

Tariffs, Trade Deficits, and Liquidity Supply

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Tariffs

- Stated goal of Trump's trade policy: reduce the current account deficit
- Several issues:
 - ▶ Misplaced focus on bilateral deficits
 - ▶ Not clear what welfare basis for targeting deficit
- This paper:
 - ▶ Does it work? Mechanisms?
 - ▶ If it does not work, what next?

Trade Openness and Deficits

- Traditional argument: deficits depends on aggregate saving and investment, why should trade policy affect them?
- Things are subtler:
 - ▶ intertemporal trade: you have to get goods from country 1 to country 2 when country 1 is borrowing, then from country 1 to country 2 when it's repaying
 - ▶ if it you add frictions to both movements, it must make it harder to borrow, so affect saving/lending decisions
- Point made in Obstfeld and Rogoff (2000)
- Recently quantitative work explores the idea in rich firm-level trade models: Fitzgerald (2008), Eaton-Kortum-Neiman (2016), Alessandria and Choi (2016), Reyes-Heroles (2017)
- Very recent work dissecting the mechanism: Costinot and Werning (2025)

This Paper

- Review intertemporal argument
- Point 1:
 - ▶ The mechanism depends on *transitory* trade imbalances
 - ▶ Contrast two models to illustrate: one has permanent imbalances → zero effect!
- To make the point, build model of a country that is world supplier of a liquid asset
- Point 2:
 - ▶ Valuation effects and assumptions on liquidity supply matter
- Can we reduce trade deficits by discouraging liquid asset accumulation?
- Point 3:
 - ▶ It may happen on its own
 - ▶ A targeted tax can do it
- Will focus on permanent tariffs, both unilateral and bilateral

Plan

- Review intertemporal argument
- Point 1: transitory vs permanent imbalances
- Point 2: valuation effects
- Point 3: liquidity manipulation

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- **Review intertemporal argument**
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The Intertemporal Argument

- Simple 2x2x2 endowment economy
- 2 countries, 2 goods, 2 periods
- CRRA intertemporal, Armington trade structure:

$$C_t = \left(\omega^{\frac{1}{\varepsilon}} C_{Ht}^{1-\frac{1}{\varepsilon}} + (1-\omega)^{\frac{1}{\varepsilon}} C_{Ft}^{1-\frac{1}{\varepsilon}} \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

- Role inverted for F
- Fully specialized endowments Y_H and Y_F^*
- $\omega > 1/2$ (home bias)
- $\varepsilon \geq 1$ (realistic range)

Tariff Shock

- Take an equilibrium with zero initial assets, trade deficit in first period
- Comparative statics: effect of a permanent tariff $\tau > 0$ on deficit
 - ▶ Tariff affects price of home price index directly
 - ▶ And in GE all prices
- Level effect (home bias):
 - ▶ when τ increases it moves more spending to $H \rightarrow$ higher P_{Ht}/P_{Ft}
- In what period are these effects stronger?

Euler Equation

- Euler equation

$$u'(C_1) = (1 + i_1) \frac{P_1}{P_2} \beta u'(C_2),$$

- Combine both countries

$$\frac{u'(C_1)}{\beta u'(C_2)} = \left(\frac{P_1/P_1^*}{P_2/P_2^*} \right) \frac{u'(C_1^*)}{\beta^* u'(C_2^*)}$$

- Price indices $P_t \neq P_t^*$
- Real interest rate different in the two countries because they consume different baskets (Dornbush, 1976)

Trade Deficit

- Trade deficit

$$\underbrace{P_{Ft}C_{Ft}}_{\text{imports}} - \underbrace{P_{Ht}(Y_{Ht} - C_{Ht})}_{\text{exports}} = P_{Ht}D_t$$

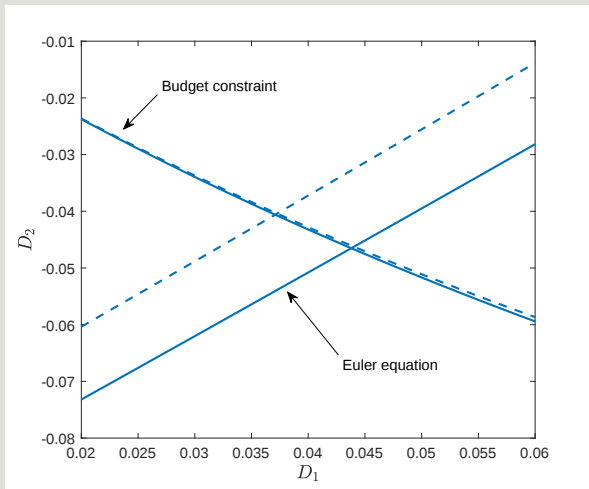
- Intertemporal constraint

$$P_{H1}D_{H1} + \frac{1}{1+i_1}P_{H2}D_{H2} = 0$$

- Choose parameters so that in equilibrium

$$D_1 > 0 > D_2$$

Effects of a tariff



Effects of a tariff (continued)

- **Result 1:** For given $\{D_t\}$ home tariff shifts relative real interest rates up. In range of realistic parameters this reduces deficit at $t = 1$.
- Real interest rate goes up relatively more for the home country

$$\frac{u'(C_1)}{u'(C_2)} = \left(\frac{P_1/P_1^* \uparrow\uparrow}{P_2/P_2^* \uparrow} \right) \frac{u'(C_1^*)}{u'(C_2^*)}$$

- Why? Because in period 1 home country spending is bigger fraction of world spending, so distortions in home spending have bigger effects on relative prices
- *Side note:* With fixed terms of trade (small open economy), the effect of tariff in this simple model is zero! Not quite as in Obstfeld and Rogoff (2000). Why? Ask Costinot and Werning (2025)

Effects of trade war

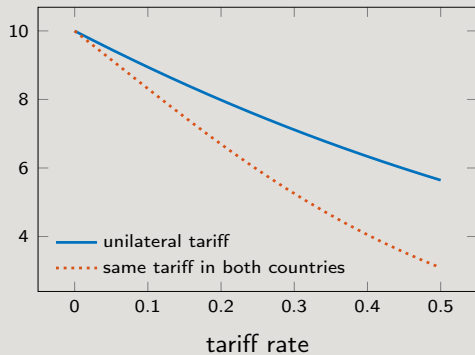
- **Result 2:** For given $\{D_t\}$ foreign tariff shifts relative real interest rates up. In range of realistic parameters this reduces deficit at $t = 1$.
- Levels go in opposite direction, but real interest rate goes up relatively more for the home country

$$\frac{u'(C_1)}{u'(C_2)} = \left(\frac{P_1/P_1^* \downarrow}{P_2/P_2^* \downarrow\downarrow} \right) \frac{u'(C_1^*)}{u'(C_2^*)}$$

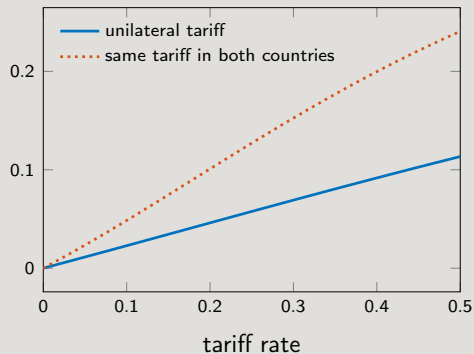
- Why? Because in period 2 foreign country spending is bigger fraction of world spending

Two-period model: summary

Trade deficit



Real interest rate wedge



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A model of world liquidity supply

- Same 2 goods structure, same endowment economies, same Cobb-Douglas preferences with home bias
- Different reason for trading assets
- Preferences of H consumer

$$\int_0^{\infty} e^{-\rho t} \left(u(C_t) + v\left(\frac{B_t}{P_t}\right) \right) dt$$

- Continuous time, infinite horizon (not crucial)
- $v(B/P)$ demand for liquid bonds (crucial) (Sidrauski, 1967)

Accounting

- Both home and foreign consumers demand liquid bonds
- Only entity that supplies liquid bonds is H government
- Domestic budget constraint is

$$P_{Ht}C_{Ht} + (1 + \tau)P_{Ft}C_{Ft} + \dot{B}_t + \dot{A}_t = P_{Ht}Y_{Ht} + i_t + i_{bt}B_t + T_t,$$

- Gov't budget constraint

$$\dot{\bar{B}} + \tau P_{Ft}C_{Ft} = T_t + i_{bt}\bar{B}_t$$

- Bond market equilibrium

$$B_t + B_t^* = \bar{B}_t$$

- Consolidated budget constraint of country H

$$\underbrace{\dot{A} - \dot{B}^*}_{\text{current account balance}} = \underbrace{P_{Ht}(Y_{Ht} - C_{Ht})}_{\text{exports}} - \underbrace{P_{tF}C_{Ft}}_{\text{imports}} + \underbrace{i_t A_t - i_{bt} B_t^*}_{\text{interest income}}$$

Equilibrium conditions

- Euler equation

$$\gamma \frac{\dot{C}_t}{C_t} = i_t - \pi_t - \rho$$

- Demand for liquid asset

$$B_t = \psi^{\frac{1}{\gamma}} (i_t - i_{bt})^{-\frac{1}{\gamma}} P_t C_t,$$

- Analogous to traditional demand for money

Permanent trade deficit

- All endowments grow at rate g
- Stationary equilibrium: all prices constant, all quantities grow at rate g
- Assumption: H gov't keeps i_b stable
- Budget constraint in steady state

$$\begin{aligned} P_H d &= \underbrace{P_F c_F}_{\text{imports}} - \underbrace{P_H (y_H - c_H)}_{\text{exports}} = \underbrace{ia - i_b b^*}_{\text{interest income}} - \underbrace{g(a - b^*)}_{\text{current account balance}} \\ &= (i - g)(a - b^*) + (i - i_b)b^* \end{aligned}$$

- **Result:** Choose initial condition for $a - b^* < 0$ but not too large in absolute value, then in stationary equilibrium there are **permanent trade deficit** and **permanent current account deficit**
- Simple model of "privilege" (Gourinchas and Rey)

Effects of tariff: financial side

- Tariff introduced at $t = 0$, economy jumps to new steady state
- Where? It depends on valuation effects
- **Result:** (*Perfect separation*) If all assets denominated in F the effect on d is zero!
- Foreign country wealth excluding liquid asset has flow value:

$$y_F^* - (i - g)(a - b^*) \tag{1}$$

- $\rightarrow$ unchanged consumer spending P^*c^* and demand for liquid asset b^* (both proportional to (1))
- so a can remain at initial value

Effects of tariff: good markets

- Terms of trade improve for Home
- Foreign welfare decreases
- Same P^*c^* , but $P^* \uparrow$ and $c^* \downarrow$
- If we start at free trade, small tariff shock
- $\rightarrow$ Home welfare increases,
- Exports and imports fall in consort

$$\downarrow P_F c_F - \downarrow P_H (y_H - c_H) = (i - g)(a - b^*) + (i - i_b)b^*$$

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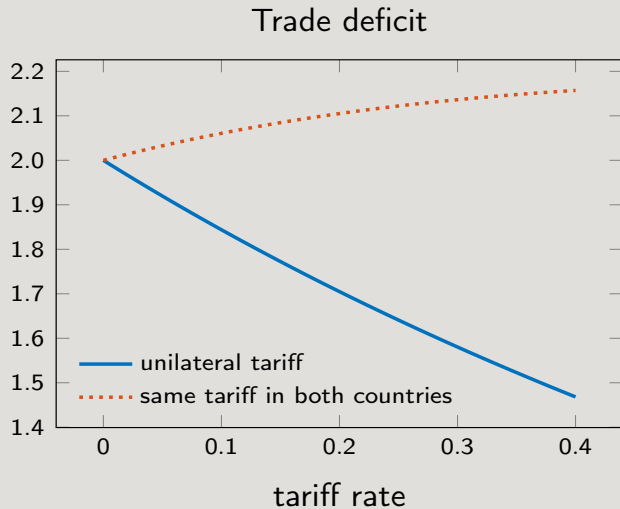
Valuation effects

- More realistic configuration: A denominated in F , B denominated in H
- In new stationary equilibrium lower Home net financial wealth $a - b^*$
- Lower value of foreign consumption P^*c^*
- Reduced demand for b^*
- Domestics reduce a and withdraw liquidity from the system
- Lower a , lower b^* , less “privilege”
- **Result:** (*Valuation effects*) With A denominated in F and B denominated in H : tariff reduces the trade deficit
- Home welfare: $\uparrow$ because of terms-of-trade effects + $\downarrow$ valuation effects and seignorage

Trade war

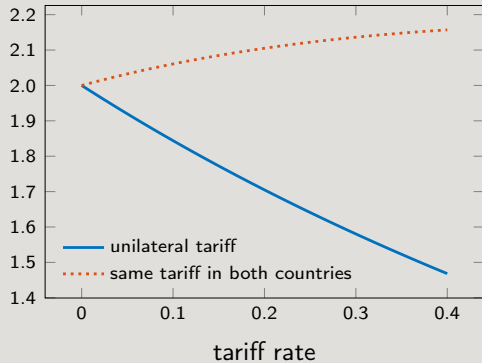
- All effects above where due to valuation through changes in P_H/P_F
- With trade war now everything goes in reverse
- **Result:** An increase in both countries' tariffs that keeps P_H/P_F unchanged has zero effects on the trade deficit

Liquidity model: trade deficit response

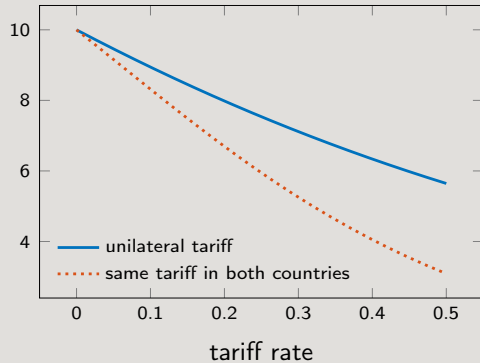


Two-period vs liquidity model

Trade deficit



Trade deficit



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Point 2: Effects on liquidity demand

- Suppose side effect: loss in appetite for Home liquidity
- Simple approach: reduce ψ^*
- **Result:** In model with F numeraire, trade deficit goes down
- Effect is to worsen terms of trade: simple "transfer problem" effect
- Welfare for Home country reduced
- Again: when trade deficit goes down it is bad for Home welfare

Taxing liquidity?

- Suppose instead demand is stable
- Trade deficit does not go down with tariffs
- Home government experiments with new policy
- Add a tax τ_b on foreign holdings of liquid bond (Miran's "user fee")
- **Result:** (*Miran's dilemma*) A small tax τ_b is either:
 - ▶ Welfare improving for Home and increase the trade deficit
 - ▶ Welfare reducing for Home and decrease the trade deficit