Currency Wars, Trade Wars and Global Demand

Olivier Jeanne

Johns Hopkins University
NBER and CEPR

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Introduction

- Similarities between global economy in the 1930s and the 2010s
  - low global demand and debate about secular stagnation
  - monetary policies constrained by the ZLB/ELB
  - trade and currency wars
- A multiplicity of policy instruments are used
  - interest rate, inflation target, foreign exchange interventions, capital controls, trade taxes
  - multilateral implications should depend on the instrument
- This paper analyzes the case for international policy coordination in a Keynesian global economy with multiple policy instruments
  - tractable Armington economy with continuum of countries and downward nominal wage stickiness

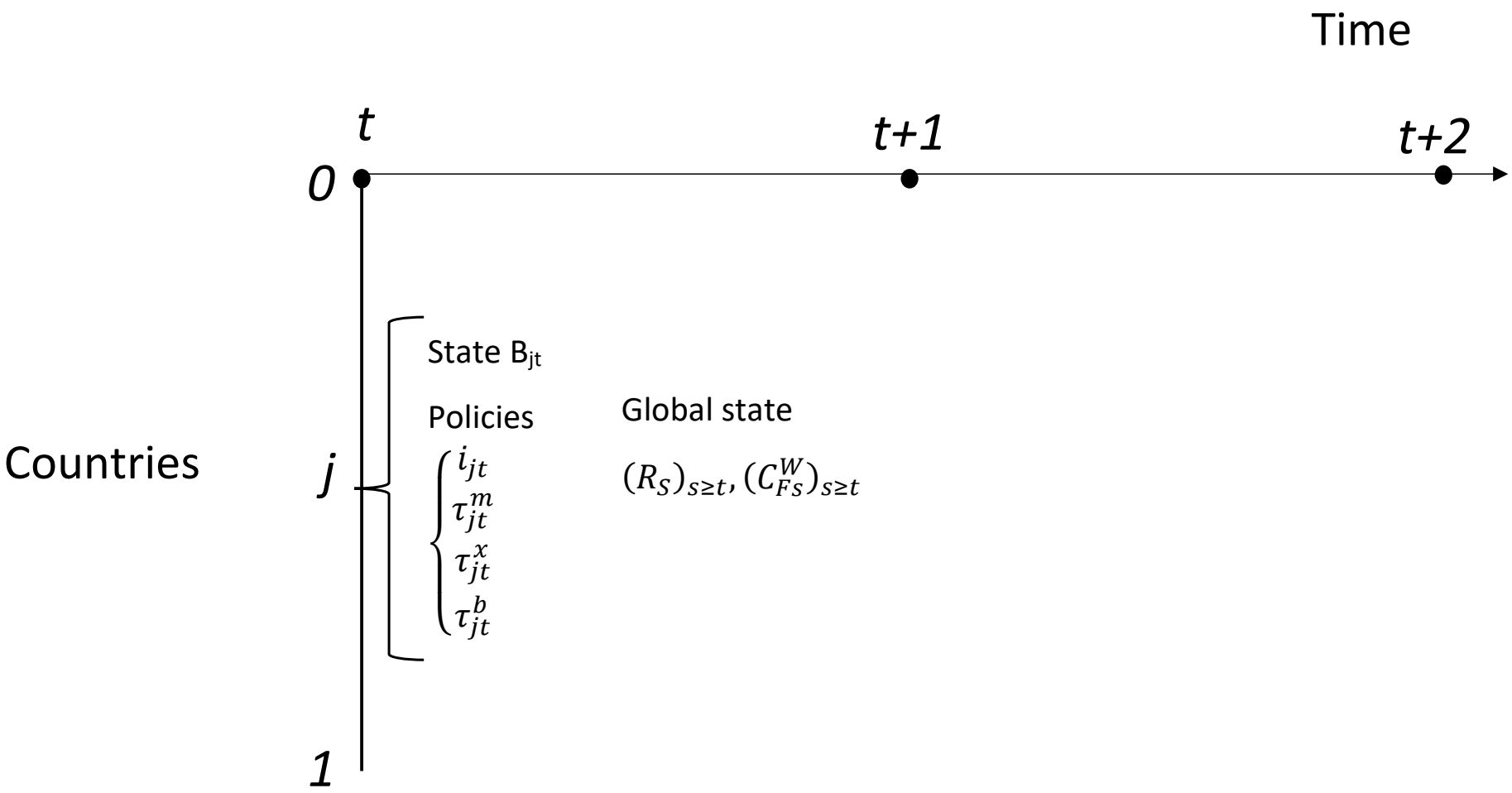
Introduction

Literature

- International monetary coordination: Obstfeld and Rogoff (2002), Benigno and Benigno (2006), Canzoneri, Cumby and Diba (2005) etc.
- International contagion in global liquidity traps: Eggertsson et al (2016), Caballero, Farhi and Gourinchas (2015), Fujiwara et al. (2013), Devereux and Yetman (2014), Acharya and Bengui (2016), Fornaro and Romei (2019), Auray, Devereux and Eyquem (2021)
- Macro impact of trade policy: Barbiero et al (2017), Erceg, Prestipino and Raffo (2017), Lindé and Pescatori (2017)
- Two distinct features of this paper: multiplicity of policy instruments and explicit characterization of Markov equilibria

Model

Model: deterministic, infinite time, continuum of countries $j \in (0,1)$



Preferences

- Time t utility of representative consumer $j \in [0,1]$

$$U_{jt} = u(C_{jt}) + \beta_{jt} U_{jt+1}$$

where $u(C) = \frac{C^{1-1/\epsilon_i} - 1}{1 - 1/\epsilon_i}$

- Consumption is the Cobb-Douglas index

$$C = \left(\frac{C_H}{\alpha_H}\right)^{\alpha_H} \left(\frac{C_F}{\alpha_F}\right)^{\alpha_F}$$

where $C_F = \left[\int_0^1 C_k^{(\epsilon_x - 1)/\epsilon_x} dk\right]^{\epsilon_x/(\epsilon_x - 1)}, \quad \epsilon_x > 1$

- International trade in real bonds denominated in imported good

Production and labor market

- Production of home good

$$Y_{jt} = L_{jt}$$

- The representative consumer is endowed with a fixed quantity of labor $\overline{L}$

$$L_{jt} \leq \overline{L}$$

- Downward nominal stickiness in wage like in Schmitt-Grohé and Uribe (2016) or Eggertsson et al (2016)

$$\pi_{jt} = \frac{W_{jt}}{W_{jt-1}} - 1 \geq 0$$

The economy can be in two regimes: *classical* regime with full employment ($L = \overline{L}$), or *Keynesian* regime less than full employment and $\pi = 0$

Policy instruments

- **monetary policy:** nominal interest rate i_{jt} subject to ZLB constraint
  - another instrument is the inflation target $\pi_j^* \geq 0$, which can be implemented iff there is full employment
- **trade policy:** taxes/subsidies on imports τ_{jt}^m and on exports τ_{jt}^x
- **capital account policy:** tax on external borrowing τ_{jt}^b
  - equivalent to reserves intervention with a closed capital account

Model

Impact of different policies on demand for home good and home labor

	$i \searrow$	$\tau^m \nearrow$	$\tau^x \searrow$	$\tau^b \nearrow$
expenditure changing	$\alpha_H^2 \epsilon_i$	$-\alpha_H \alpha_F \epsilon_i$	0	$-\alpha_H \alpha_F \epsilon_i$
expenditure switching	$\alpha_H \alpha_F + \alpha_F \epsilon_x$	$\alpha_H \alpha_F$	$\alpha_F \epsilon_x$	$\alpha_H \alpha_F + \alpha_F \epsilon_x$

If $\epsilon_i < 1$, taxing imports or capital inflows is expansionary

Model

Steps in the derivation of the equilibrium

- Define global Markov equilibrium between national policymakers who maximize domestic welfare taking global conditions as given
- Characterize allocations in symmetric ($\beta_{jt} = \beta_t$) global Markov equilibrium
  - a given allocation can be implemented with multiple combinations of policy instruments (Lerner symmetry)
- There is a Nash equilibrium in which the ZLB constraint never binds if and only if the global natural rate of interest is large enough ($\beta_t \leq 1 + \pi^*$) in all periods t
  - if this is the case, Nash equilibrium leads to classical tariff war with terms of trade manipulation
- In the rest of the paper we focus on **global liquidity traps** with unemployment

Global Liquidity Traps

- Consider global liquidity trap that lasts one period in $t = 1$
- We compare the period-1 equilibria under different assumptions about the policy instruments that countries can use
  - **symmetry:** all countries use the same instruments
  - but they do not use all the instruments: we consider the following policy mixes: (i), (i, π^*), (i, τ^m), (i, τ^x), (i, τ^m, τ^x), $(i, \tau^m, \tau^x, \tau^b)$
- Equilibrium solved in closed form, based on first-order approximations derived under the assumptions that $1 - \beta_2$ is small

Global Liquidity Traps

Monetary wars (i, π^*)

- If the only policy instrument is the nominal interest rate, there is no gain from international cooperation (Proposition 5)
- Lowering the interest rate in one country can have a beggar-thy neighbor effect, but lowering the interest rate in all countries raises global demand
  - monetary stimulus is a positive sum game
- An "inflation target war" leads to the first best (Proposition 6)

Global Liquidity Traps

Tariff wars (i, τ^m)

- If $\epsilon_i < 1$ imposing a tariff on imports raises home employment and welfare $\rightarrow$ tariff war in the Nash equilibrium
- A generalized increase in tariffs lowers global employment and welfare
  - tariffs have beggar-thy-neighbor effects and lead to a negative-sum game; there are gains from international cooperation to avoid a tariff war (Proposition 8)
- A tariff war is more costly but also more difficult to avoid when there is insufficient global demand
  - the temptation to introduce tariffs is stronger to increase employment than to manipulate the terms of trade
- Allowing the use of tariff may lead to self-fulfilling liquidity traps and tariff wars

Global Liquidity Traps

Trade wars with export taxes (i, τ^x)

- With export taxes/subsidies the Nash equilibrium features full employment in $t = 1$ (Proposition 10)
- National policymakers can reach full employment without distorting home consumption by subsidizing exports
- There is no need for international coordination to avoid export subsidies in $t = 1$
- Key difference between a tariff on imports and a subsidy on exports is the congruence between partial and general equilibrium
    - transitory export subsidies lower the price of cosumption in $t = 1$ whereas transitory import tariffs increase it

Global Liquidity Traps

Capital wars (i, τ^b)

- All countries impose a tax on capital inflows to increase employment, with no impact on allocations and welfare (zero sum game)
  - if capital controls are used only by a subset of countries, these countries achieve full employment and trade surpluses

Total wars $(i, \tau^m, \tau^x, \tau^b)$

- If τ^x is in the policy mix, the Nash allocation is the same as in the case (i, τ^x) (it is unique and features full employment)

Global Liquidity Traps

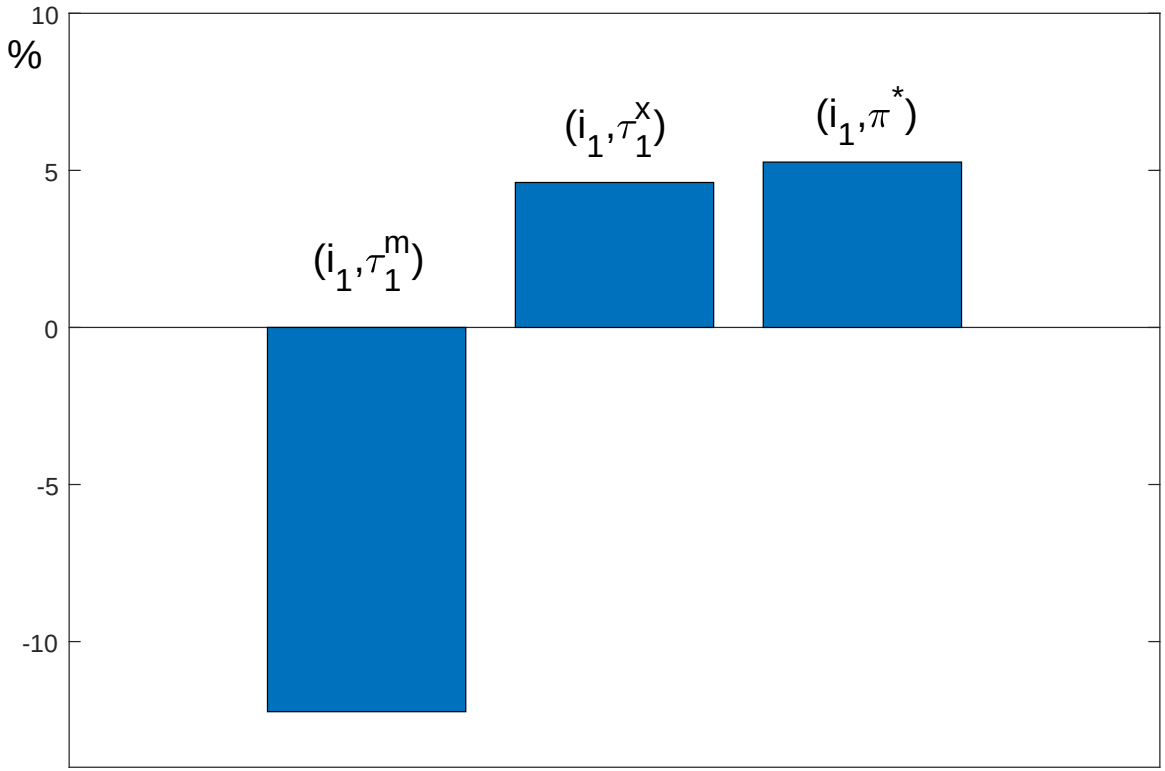


Figure: Impact of trade and currency wars on period-1 consumption (percentage points of pre-war consumption)

Dynamic Trade and Currency Wars

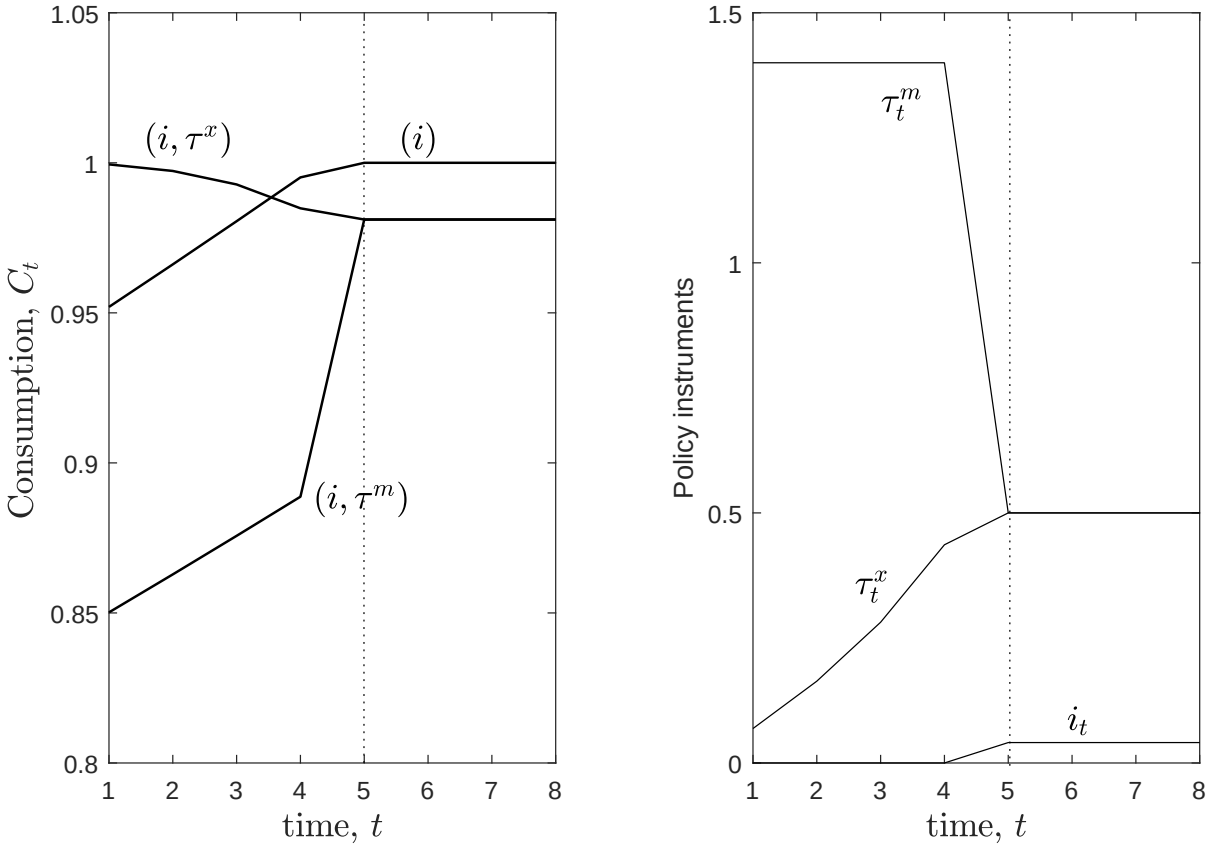


Figure: Consumption and policy instruments in a dynamic trade war

Conclusions

Summary

- The welfare cost of uncoordinated policies crucially depends on the state of global demand
- "Currency wars" and "trade wars" are loose concepts: the policy instruments crucially matter
  - with insufficient global demand a trade war has opposite welfare implications if it involves tariff imports or export subsidies
- The welfare gains from international policy coordination are large when it avoids an import tariff war in a context of low global demand
  - sadly import tariffs seem to be the instrument of choice in the real world, and global demand shortage is conducive to tariff wars