US tariffs and trade deficits in a forward-looking dynamic structure

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Context and Central Question

The US has recently deployed large tariffs against China and other major partners. The motivation for this protectionist stance is often justified by observed **imbalanced trade**.

- US runs a persistent current-account deficits.
- US has open capital markets with forward-looking investors.

These features are often not adequately addressed in standard tariff analysis.

Central question What can we learn about transition dynamics and trade imbalances from a forward-looking multi-region model of US tariff policy?

What static models can't see

Tariff policy unfolds in time. Four consequential features are invisible in a standard static framework:

1. **Policy anticipation**
2. **Balance-of-payments adjustments**
3. **The welfare costs of intertemporal adjustment dynamics**
4. **International capital ownership structure**

For example, **classical result on optimal tariffs (Johnson, 1950)** static with balanced trade: $\tau^* = \frac{1}{\varepsilon - 1} = 25\%$ (export-demand elasticity $\varepsilon = 5$).

Johnson's bottom-line number is valid for comparative-static, and even comparative steady-state analysis, but this may hide a number of intertemporal considerations and responses.

US tariffs: Anderson and van Wincoop static structure

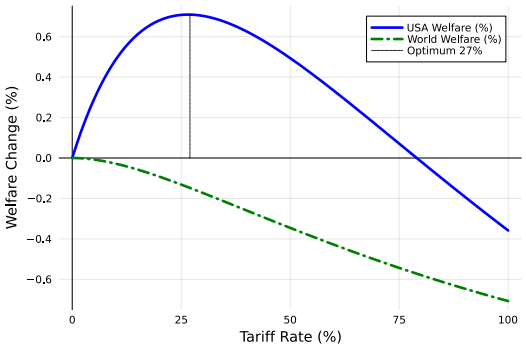


Figure: Balistreri, Ali, McDaniel (2026) "Tariff: the most beautiful word in the dictionary?" *RIE*.

Model at a glance

Multi-region, multi-sector dynamic general equilibrium, in the spirit of Lau, Pahlke, and Rutherford (2002).

- R regions (9), N sectors (1 for now), primary factors (K, L).
- Armington (Armington, 1969) trade: domestic vs. imported; bilateral CES nest over source countries.
- Forward-looking households — CRRA intertemporal utility; consumption–savings Euler.
- Capital accumulation growth model (with Uzawa (1969), quadratic adjustment costs).
- Discrete-time, finite-horizon ($t = 2020, \ldots, T = 2060$), termination strategy (Lau, Pahlke, and Rutherford, 2002).
- Tariffs—bilateral, ad valorem, revenues rebated lump-sum.

Balance-of-payments closures

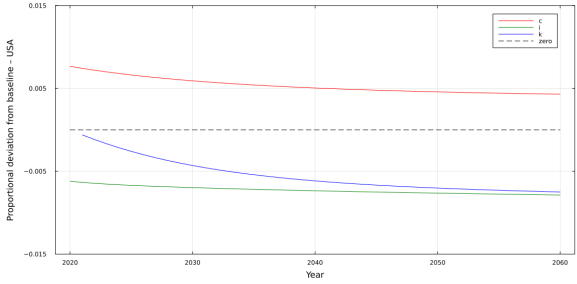
Closure	Capital-market access	What's fixed?
I. Period-by-period	*None*—no intertemporal trade	$CA_{r,t}$ fixed *every* period
II. Within-horizon	Bounded—no change in net indebtedness	PV of transfers fixed
III. Infinite-horizon	Frictionless—debt only needs servicing	Endogenous adjustment for approximation

Calibration: GTAP 11, nine regions

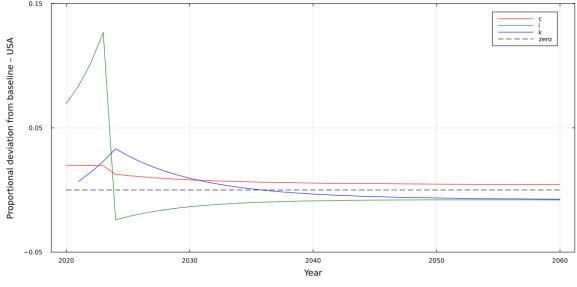
Data: GTAP 11, 2017 benchmark year.
Regions (9): USA, EU-27+, China, Canada, Mexico, South Korea, Mercosur, Rest-of-OECD, Rest-of-World

Parameter	Symbol	Value
Base year	t_0	2020
Model horizon	T	2060
Steady-state growth rate	g	0.02
Household discount rate	ρ	0.05
Capital depreciation rate	δ	0.08
Armington elasticity	ε_i	5.0
Quadratic adjustment cost	ψ	0.75

Unanticipated vs. Anticipated Shocks: Macroeconomic Responses

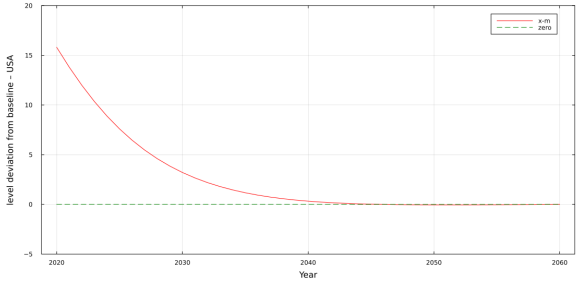


Unanticipated

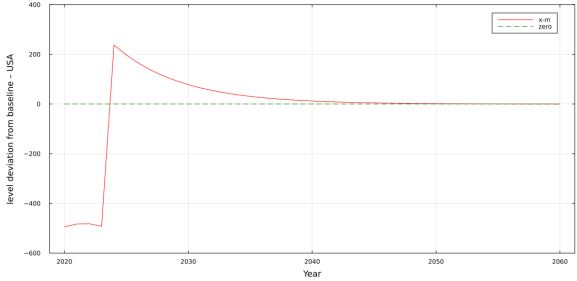


Anticipated

Unanticipated vs. Anticipated Shocks: Change in Trade Balance



Unanticipated



Anticipated

How BOP Closure Shapes Trade Balance Adjustment

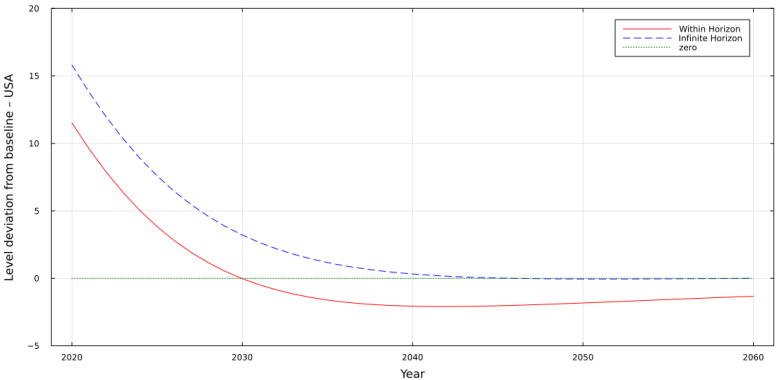


Figure: Change in Trade Balance in different BOP Closures

Optimal Tariff Analysis

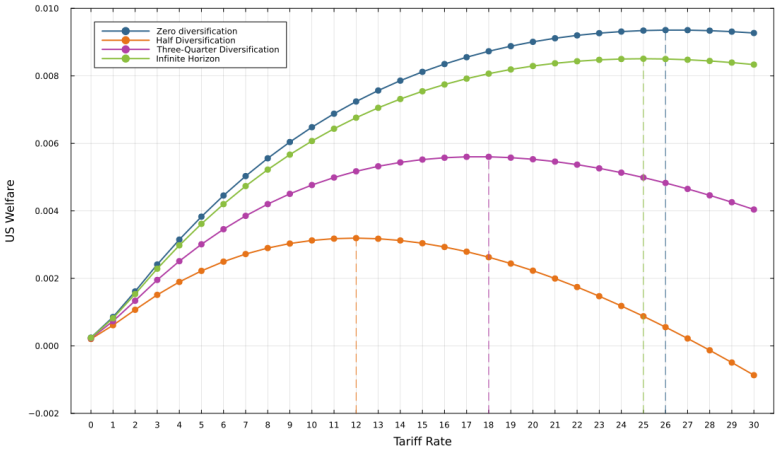
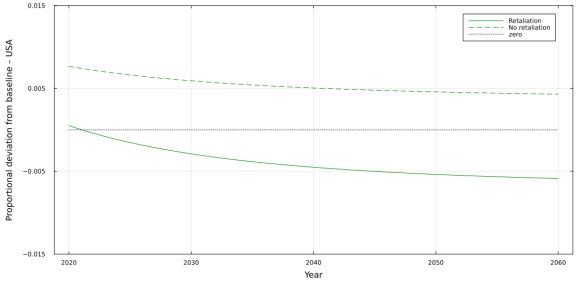
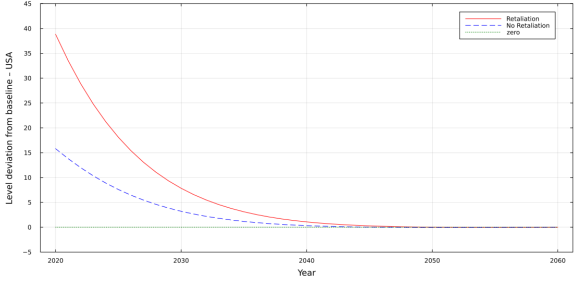


Figure: Optimal Tariff Rate under Alternative BOP Closures and Capital Diversification Assumptions

Trade War Dynamics: Retaliation vs. No Retaliation



Consumption



Trade Balance

Why Adjustment Costs Matter: Smoothing Investment Dynamics

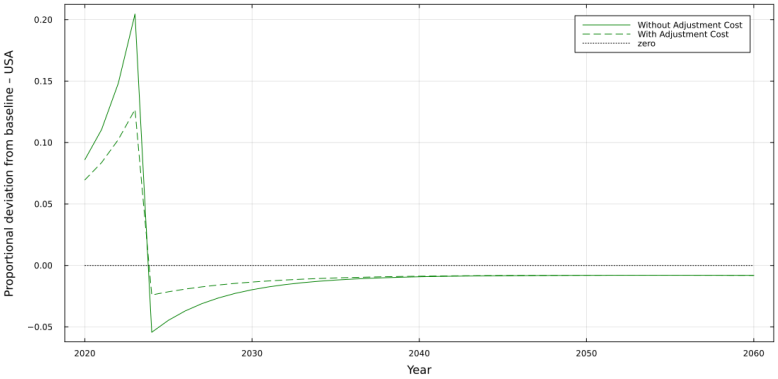


Figure: Investment response with and without quadratic adjustment costs ($\psi = 0.75$)

Some takeaways from our initial analysis

- **Anticipation matters.** A credible announcement of a tariff can cause large import surges and increased trade deficits.
- **Trade balance dynamics depend on the assumed closure.** Under a frictionless infinite-horizon balance-of-payments closure, surpluses fade smoothly. Under the within-horizon closure, they have to be paid back, so surpluses today mean deficits tomorrow.
- **The optimal tariff falls with portfolio diversification** — but without it, Johnson's 25% still holds.
- Retaliation eliminates the **terms-of-trade gains**.

Ongoing work

- **Period-by-period closure:** finish the third BoP closure so we can fully compare how capital-market access shapes the tariff response.
- **Quadratic capital adjustment costs (Uzawa, 1969):** coded but no sensitivity analyses.
- **5 year time intervals:** move from annual to 5-year intervals to shrink the model size and make room for more sectors with input-output linkages.
- **2025 base year with baseline trajectories:** update to GTAP v12 + IMF outlook.
- **Tariff dynamics with committed imports and inventories:** Lagged responses or structural trade-adjustment costs.

Thank You!

References

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