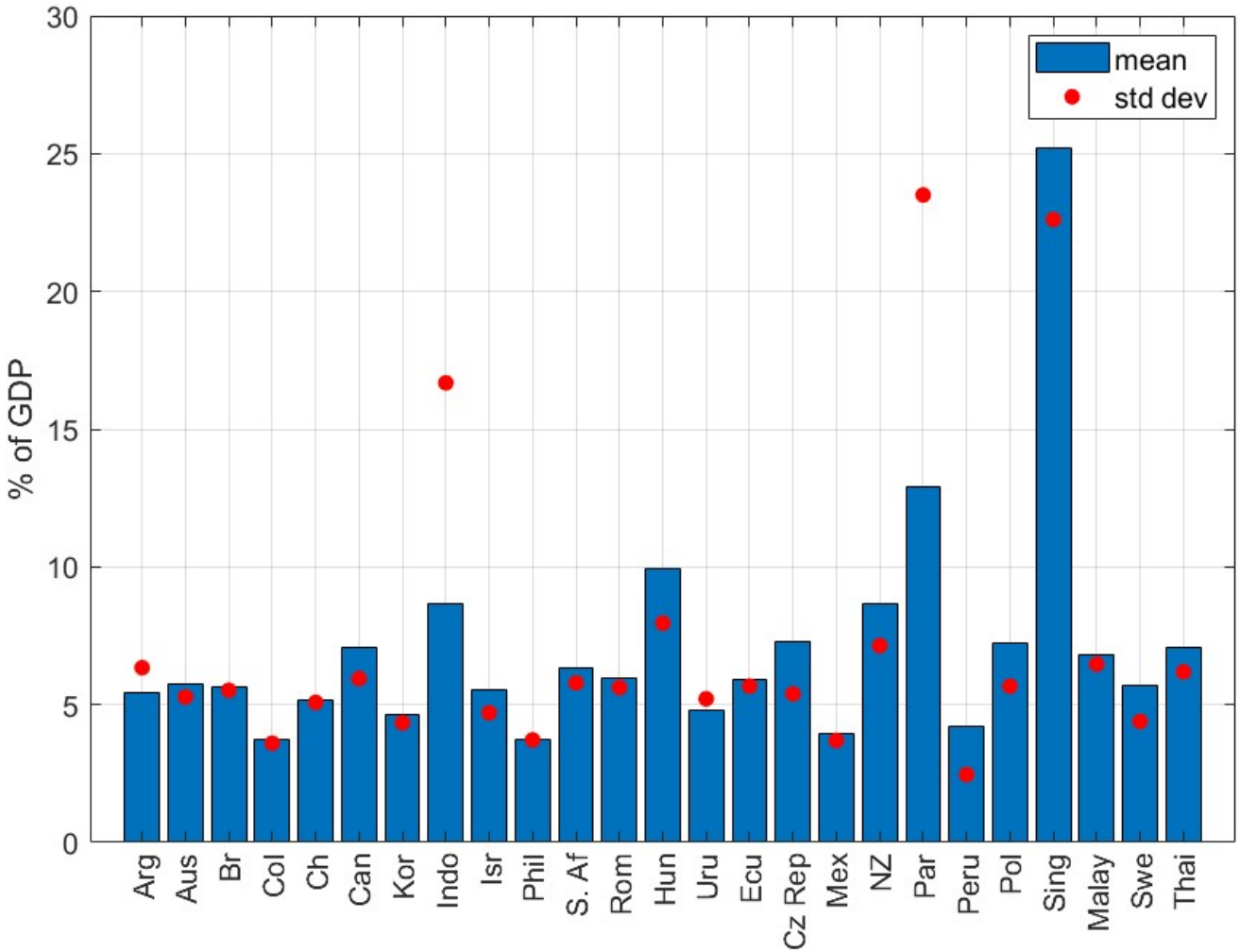
Capital Account Policies in EMEs

→ EME have a long history of high price instability often related to government policies (see Kehoe and Nicolini, 2022 for LatAm)

→ Capital flows are of first-order importance in EMEs

Volatile Capital Flows in EMEs

Figure: Capital Flows as % of GDP (1991-2023)



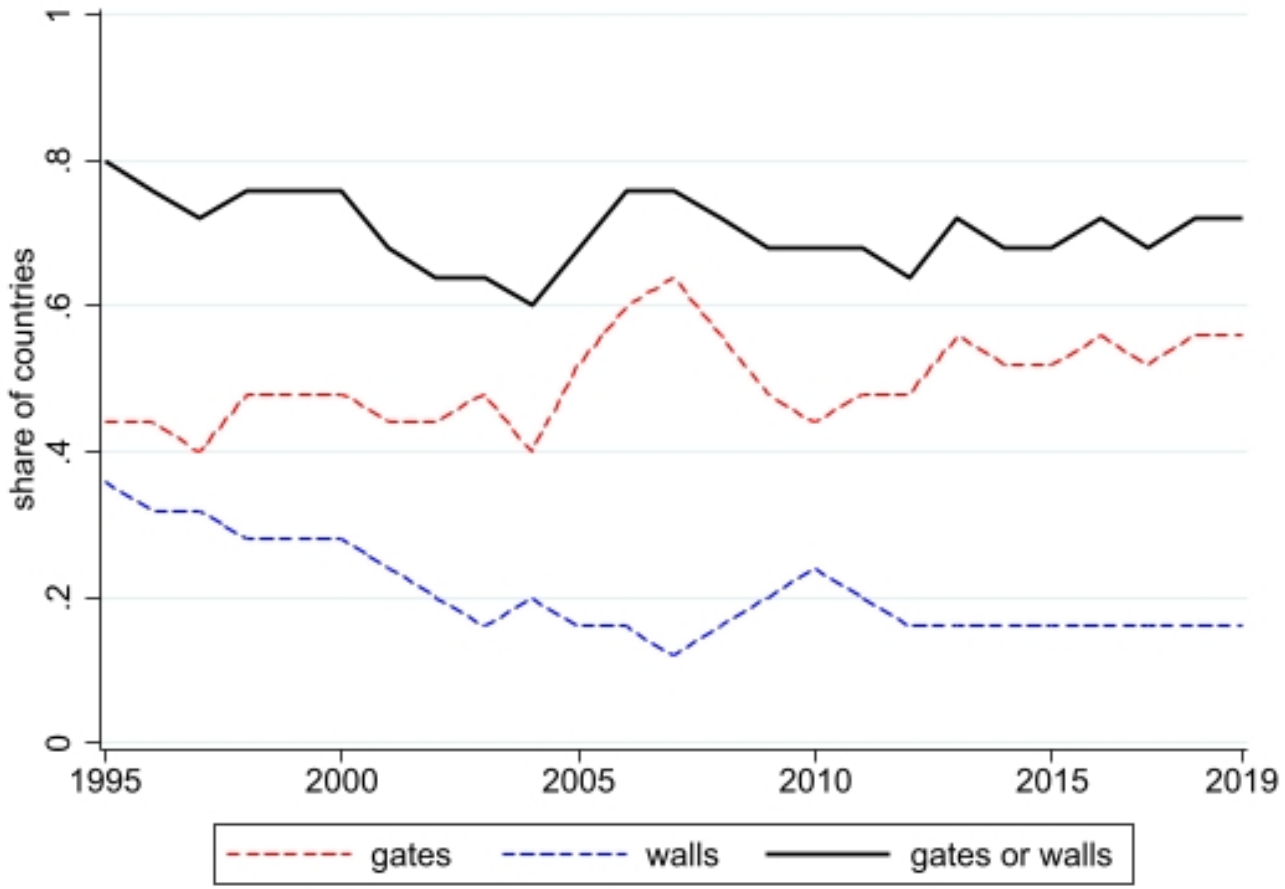
Notes: Figure shows absolute change in the country's net foreign asset position (excluding reserves).
Source: Milesi-Ferretti, 2022

Capital Account Policies in EMEs

- → EME have a long history of high price instability often related to government policies (see Kehoe and Nicolini, 2022 for LatAm)
- → Capital flows are of first-order importance in EMEs
- → KA policies are extensively and intensively used in EMEs

Capital Account Policies in EMEs

Figure: Share of 'Gates' and 'Walls' (1995-2019)



Notes: Share of 'Gates' and 'Walls' using the capital account openness index in Fernández et al., 2015.

My Paper

→ In this paper I study:

1. How capital account policies interact with monetary and fiscal policies in a SOE
2. What these interactions mean for the effects of government policies on inflation and exchange rates

→ MFK framework is extension of closed economy M-F interactions framework in Cochrane, 1998; Leeper, 1991; Woodford, 1994 to a SOE

Today's Agenda

→ New 'capital account dominance' regime (Regime K) where KAP targets RER:

1. Implications for π and ER dynamics
   - KAP is sole policy source of inflation and ER surprises
   - Higher interest rates fail to lower current π and raise future π (Sargent and Wallace, 1981)
   - Well-anchored inflation expectations depend on stable path of external debt
2. Regime K carries over to other KA policy instruments (tariffs,FXI)
   - RER depreciation policies are **contractionary** ($\pi < 0$)
   - M-F policies consistent with RER depreciation policies are **higher real interest rates and higher taxes**

→ [If time] 'OE monetary dominance' regime

1. π targeting in EME requires **joint support** from F and KA policies

Case of Chile

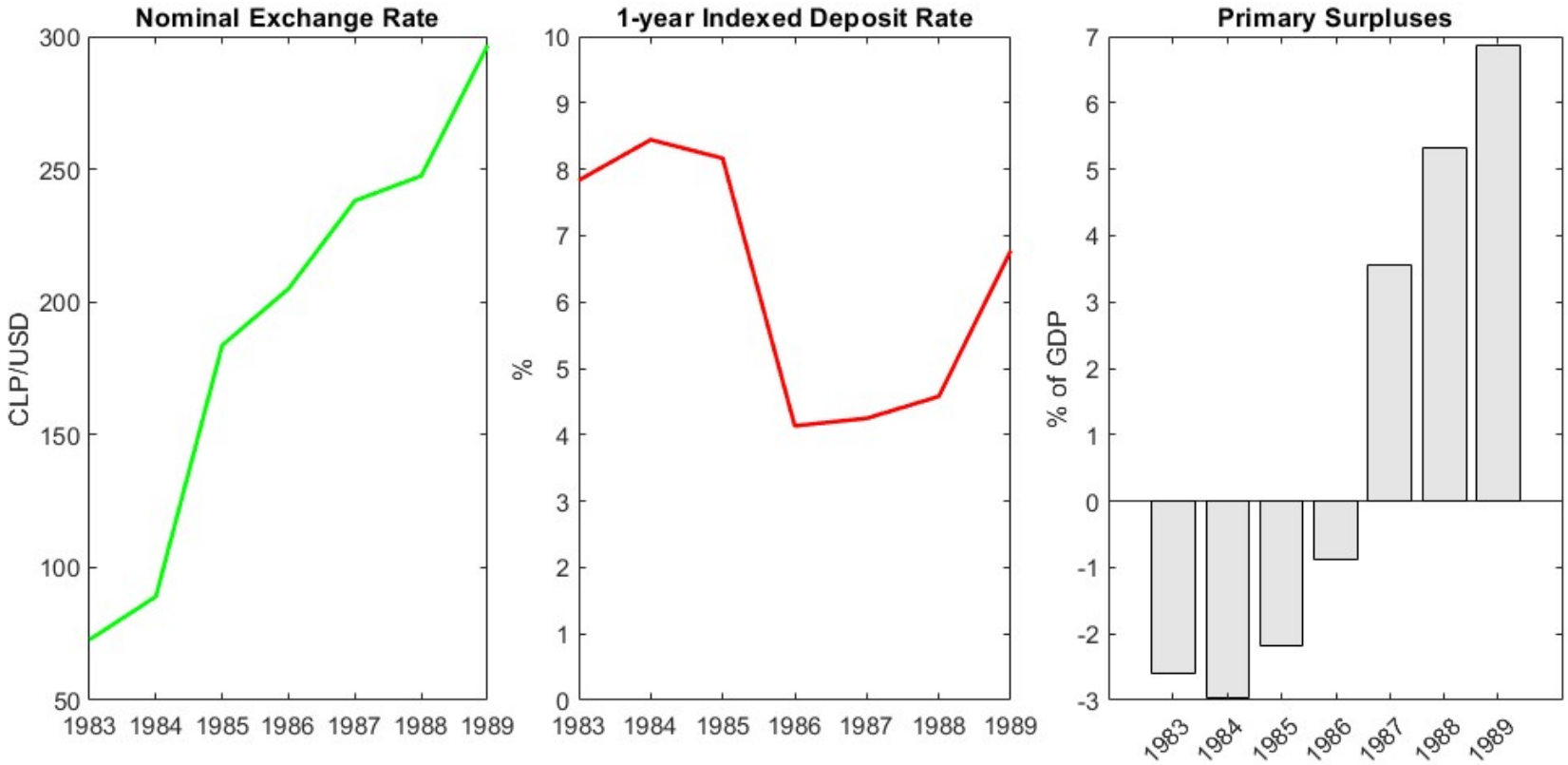
Chile in the 1980s

- After severe financial crisis and recession in 1982, growth was low, capital inflows dried up, and the RER had appreciated sharply
- The focus of government policies was to foster export-led growth by depreciating the RER
- Implemented so-called 'PPP rule'

  $\rightarrow$ Nominal devaluations announced ('tablita') based on inflation differentials between the US and Chile to be as close as possible to PPP i.e. $Q_t = 1$
- Capital account was heavily regulated by the government

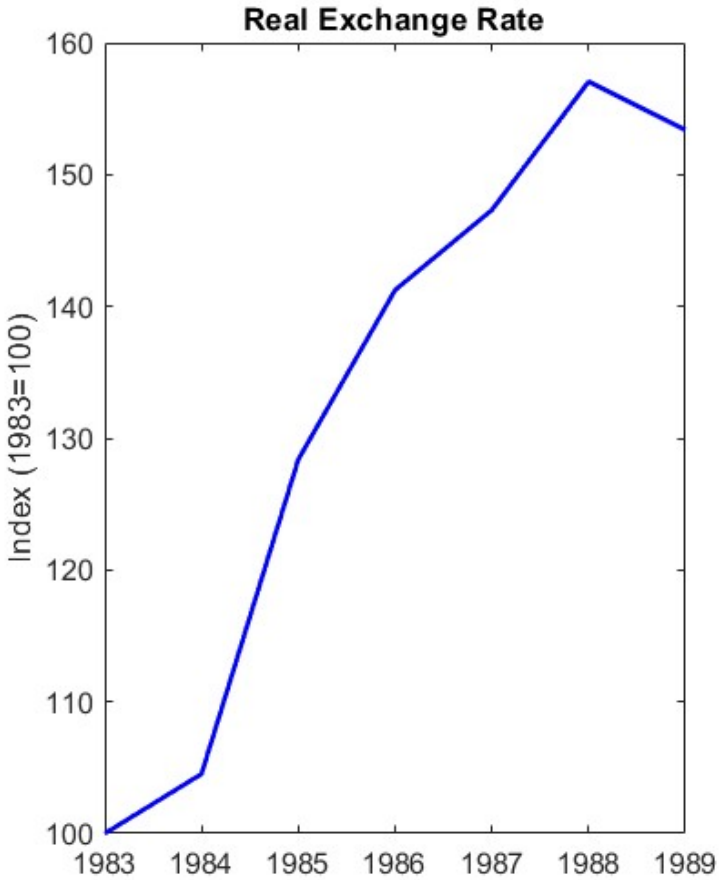
Chile in the 1980s – Empirical Evidence

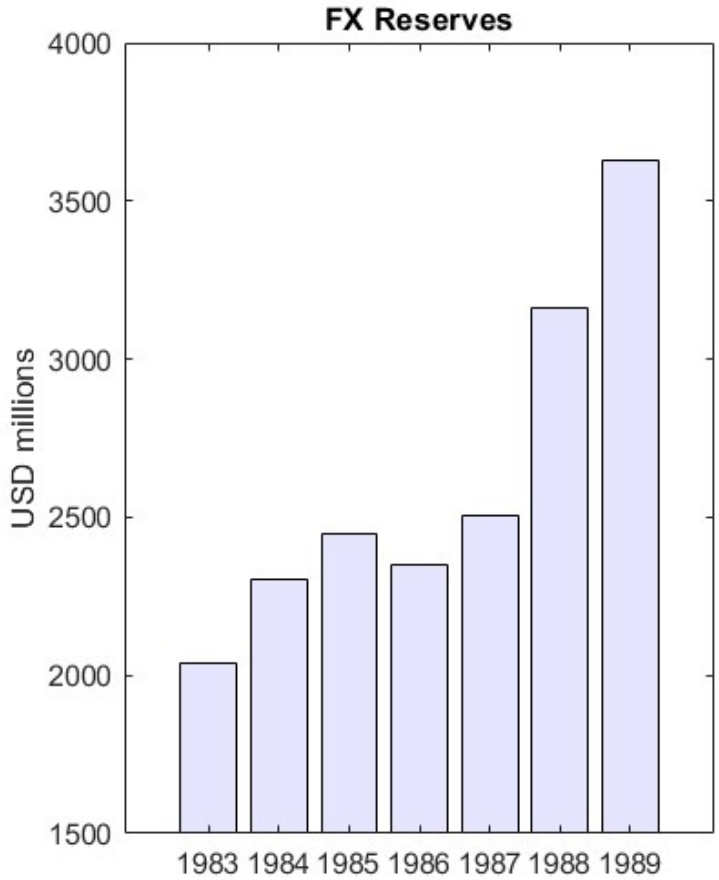
- MP: nominal devaluations and falling real rates
- FP: increasing surpluses



Chile in the 1980s – Empirical Evidence

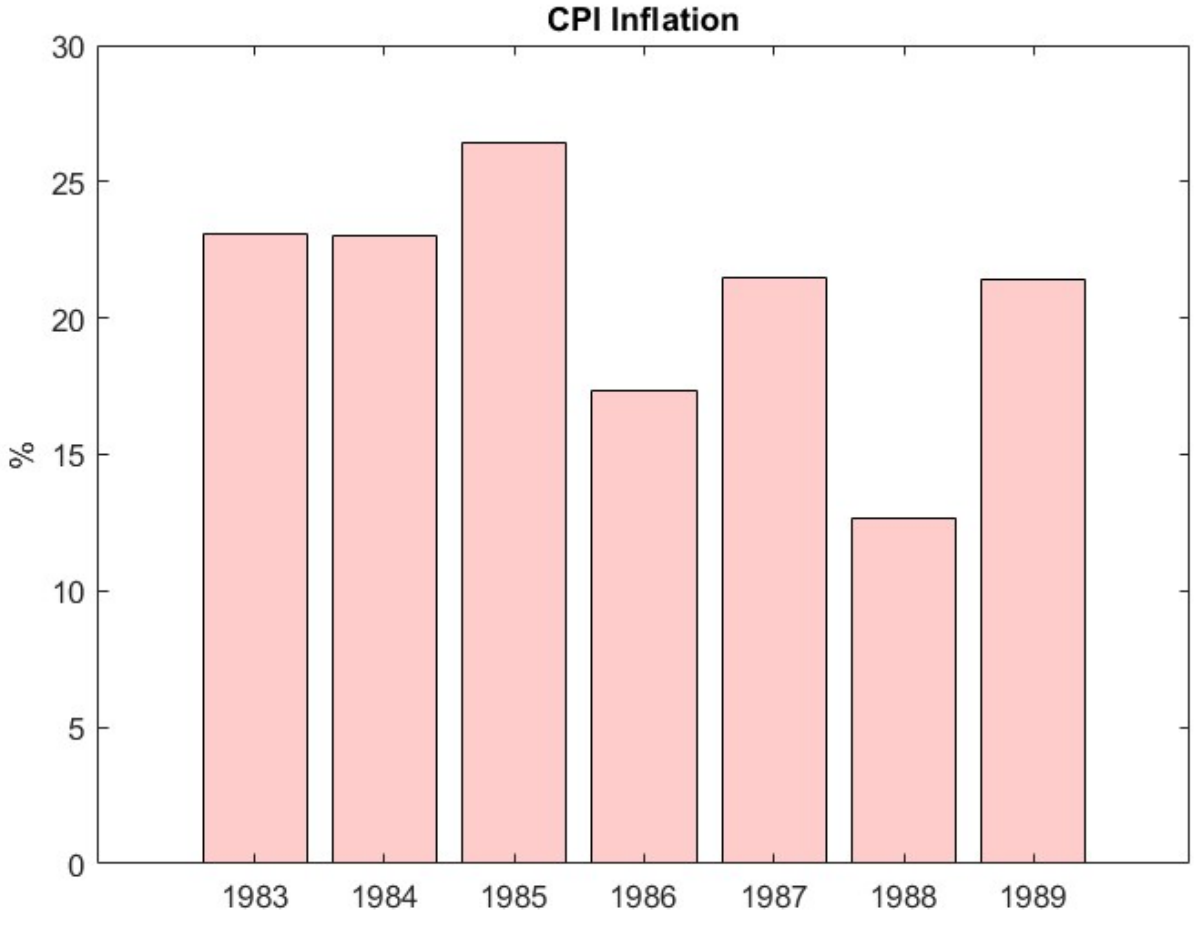
- RER depreciated by 53% between end of 1983 and end of 1989
- FX reserves increased by 78% in USD (9.8% to 12.1% of GDP)





Chile in the 1980s – Empirical Evidence

- Inflation averaged 20% per year



Chile in the 1980s

- High π should create strong appreciation pressures on RER

$$Q_t = \frac{e_t P_t^*}{P_t}$$

- How was policy able to depreciate the NER by $\approx 30\%$ per year and keep inflation from spiraling?
- Did FX accumulation and higher fiscal surpluses play a role?
- MFK framework can help us understand this episode

Model

Model

- Simplified two-country SOE model
- 3 government policies (M, F, and KA) subject to a consolidated government budget constraint
- Economic environment:
  - 2 tradable goods (home and foreign)
  - 2 one-period nominal government bonds B_t, B_t^* (home and foreign)
  - HHs receive endowment y_t each period
  - HHs exhibit bias in consumption + unit trade elasticity:
    $C_t = C_{Ht}^{1-\gamma} C_{Ft}^{\gamma} \quad ; \quad P_t = P_{Ht}^{1-\gamma} P_{Ft}^{\gamma}$
  - Domestic HH borrow from foreign markets at constant rate R^* and save in domestic government bonds with return R_t
  - Only sources of uncertainty are policy shocks

Government

- MP sets $\{R_t\}$ while FP sets $\{\tau_t\}$ and issues B_t
- I consider three different KAP instruments: (τ_t^c, T_t, A_t^*)
- Government consolidated budget constraint:

$$\underbrace{P_t \tau_t}_{\text{tax revenue}} + \underbrace{\frac{B_t}{R_t}}_{\substack{\text{bond} \\ \text{issuances}}} + \underbrace{\tau_t^c n f l_t}_{\text{K revenues}} = \underbrace{B_{t-1}}_{\substack{\text{government} \\ \text{liabilities}}} \tag{1}$$

- e_t: nominal exchange rate (units of LC per unit of FC)

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$$\underbrace{P_t \tau_t}_{\text{tax revenue}} + \underbrace{\frac{B_t}{R_t}}_{\substack{\text{bond} \\ \text{issuances}}} + \underbrace{T_t M_t}_{\text{tariff revenue}} = \underbrace{B_{t-1}}_{\substack{\text{government} \\ \text{liabilities}}} \tag{2}$$

- e_t: nominal exchange rate (units of LC per unit of FC)

Government

- MP sets $\{R_t\}$ while FP sets $\{\tau_t\}$ and issues B_t
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$$\underbrace{P_t\tau_t}_{\text{tax revenue}} + \underbrace{\frac{B_t}{R_t}}_{\substack{\text{bond}\\ \text{issuances}}} - \underbrace{e_t\left(\frac{A_t^*}{R^*} - A_{t-1}^*\right)}_{\Delta \text{ FX reserves}} = \underbrace{B_{t-1}}_{\substack{\text{government}\\ \text{liabilities}}} \tag{3}$$

- e_t: nominal exchange rate (units of LC per unit of FC)

Households

- Representative household maximizes:

$$\sum_{t=0}^{\infty} \beta^t u(C_t)$$

subject to

$$P_{Ht}C_{Ht} + P_{Ft}C_{Ft} + \frac{B_{Ht}}{R_t} + e_t D^*_{t-1} = P_t(y_t - \tau_t) + \frac{e_t D^*_t}{R^*(1+\tau^c_t)} + B_{Ht-1} \quad (4)$$

- B_{Ht}: domestic holdings of domestic government debt B_t
- D^*_t: external borrowing (in foreign currency)
- P_{Ht}, P_{Ft}: local currency prices of home and foreign good
- τ^c_t, T_t: capital inflow tax / tariffs rate
- y_t: Household income (exogenous endowment)

Households

- Representative household maximizes:

$$\sum_{t=0}^{\infty} \beta^t u(C_t)$$

subject to

$$P_{Ht}C_{Ht} + (1+T_t)P_{Ft}C_{Ft} + \frac{B_{Ht}}{R_t} + e_t D^*_{t-1} = P_t(y_t - \tau_t) + \frac{e_t D^*_t}{R^*} + B_{Ht-1} \quad (5)$$

- B_{Ht}: domestic holdings of domestic government debt B_t
- D^*_t: external borrowing (in foreign currency)
- P_{Ht}, P_{Ft}: local currency prices of home and foreign good
- τ^c_t, T_t: capital inflow tax / tariffs rate
- y_t: Household income (exogenous endowment)

Current Account Condition

- The country's budget constraint (i.e current account condition):

$$\underbrace{\frac{B_{Ft}}{R_t} + \frac{e_t D_t^*}{R^*}}_{\text{foreign borrowing}} + \underbrace{\tau_t^c \frac{B_{Ft}}{R_t}}_{\substack{\text{K control} \\ \text{revenues}}} - \underbrace{\left(B_{Ft-1} + e_t D_{t-1}^*\right)}_{\text{foreign liabilities}} = \underbrace{P_{Ft} C_{Ft} - e_t P_{Ht}^* C_{Ht}^*}_{\text{trade deficit (M-X)}} \tag{6}$$

- B_{Ft} are foreign holdings of domestic government debt ($B_t = B_{Ht} + B_{Ft}$)
- CA reflects $KA = -CA$

Current Account Condition

- The country's budget constraint (i.e current account condition):

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Current Account Condition

- The country's budget constraint (i.e current account condition):

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- B_{Ft} are foreign holdings of domestic government debt ($B_t = B_{Ht} + B_{Ft}$)
- CA reflects $KA = -CA$

Intertemporal Equilibrium Conditions

1. Intertemporal government solvency condition (IGBC):

$$\underbrace{\frac{B_{Ht-1} + B_{Ft-1}}{P_t}}_{\text{total outstanding gov liab}} = \underbrace{\tau_t + \sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (\tau_{t+j} + Krev_{t+j})}_{\text{PV of gov surpluses}} \tag{9}$$

2. Intertemporal CA solvency condition (ICA):

$$\underbrace{\frac{B_{Ft-1} + e_t D^*_{t-1}}{P_t}}_{\text{total outstanding NFLs}} = \underbrace{tb_t + \sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (tb_{t+j} + Krev_{t+j})}_{\text{PV of external surpluses}} \tag{10}$$

where $Krev_t = (\tau^c_{t-1} nfl_t \ , \ T_t M_t \ , \ -\frac{e_t \Delta A^*_t}{P_t})$

$\rightarrow$ Connect equilibrium P_t and e_t to MFK policies

Intertemporal Equilibrium Conditions

- IGBC into GBC implies:

$$\underbrace{\frac{B_t}{R_t P_t}}_{\text{Market value of gov liab}} = \underbrace{\sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (\tau_{t+j} + Krev_{t+j})}_{\text{PV of future gov surpluses}} \tag{11}$$

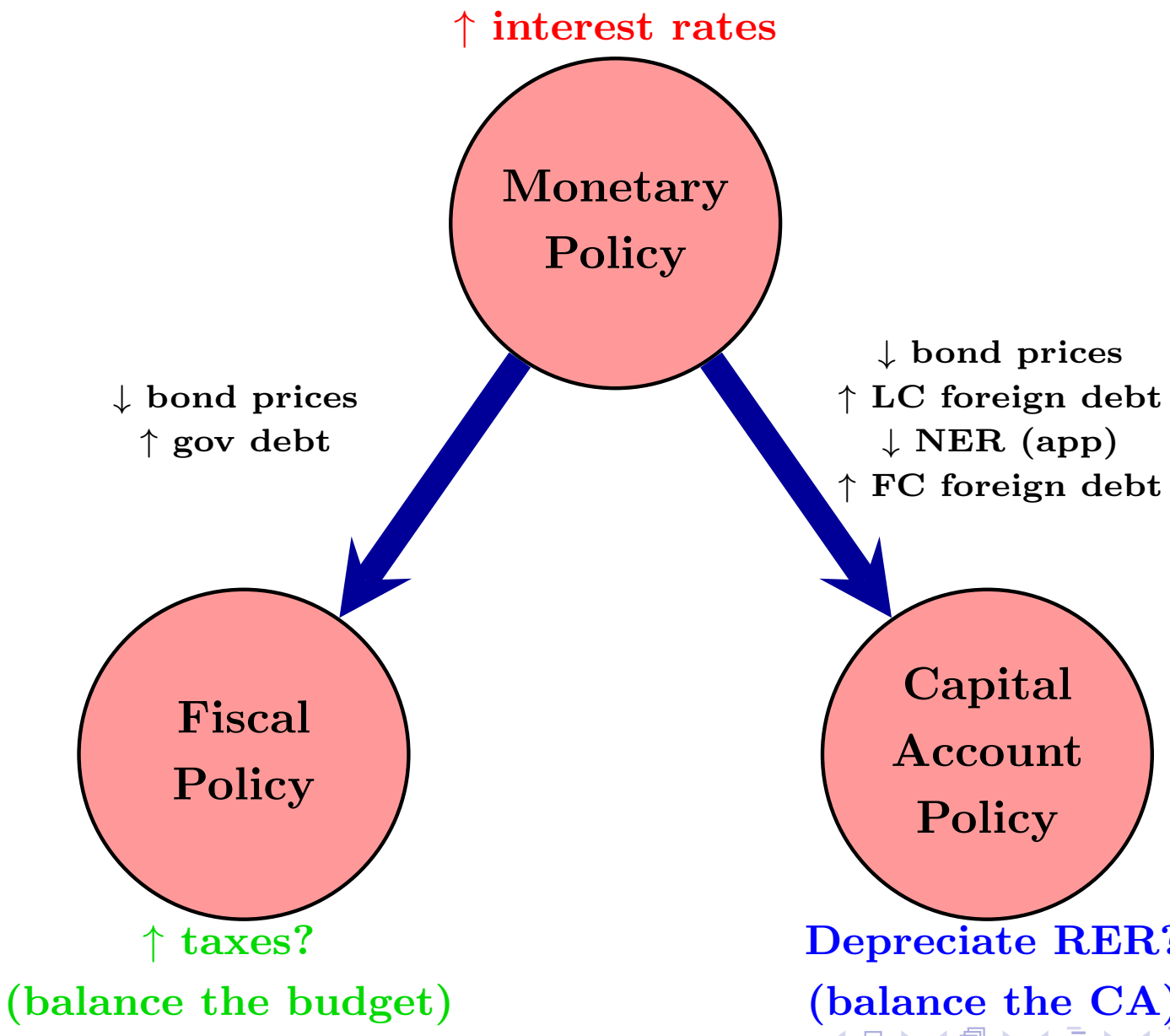
- ICA into CA condition implies:

$$\underbrace{\frac{B_{Ft}}{R_t P_t} + \frac{e_t D_t^*}{R^* P_t}}_{\text{Market value of NFLs}} = \underbrace{\sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (tb_{t+j} + Krev_{t+j})}_{\text{PV of future external surpluses}} \tag{12}$$

→ MP related to FP and KAP through market value of government debt

→ MP related to KAP through market value of external debt

Example of Policy Interaction



3 Policy Regimes

Does FP raise taxes after a M tightening?

Does KAP let the RER depreciate after a M tightening?

→ 3 policy regimes emerge from answers to these questions:

1. OE Monetary dominance: FP and KAP accommodate to MP (OE NK)
2. OE Fiscal dominance: MP and KAP accommodate to FP
3. Capital Account dominance: MP and FP accommodate to KAP

- 1 and 2 are extensions of closed economy regimes (Blanchard, 2004; Leeper, 1991; Sargent and Wallace, 1981)
- Focus on third (new) case where KA policy 'dominates'

Capital Account Dominance w. K controls

- **What is 'Capital Account Dominance'?**

$\Longrightarrow$ When KAP sets $\{\tau_t^c\}$ to target the RER with no concern for CA solvency ('active' in Leeper, 1991)

$\rightarrow$ How? Usually RER adjusts to clear FX market (satisfy CA condition)

$\rightarrow$ But τ_t^c introduces a wedge between mg benefit and mg cost of foreign borrowing:

$$\underbrace{u'(C_t)Q_t}_{\text{utility of 1 unit of FC}} = (1+\tau_t^c) \underbrace{R^* \frac{\beta}{\pi^*} \mathbb{E}_t \left[u'(C_{t+1})Q_{t+1}\right]}_{\text{PV of debt repayment utility cost}}$$

$\rightarrow$ K controls as a policy-based market segmentation (Gabaix and Maggiori, 2015)

Capital Account Dominance w. K controls

- If $u(C) = \log C$, equilibrium RER is:

$$\frac{Q_t}{Q} = \frac{z_{t,\infty}\frac{y_t}{y}}{1 + \frac{Q\gamma^* y^*}{y}(z_{t,\infty}\frac{y_t^*}{y^*} - 1)} \quad ; \quad z_{t,\infty} \equiv \mathbb{E}_t \prod_{j=0}^{\infty}(1 + \tau_{t+j}^c) \tag{13}$$

- If KAP can (credibly) announce an arbitrary sequence $\{\tau_t^c\}$, it can effectively choose any Q_t
- e.g. KAP could choose a Q_t that doesn't (all else constant) satisfy CA condition
- Capital account policies used in EMEs showed to respond to this 'mercantilist' motive i.e. use KAP to undervalue the country's RER (Dooley et al., 2004; Jeanne, 2013; Korinek and Serven, 2016; Pasricha, 2022)

Price Level Determination in Regime K

→ By targeting the RER, KAP also uniquely determines equilibrium P_t

→ Intertemporal CA condition equates real NFLs to $PV(tb)$, then:

$$P_t = \frac{B_{Ft-1}}{PV(tb) - \frac{Q_t D^*_{t-1}}{P^*}} \tag{14}$$

→ Usually $PV(tb)$ is endogenous. In Regime K,

$$PV(tb) = \sum_{j=0}^{\infty} \beta^j \mathbb{E}_t \underbrace{\left(\frac{y_t - Q_t \gamma^* y^*_t}{y_{t+j} - Q_{t+j} \gamma^* y^*_{t+j}} \right)}_{1/(1+r_{t+j})} z_{t,t+j-1} \underbrace{\frac{Q_{t+j} \gamma^* y^*_{t+j} - \gamma y_t}{1-\gamma}}_{tb_{t+j}}, \quad z_{t,t-1} = 1$$

since $Q_t = Q(\{\tau^c_t\})\ \forall t$

→ One-time increase in τ^c_t **lowers** inflation through two channels:

1. higher $Q_t \rightarrow$ higher exports $\rightarrow$ lower C $\rightarrow$ lower π
2. higher $Q_t \rightarrow$ higher real interest rates $\rightarrow$ lower C $\rightarrow$ lower π

Capital Account Dominance w. Tariffs

- **What is 'Capital Account Dominance' with tariffs?**

$\Longrightarrow$ When KA (trade) policy sets $\{T_t\}$ to target the RER

$\rightarrow$ Tariffs also enter as a wedge on the foreign bond pricing equation (akin to a consumption tax):

$$u'(C_t)Q_t(1+T_t)^{-\gamma} = R^* \frac{\beta}{\pi^*} \mathbb{E}_t \left[u'(C_{t+1})Q_{t+1}(1+T_{t+1})^{-\gamma} \right]$$

$\rightarrow$ If $u(C) = \log C$, equilibrium RER is

$$\frac{Q_t}{Q} = \frac{z_t \frac{y_t}{y}}{1 + \frac{Q\gamma^* y^*}{y}(z_t \frac{y_t^*}{y^*} - 1)} \quad ; \quad z_t \equiv \left(\frac{1+T_t}{1+T} \right)^{\gamma} \tag{15}$$

$\rightarrow$ KA (trade) policy can use tariffs to choose any path $\{Q_t\}$ of the RER

Capital Account Dominance w. Tariffs

→ Price level is again pinned down by intertemporal CA:

$$P_t = \frac{B_{Ft-1}}{PV(tb) - \frac{Q_t D^*_{t-1}}{P^*}} \tag{16}$$

with $PV(tb)$ policy-determined

→ One-time increase in T_t also **lowers** inflation:

1. higher $Q_t \rightarrow$ higher exports $\rightarrow$ lower C $\rightarrow$ lower π
2. higher $Q_t \rightarrow$ higher real interest rates $\rightarrow$ lower C $\rightarrow$ lower π

Capital Account Dominance w. FXI

- **What is 'Capital Account Dominance' with FXI?**

$\Longrightarrow$ When KAP uses FX reserves $\{A_t^*\}$ and KA restrictions to target the RER (Chile in 1980s)

$\rightarrow$ In Chile, policy consisted of scheduled nominal devaluations $\{\bar{e}_t\}$ and FX reserves $\{A_t^*\}$ to 'defend' the ER (+ regulated KA)

$\rightarrow$ Assume government completely closes KA ($B_{Ft} = D_t^* = 0$):

$$\bar{e}_t(\underbrace{\frac{A_t^*}{R^*} - A_{t-1}^*}_{\Delta A_t^*}) + \bar{e}_t D_{t-1}^* + B_{Ft-1} = \frac{e_t P^* \gamma^* y_t^* - \gamma P_t y_t}{1-\gamma}$$

$\rightarrow$ No wedge in this case, but government still segments market by directly restricting K flows (could pair FXI with K controls to same effect e.g. Choi and Taylor, 2017)

Capital Account Dominance w. FXI

→ Under these policies, the price level is pinned down by flow CA condition:

$$P_t = \frac{\bar{e}_t P_t^* \gamma^* y_t^* - (1-\gamma)(\bar{e}_t \Delta A_t^* + \bar{e}_t D_{t-1}^* + B_{Ft-1})}{\gamma y_t}$$

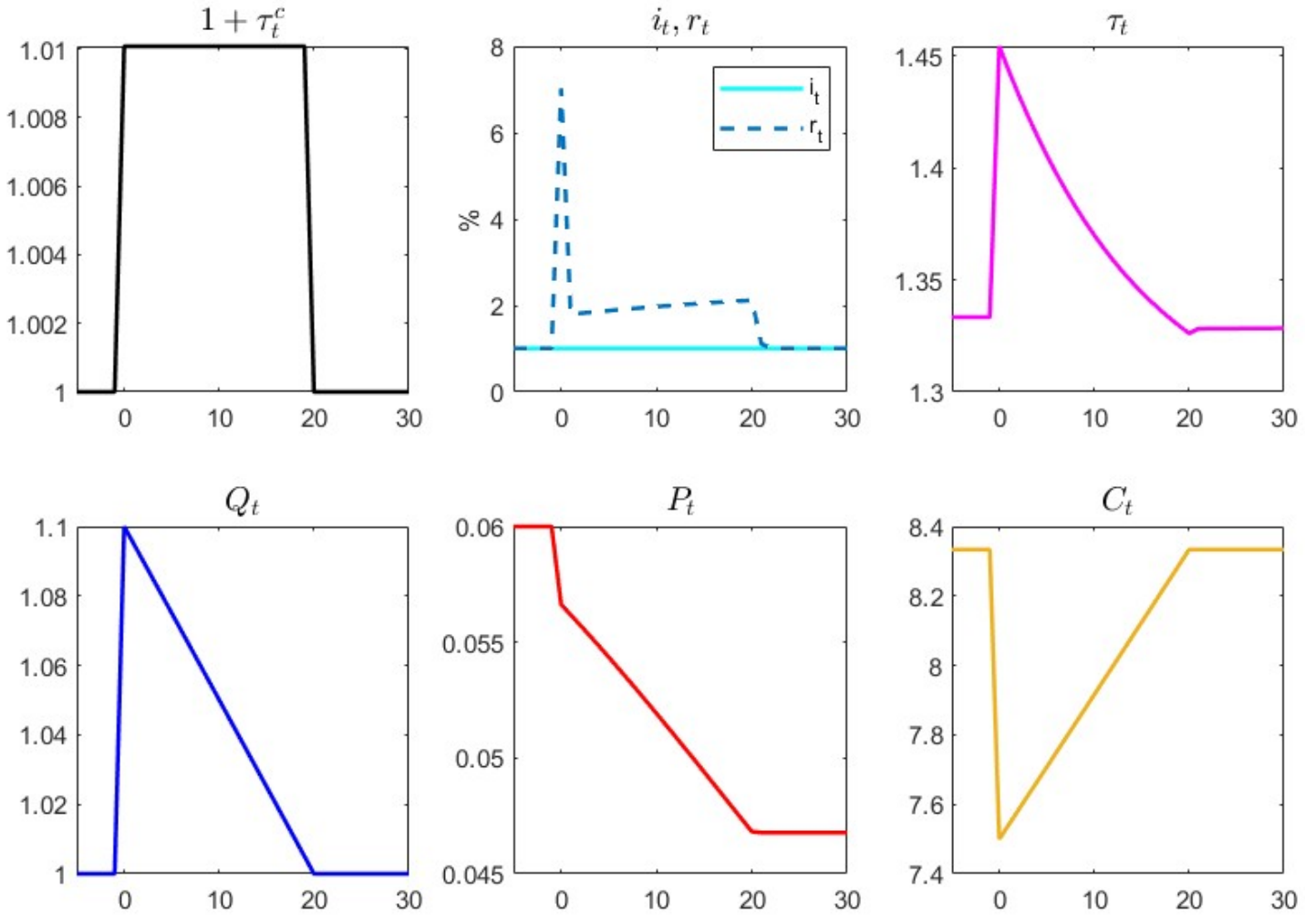
→ KA policy can then choose the RER using $(\bar{e}_t, A_t^*)$:

$$Q_t = \frac{\bar{e}_t P_t^*}{P(\bar{e}_t, A_t^*)}$$

→ Nominal devaluations + Reserve accumulation consistent with high π and depreciation of RER as in Chile in the 80s

→ Reserves accumulation partially offset inflationary effect of nominal devaluation by creating expectations of higher taxes

Policy Experiment – Simulated Economy



Monetary Policy under Capital Account Dominance

- What is a consistent monetary policy in Regime K?
- Depreciation of RER (using τ_t^c, A_t^*, T_t) raises real interest rates:

$$\uparrow r_{t+1} \equiv \beta^{-1} \frac{C_{t+1}}{\downarrow C_t}$$

- Equilibrium MP ensures HHs are still willing to hold government debt
- It does so by adjusting i_t by less than 1-to-1 with inflation

$$\uparrow r^b_{t+1} = \downarrow i_t - \downarrow\downarrow \mathbb{E}_t \pi_{t+1}$$

$\implies$ 'Passive' MP equates the real return of gov bonds r^b_{t+1} to r_{t+1}

! If MP targets π and increases i_t by more than 1-to-1:

$$\downarrow r^b_{t+1} = \downarrow\downarrow i_t - \downarrow \mathbb{E}_t \pi_{t+1} < \uparrow r_{t+1}$$

Monetary Policy under Capital Account Dominance

- What are the effects of higher interest rates on π in Regime K?
- Higher R_t reduce bond prices and increase external indebtedness B_{Ft}, D_t^*

$$\underbrace{\mathbb{E}_t\left[\frac{B_{Ft}}{P_{t+1}} + \frac{Q_{t+1}D_t^*}{P_{t+1}^*}\right]}_{\text{outstanding NFLs at } t+1} = \sum_{j=0}^{\infty} \mathbb{E}_t \Theta_{t+j}(tb_{t+j+1} + Krev_{t+j+1})$$

- $\{Q_t\}$ already pinned down by KA policy $\rightarrow PV(tb)$ fixed
- Expected P_{t+1} (and e_{t+1}) rises to eliminate domestic and foreign WE $\rightarrow P_t$ unchanged as HH real wealth constant in eqm

$\therefore$ Monetary tightening fails to reduce current inflation and **raises** future inflation (Sargent and Wallace, 1981)

Inflation Expectations in Regime K

- → What drives π expectations in Regime K?
- → From expression for eqm P_t can write:

$$\mathbb{E}_t[\hat{\pi}_{t+j}] = \mathbb{E}_t[\hat{b}_{Ft+j-1} + \hat{d}^*_{t+j-1}] - \mathbb{E}_t[\widehat{PV_{t+j}(tb)}], \quad \forall j \geq 1$$

- → If KAP not expected to change after $t \implies \pi$ expectations linked one-to-one to path of external debt
- → News about sustainability of external debt directly impact π expectations
- → Anchored and stable inflation expectations under RER policies hinge on stable path of external debt

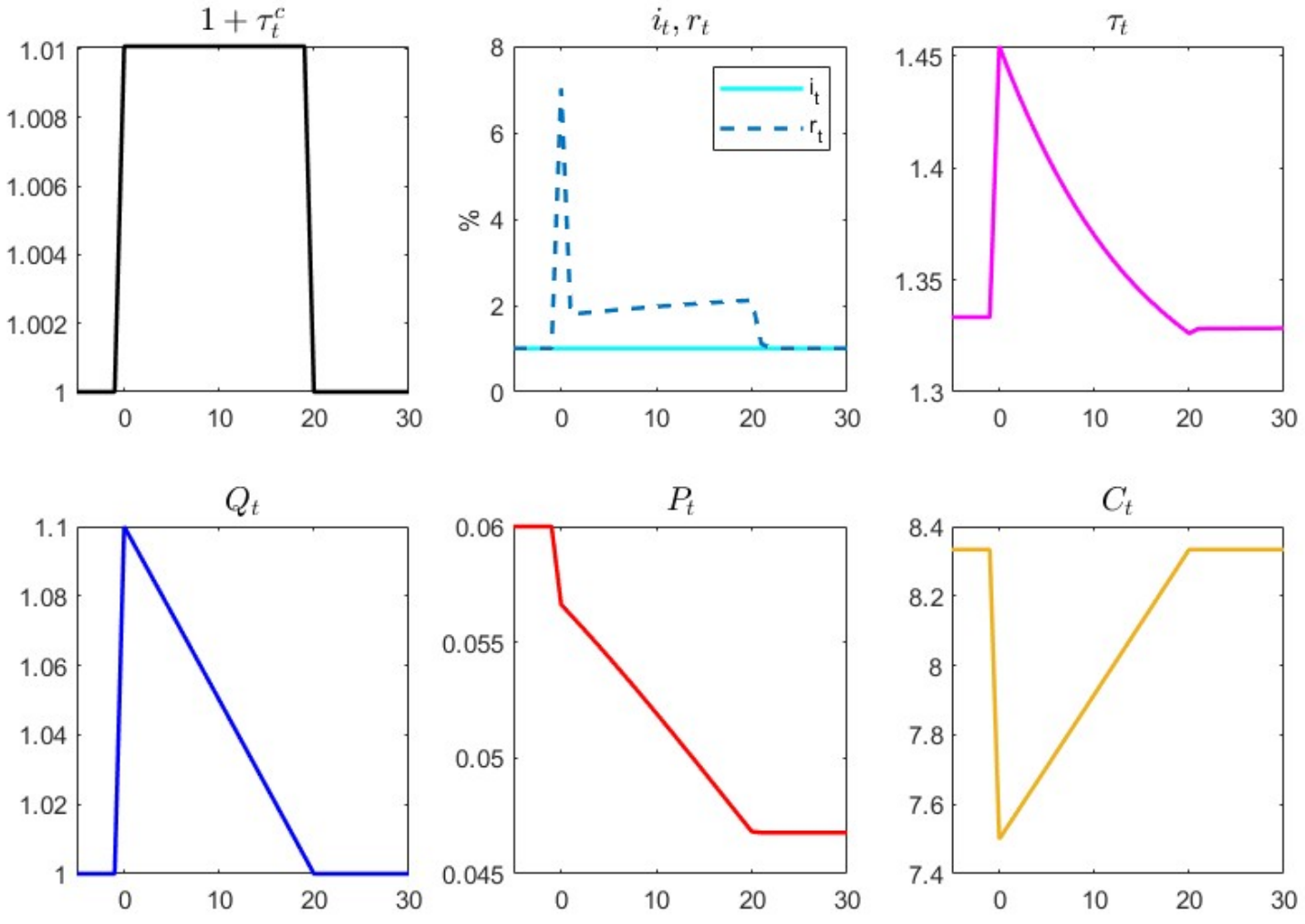
Fiscal Policy under Capital Account Dominance

- What is a consistent fiscal policy in Regime K?
- Government must be intertemporally solvent for any equilibrium P_t, Q_t chosen by KAP:

$$\frac{B_{Ht-1} + B_{Ft-1}}{\downarrow P_t} = \tau_t + \sum_{j=1}^{\infty} \mathbb{E}_t \downarrow \Theta_{t+j} (\tau_{t+j} + Krev_{t+j})$$

- Lower P_t raises real debt B_{t-1}/P_t, and higher real rates lower $PV(\tau)$
- First two cases, there is a Laffer curve on $Krev$ since higher τ_t^c, T_t reduce $nfl_t, M_t \implies$ fiscal effect limited
- Equilibrium fiscal policy raises taxes to make up for higher liabilities and lower PV of taxes

Policy Experiment – Simulated Economy



Fiscal Policy under Capital Account Dominance

- In case with FXI, $Krev$ is negative as KA policy needs to buy reserves
- Consistent FP unambiguously raises taxes to finance accumulation of reserves:

$$\frac{B_{Ht-1} + B_{Ft-1}}{\downarrow P_t} = \sum_{j=0}^{\infty} \mathbb{E}_t \downarrow \Theta_{t+j} \left(\tau_{t+j} - \uparrow \frac{Q_{t+j} \Delta A^*_{t+j}}{P^*_{t+j}} \right)$$

- In Chile example, $\uparrow P_t$ and $Q_{t+1} > Q_t \implies \downarrow r_{t+1}$

$$\frac{B_{Ht-1} + B_{Ft-1}}{\uparrow P_t} = \sum_{j=0}^{\infty} \mathbb{E}_t \uparrow \Theta_{t+j} \left(\tau_{t+j} - \uparrow\uparrow \frac{\uparrow Q_{t+j} \uparrow \Delta A^*_{t+j}}{P^*_{t+j}} \right)$$

- Increase in FX purchases represented 1/3 of extra surpluses generated over 83-89 period (2.4% of 7.9% of GDP)

Consistent Monetary-Fiscal Policies

- Consistent monetary and fiscal policies under RER-depreciating policies are **contractionary**
  - MP allows for higher real interest rates
  - FP increases surpluses (taxes)
- EMEs experiences with such RER policies using K controls and FXIs usually spurred growth from boosting export sector
- RER policy using tariffs unlikely to have same effects (consumption tax)

Inflation Targeting in EMEs

- **What is 'OE Monetary Dominance'?**
- When MP sets $\{R_t\}$ to target inflation with no concerns over GBC/CA
- Imposes restrictions on what equilibrium FP and KAP can be

$$\frac{B_t}{R_t P_t} = \sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (\tau_{t+j} + Krev_{t+j})$$

$$\frac{B_{Ft}}{R_t P_t} + \frac{e_t D_t^*}{R^* P_t} = \sum_{j=1}^{\infty} \mathbb{E}_t \Theta_{t+j} (tb_{t+j} + Krev_{t+j})$$

- If MP raises interest rates:
  - **Fiscal** policy creates future surpluses to pay for higher government debt
  - **Capital account** policy creates higher future *trade* surpluses to pay for higher external debt
- Concept of policy 'backing' (Cochrane, 2011; Sims, 2005)

Inflation Targeting in EMEs

- When do higher interest rate lower inflation in EMEs?

Corollary 1

A monetary tightening lowers inflation on impact if and only if it is accompanied by a fiscal and KA tightening

- Fiscal and capital account backing are **necessary** conditions for the existence of an eqm where CB targets inflation
- Fiscal and Capital account policy behavior as central to success of π targeting (MP can't go-it-alone)
- Lack of either policy backing creates 'perverse' effects of MP (unchanged π_t and higher π_{t+1} after higher i_t)

Conclusion

→ Framework of M-F-K interactions gives coherent story for GE effects of KA policies (K controls, tariffs, FXIs)

→ M-F policies consistent with RER depreciation policies (e.g. to reduce trade deficits) have **contractionary** effects on π ($\uparrow r_{t+1}, \uparrow \tau_t$)

Other GE effects could partly offset this effect in richer model (e.g. higher MC for firms)

→ Important policy implication for π targeting EMEs → FP and KAP both contractionary after interest rate hike to lower π

→ Rising use of these policies in EMEs (and AEs) suggests a MFK framework increasingly useful for: i) interpreting macroeconomic data and ii) future policy design in the face of KA policy shocks