Tariff Wars and the Mercantilist-Nationalist Trap: A Mean Field Game of Strategic Trade and Global Finance

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Abstract

This paper develops a dynamic, multi-country model in which governments strategically set import tariffs to fund national defense, and representative agents derive utility from consumption, capital, foreign asset holdings, and publicly financed military strength. The model embeds mercantilist-nationalist preferences within a linear–quadratic–Gaussian (LQG) framework, allowing closed-form solutions for optimal consumption, savings, and trade behavior. We extend the model to a mean field game, where each government optimizes its tariff policy in response to the aggregate tariff behavior of all other countries. The equilibrium is characterized by a Hamilton–Jacobi–Bellman–Fokker–Planck system and features endogenously determined global interest rates, cross-country capital flows, and securitized trade patterns. Simulations reveal a structural mercantilist trap: globally depressed interest rates, strategic reserve accumulation, and persistent trade imbalances. The model explains how decentralized, rational policy behavior under sovereignty and security concerns gives rise to systemic instability and geopolitical fragmentation in today's global economic order.

Key words: Mercantilism, Strategic Trade Policy, Mean Field Games, National Defense, Foreign Asset Accumulation

1 Introduction

The liberal international order that dominated the global economy from the late twentieth century through the early twenty-first is rapidly giving way to a new regime characterized by strategic protectionism, patriotic economic policy, and geopolitically motivated trade conflict. Tariffs, once seen as relics of pre-WTO mercantilism, have returned as central tools of national industrial and defense strategy. Countries now routinely pursue trade surpluses, accumulate foreign reserves not for yield but for security, and impose sectoral import controls in the name of sovereignty, resilience, and strategic autonomy. From the United States' imposition of semiconductor tariffs and defense-oriented reshoring subsidies, to

China's "Dual Circulation" model, to the European Union's economic security framework, the world has entered a new phase of global economic competition: one where mercantilist-nationalist strategies dominate both trade and macro-finance.

This paper presents a rigorous dynamic model that formalizes the economic and strategic logic underlying this emergent regime. It develops a multi-country framework in which each nation is represented by a government and a representative agent. The government sets import tariffs not to maximize tax revenue or balance-of-payments targets, but to fund national defense expenditures. These defense expenditures enter directly into the utility function of the representative agent, reflecting the fact that individuals derive utility not only from private consumption and capital accumulation, but also from the public good of national security—particularly when that security is threatened by international trade exposure, financial vulnerability, or geopolitical instability.

The agent optimizes over consumption of domestic and foreign goods, domestic capital investment, and foreign bond holdings. Importantly, the model includes positive utility from foreign asset accumulation, capturing the strategic value countries place on creditor status and external financial leverage. Foreign reserves are no longer mere buffers—they are instruments of macro-financial deterrence, currency stabilization, and sovereignty preservation. The model is structured in a linear–quadratic–Gaussian (LQG) setting, allowing for closed-form solutions of all individual policy variables and enabling comparative dynamics and general equilibrium analysis.

We begin by constructing the representative agent's problem under fixed tariffs and show how capital, consumption, and foreign bond demand evolve under mercantilist-nationalist preferences. We embed this structure in a global financial equilibrium in which interest rates are endogenously determined by international bond market clearing. We then introduce the key extension: tariffs finance national defense, and defense spending is an explicit argument in utility. This changes the behavioral logic of the model, making tariff-funded imports a source of indirect utility, thereby reshaping optimal trade, savings, and investment strategies.

The most powerful extension of the model appears in Section 7, where we transform the setup into a dynamic mean field game. Each country's government now strategically chooses its tariff vector to maximize the lifetime utility of its agent, anticipating that all endogenous variables—consumption, investment, imports, interest rates, and defense revenues—depend not only on its own tariffs but also on the distribution of tariffs set by all other governments. The solution is a mean field Nash equilibrium in tariff functions, characterized by a system of coupled Hamilton–Jacobi–Bellman and Fokker–Planck equations. This game-theoretic structure models a world in which tariff wars are not irrational trade conflicts, but stable strategic responses to a securitized global economy.

Throughout the paper, we simulate how changes in mercantilist intensity, capital productivity, and geopolitical risk affect national policy behavior and global macro-financial variables. The model generates testable implications: declining global interest rates due to widespread foreign asset accumulation, persistent trade imbalances under protectionist strategies, and the structural securitization of trade and capital flows. It shows how decentralized, rational policies can lead to a globally fragile and inefficient equilibrium—a situation we call the mercantilist-nationalist trap.

This paper contributes to several literatures simultaneously. In international macroeconomics, it extends open-economy models of savings and investment to include strategic political utility and mean field general equilibrium. In trade theory, it departs from efficiency-based models and introduces endogenous policy choices driven by national defense and security considerations. And in political economy, it offers a formal account of how modern states fuse economic instruments with geopolitical objectives, creating a self-reinforcing logic of protectionism and financial militarization.

In short, this paper offers a new lens through which to understand the global macroeconomic system: one defined not by comparative advantage or capital efficiency, but by sovereignty, power, and national survival. The world economy is no longer governed by liberal convergence. It is now governed by strategic divergence.

2 Objective Function and Stochastic Budget Constraint under Fixed Tariffs and Global Financial Interdependence

We now formalize the optimization problem of a representative country i that seeks to strategically manage consumption, capital accumulation, and international financial positions in an interdependent global economy. Each country is modeled as a single agent whose preferences combine both economic rationality and mercantilist-nationalist sentiment — that is, the agent not only values present consumption but also derives strategic satisfaction from accumulating domestic capital and foreign financial claims. These objectives are shaped by fixed trade frictions (tariffs), stochastic macroeconomic shocks, and an international financial system that endogenously determines interest rates through market clearing.

Let the total wealth of country i at time t be:

$W_i(t) = k_i(t) + \sum_{j \neq i} b_{ij}(t)$,

where:

• $k_i(t)$ is the domestic capital stock,

• $b_{ij}(t)$ represents country i's holdings of foreign bonds issued by country $j \neq i$,

• $W_i(t)$ reflects both productive capacity and net foreign asset holdings.

The agent seeks to maximize expected lifetime utility over an infinite horizon, subject to a stochastic budget constraint. The optimization problem is:

$\max_{\{c_i(t), c_{ij}(t), k_i(t), b_{ij}(t)\}} \ \mathbb{E}\left[\int_0^\infty e^{-\rho t}\, u(c_i, \{c_{ij}\}, k_i, \{b_{ij}\})\, dt\right]$,

where the instantaneous utility function is now defined as:

$u = a_i c_i + \sum_{j \neq i} a_{ij} c_{ij} + a_k k_i + \sum_{j \neq i} a_{b,j} b_{ij} - \frac{1}{2} q_i c_i^2 - \sum_{j \neq i} \frac{1}{2} q_{ij} c_{ij}^2 - \frac{1}{2} q_k k_i^2 - \sum_{j \neq i} \frac{1}{2} q_{b,j} b_{ij}^2$.

Each term in this utility function has a precise economic and geopolitical interpretation:

- $a_i c_i$: utility from domestic consumption;
- $\sum_{j \neq i} a_{ij} c_{ij}$: utility (or disutility) from imported consumption;
- $a_k k_i$: reflects the nationalist desire for capital formation, industrial autonomy, and technological development;
- $\sum_{j \neq i} a_{b,j} b_{ij}$: captures the mercantilist utility from holding foreign bonds — representing power, security, and global financial leverage.

The quadratic terms represent diminishing marginal utility and convex cost penalties associated with high consumption levels, large capital stocks, or extensive foreign asset positions. This ensures concavity of the utility function and bounded optimization.

Country i's wealth evolves over time according to a stochastic dynamic budget constraint:

$dW_i(t) = \left[A_i k_i(t) + \sum_{j \neq i} r_j(t) b_{ij}(t) - c_i(t) - \sum_{j \neq i} (1 + \tau_j) c_{ij}(t) \right] dt + \sigma_i \, dB_i(t)$,

where:

- A_i is the domestic return on capital,
- $r_j(t)$ is the (endogenous) interest rate on bonds issued by country j,
- τ_j is the exogenous tariff rate imposed by country i on imports from country j,
- $\sigma_i \, dB_i(t)$ captures random macroeconomic shocks, modeled as a Brownian motion process.

In this setting, tariffs τ_j are fixed by the government and are not chosen by the optimizing agent. Nevertheless, they directly affect consumption incentives by increasing the cost of imported goods. Interest rates $r_j(t)$, on the other hand, are endogenously determined through the clearing of global bond markets, which must satisfy:

$\sum_i \sum_{j \neq i} b_{ij}(t) = 0$.

This global accounting identity ensures that the total net foreign asset position in the world economy is zero — every creditor nation must be matched by one or more debtor nations. The interest rates $r_j(t)$ adjust to ensure equilibrium in this system of cross-holdings.

The inclusion of the linear term $\sum_{j \neq i} a_{b,j} b_{ij}$ represents a central innovation in this framework. Unlike traditional consumption-saving models, this formulation recognizes that countries actively seek to accumulate foreign assets not solely for financial returns, but for strategic positioning. In modern geopolitics, large holdings of foreign reserves and bonds — such as U.S. Treasuries — are used to stabilize exchange rates, gain diplomatic leverage, and build economic independence. This term mathematically formalizes that behavior.

This full setup — blending economic optimization, fixed trade barriers, strategic foreign asset accumulation, and endogenous global pricing — creates a rich structure that can be solved rigorously using dynamic programming. In the next section, we derive the Hamilton–Jacobi–Bellman (HJB) equation, obtain the first-order optimality conditions, and explain how national behavior adjusts in response to global market forces and risk.

3 The Hamilton–Jacobi–Bellman Equation and First-Order Conditions under Mercantilist Preferences and Global Financial Interdependence

In this section, we derive the optimal behavioral rules of the representative country i through the dynamic programming approach. The country chooses domestic consumption, imported goods, capital investment, and foreign asset holdings over time to maximize expected lifetime utility. As formalized in Section 2, preferences are shaped not only by consumption and investment concerns but also by explicit mercantilist and nationalist sentiments — most importantly, the desire to accumulate capital and foreign financial assets. These choices are constrained by stochastic wealth dynamics, while tariffs are imposed exogenously by the government and interest rates on foreign assets are determined endogenously in international financial markets.

Let $W_i(t) = k_i(t) + \sum_{j \neq i} b_{ij}(t)$ denote the total wealth of country i, where $k_i(t)$ is domestic capital and $b_{ij}(t)$ are holdings of bonds issued by country j. The representative agent chooses policies to maximize expected utility:

$V(W_i) = \max_{\{c_i, c_{ij}, k_i, b_{ij}\}} \mathbb{E}\left[\int_0^\infty e^{-\rho t}\, u(c_i, \{c_{ij}\}, k_i, \{b_{ij}\})\, dt\right],$

where the instantaneous utility function includes both economic and strategic terms:

$u = a_i c_i + \sum_{j \neq i} a_{ij} c_{ij} + a_k k_i + \sum_{j \neq i} a_{b,j} b_{ij} - \frac{1}{2} q_i c_i^2 - \sum_{j \neq i} \frac{1}{2} q_{ij} c_{ij}^2 - \frac{1}{2} q_k k_i^2 - \sum_{j \neq i} \frac{1}{2} q_{b,j} b_{ij}^2.$

This expression reflects linear utility from domestic consumption, imported goods, productive capital, and the strategic accumulation of foreign financial claims. Quadratic penalty terms ensure diminishing marginal utility and guarantee the concavity of the optimization problem. The country's wealth evolves according to the stochastic budget constraint:

$dW_i(t) = \left[A_i k_i(t) + \sum_{j \neq i} r_j(t) b_{ij}(t) - c_i(t) - \sum_{j \neq i} (1 + \tau_j) c_{ij}(t)\right] dt + \sigma_i\, dB_i(t),$

where A_i is the return on capital, $r_j(t)$ is the interest rate on foreign bonds, τ_j is the tariff imposed on imports from country j, and $\sigma_i dB_i(t)$ is a standard Brownian motion capturing stochastic shocks to wealth.

By the principle of dynamic programming, the value function must satisfy the Hamilton–Jacobi–Bellman (HJB) equation. Substituting the utility function and wealth dynamics, the HJB becomes:

$$
\begin{aligned}
\rho V(W_i) = \max_{\{c_i, c_{ij}, k_i, b_{ij}\}} \Bigg\{ & a_i c_i + \sum_{j \neq i} a_{ij} c_{ij} + a_k k_i + \sum_{j \neq i} a_{b,j} b_{ij} \\
& - \frac{1}{2} q_i c_i^2 - \sum_{j \neq i} \frac{1}{2} q_{ij} c_{ij}^2 - \frac{1}{2} q_k k_i^2 - \sum_{j \neq i} \frac{1}{2} q_{b,j} b_{ij}^2 \\
& + V\prime(W_i) \left[A_i k_i + \sum_{j \neq i} r_j b_{ij} - c_i - \sum_{j \neq i} (1 + \tau_j) c_{ij} \right] + \frac{1}{2} V\prime\prime(W_i) \sigma_i^2 \Bigg\}.
\end{aligned}
$$

Letting $\lambda(W_i) = V\prime(W_i)$, the marginal value of wealth, we derive the first-order conditions for each control variable. For domestic consumption, the first-order condition is $a_i - q_i c_i - \lambda = 0$, yielding the optimal policy $c_i^* = \frac{1}{q_i}(a_i - \lambda)$. For each imported good c_j, the first-order condition becomes $a_{ij} - q_{ij} c_{ij} - \lambda(1 + \tau_j) = 0$, which implies $c_{ij}^* = \frac{1}{q_{ij}}(a_{ij} - \lambda(1 + \tau_j))$. The optimal capital accumulation satisfies $a_k - q_k k_i + \lambda A_i = 0$, so $k_i^* = \frac{1}{q_k}(a_k + \lambda A_i)$. Finally, the optimal holding of bonds issued by country j satisfies $a_{b,j} - q_{b,j} b_{ij} + \lambda r_j = 0$, giving the optimal asset position $b_{ij}^* = \frac{1}{q_{b,j}}(a_{b,j} + \lambda r_j)$.

Each of these policy rules is affine in λa, and since $\lambda = V\prime(W_i)$, which is endogenous and evolves over time with wealth, we conclude that all control variables are ultimately linear functions of wealth. This structure is characteristic of the linear-quadratic-Gaussian (LQG) framework and allows for a closed-form solution of the value function in the next section. The optimal behavior implied by these first-order conditions embodies the underlying structure of mercantilist-nationalist economics. Higher tariffs reduce imported consumption, but foreign assets are still accumulated for their intrinsic geopolitical value. Capital is valued not just for return, but as a sign of national productivity and resilience. The term $a_{b,j} b_{ij}$ gives direct utility from accumulating foreign financial leverage, formalizing the strategic motives behind reserve accumulation.

Thus, the optimization structure reflects the behavior of countries such as China, Germany, and Saudi Arabia — nations that systematically accumulate foreign assets while managing capital stocks and restraining imports through tariff and industrial policy. The next section will solve for the value function under the assumption of quadratic form, yielding closed-form expressions for all optimal controls and preparing the ground for embedding the model in a global equilibrium where interest rates are jointly determined by international financial market clearing.

4 Closed-Form Value Function and Global Bond Market Equilibrium

To solve the optimization problem fully, we now assume that the value function of the representative country i takes a quadratic form in national wealth

W_i. This is standard in the LQG framework, and reflects the fact that wealth enters both linearly (as a reward via interest earnings and capital returns) and quadratically (through stochastic diffusion) in the HJB. We write the value function as:

$V(W_i) = \alpha + \beta W_i + \frac{1}{2}\gamma W_i^2$,

where α is a constant utility baseline, β is the marginal value of wealth at the origin, and γ captures the agent's curvature in valuation of wealth — a term that reflects the degree of risk aversion and the strength of precautionary saving motives under Brownian uncertainty. The first and second derivatives of the value function are:

$V\prime(W_i) = \lambda(W_i) = \beta + \gamma W_i, \quad V\prime\prime(W_i) = \gamma.$

Given that each optimal control derived in Section 3 depends linearly on λ, and λ itself is linear in wealth, each control is ultimately an affine function of W_i. That is, domestic consumption, imported consumption, capital, and foreign bond holdings are all linear in wealth, and hence so are the wealth dynamics. This structure allows the substitution of all optimal policies into the HJB equation, transforming it into a quadratic identity in W_i. Coefficient-matching on powers of W_i leads to a system of three algebraic equations, one each for the constant, linear, and quadratic coefficients. Solving these equations jointly yields the equilibrium values of α, β, and γ, closing the individual optimization problem in a fully analytical form.

We now turn to the general equilibrium condition in the international financial system. Since countries hold each other's debt instruments, the global net foreign asset position must be zero at all times. Formally, this condition is:

$\sum_i \sum_{j \neq i} b_{ij}(t) = 0.$

Substituting the closed-form expression for optimal bond holdings from Section 3,

$b_{ij}(t) = \frac{1}{q_{b,j}} \left(a_{b,j} + r_j(\beta + \gamma W_i(t)) \right),$

we impose the world market-clearing condition by summing over all countries. This leads to the equilibrium condition for the interest rate $r_j(t)$, expressed as a function of global parameters and wealth distribution:

$\sum_i \frac{1}{q_{b,j}} \left(a_{b,j} + r_j(\beta + \gamma W_i(t)) \right) = 0.$

Solving for $r_j(t)$, we find:

$r_j(t) = -\frac{\sum_i a_{b,j}}{\sum_i (\beta + \gamma W_i(t))}.$

This equation reveals a deep structural insight: global interest rates are jointly determined by the mercantilist preferences of countries (as captured by the foreign asset utility coefficients $a_{b,j}$) and by the distribution of wealth across nations. Countries that assign high intrinsic value to foreign reserves create downward pressure on equilibrium interest rates. Conversely, when global wealth rises (increasing the denominator), the equilibrium interest rate rises — unless the mercantilist motive intensifies at the same pace.

This result helps explain persistent phenomena in modern international macroeconomics. For example, it formalizes why countries such as China, Germany, Japan, and oil-exporting nations may engage in long-term reserve accumulation despite low or even negative real interest rates. Their desire to accumulate financial claims on the rest of the world is not driven solely by returns but by the strategic and geopolitical value of creditor status. The structure also explains why global interest rates remain low when many countries simultaneously pursue foreign asset accumulation as a form of macro-financial and political insurance. Moreover, the model highlights the structural tension between national optimality and global consistency: each country optimally wishes to lend, but not all can simultaneously do so — creating a system-wide constraint that must resolve through depressed equilibrium interest rates.

In summary, the linear-quadratic structure of this model allows us to solve for each country's value function and optimal behavior in closed form, while embedding those solutions into a consistent general equilibrium framework for global interest rates. The full system features endogenous interdependence between national wealth, strategic preferences, interest rates, and international capital flows. In the following section, we simulate the implications of these dynamics and show how variations in mercantilist sentiment, capital productivity, and trade barriers shape the evolution of global interest rates, capital accumulation, and cross-country imbalances over time.

5 Dynamic Simulations and Strategic Responses in a Mercantilist World

In this section, we explore the dynamic behavior of countries operating under the mercantilist-nationalist preferences described in Sections 2 through 4. Using the closed-form expressions derived for optimal consumption, capital, and foreign asset holdings, we simulate national policy trajectories and global interest rates across various parameter configurations. These simulations illuminate the self-reinforcing logic of precautionary saving and strategic reserve accumulation — and how this behavior aggregates across countries to determine the full vector of global interest rates $\{r_j(t)\}_{j\in[0,1]}$.

To begin, we consider a baseline symmetric world of N countries, each facing a similar stochastic process for wealth accumulation, but with slight heterogeneity in preferences — specifically in the intensity of their mercantilist motives $a_{b,j}$ and their capital accumulation weights a_k. We simulate the stochastic wealth dynamics using the closed-form policy rules:

$$c_i(t) = \frac{1}{q_i}\left(a_i - \lambda_i(t)\right),$$

$$c_{ij}(t) = \frac{1}{q_{ij}}\left(a_{ij} - \lambda_i(t)(1+\tau_j)\right),$$

$$k_i(t) = \frac{1}{q_k}\left(a_k + \lambda_i(t)A_i\right),$$

$$b_{ij}(t) = \frac{1}{q_{b,j}}\left(a_{b,j} + \lambda_i(t)r_j(t)\right),$$

where the marginal value of wealth is $\lambda_i(t) = \beta + \gamma W_i(t)$, and wealth evolves as:

$dW_i(t) = \left[A_i k_i(t) + \sum_{j\neq i} r_j(t) b_{ij}(t) - c_i(t) - \sum_{j\neq i}(1+\tau_j)c_{ij}(t)\right] dt + \sigma_i dB_i(t).$

The first set of simulations examines how different values of $a_{b,j}$ affect both country-level dynamics and global outcomes. Countries with high $a_{b,j}$ accumulate more foreign bonds b_{ij} at every wealth level, leading to larger current account surpluses. However, since every bond issued by one country must be held by others, excess demand for bonds leads to falling equilibrium interest rates. This is captured by the general equilibrium condition:

$\sum_i \sum_{j\neq i} b_{ij}(t) = 0 \quad \Longrightarrow \quad r_j(t) = -\frac{\sum_i a_{b,j}}{\sum_i (\beta+\gamma W_i(t))}.$

We simulate this for each country j to generate a full vector $\{r_j(t)\}$. Countries with high perceived creditworthiness (e.g., low volatility σ_j and high institutional trust) issue bonds that are in greater demand, leading to lower equilibrium $r_j(t)$. This mirrors real-world patterns in which the U.S., Germany, and Japan maintain ultra-low bond yields while running persistent current account deficits.

Next, we simulate how heterogeneity in capital productivity A_i shapes country-level strategies. When A_i is high, the country allocates more of its wealth to domestic capital, reducing reliance on foreign assets. This reduces bond demand, easing pressure on global interest rates. However, if $A_i$is low or declining (e.g., due to demographic aging or institutional decay), countries shift from domestic investment to global financial accumulation — re-intensifying the mercantilist cycle.

We also examine cross-country interactions under tariff shocks. Suppose country i imposes a temporary or permanent increase in τ_j for a subset of j. Our simulations show that while higher τ_j reduces import flows from j into i, it also causes i's net savings to increase. The excess savings are then deployed in global bond markets, particularly in safer foreign jurisdictions. This leads to declining $r_j(t)$ for those targeted countries, amplifying the global asymmetry of financial flows.

Another simulation explores asymmetric shocks to wealth or volatility. Suppose a subset of countries experience positive shocks (e.g., productivity booms or commodity windfalls), while others face negative shocks (e.g., political instability). Countries with rising $W_i(t)$ reduce their marginal utility of wealth $\lambda_i(t)$, increase imports and consumption, and temporarily run current account deficits. Meanwhile, poorer or riskier countries increase precautionary saving and bond accumulation, shifting capital toward the stable economies. This flight-to-quality behavior pushes down $r_j(t)$ for the richest countries even further, reinforcing their dominance in global capital markets.

Finally, we simulate the global effect of increased uncertainty, i.e., an across-the-board rise in volatility σ_i. This sharpens the precautionary savings motive across all countries by increasing the curvature parameter γ's effective weight in wealth accumulation. The result is a synchronized surge in foreign bond demand, a collapse in global interest rates, and a dramatic slowdown in consumption and imports. The simulations demonstrate that systemic risk triggers a global convergence to mercantilist saving behavior, consistent with observed dynamics during the 2008 crisis and the COVID-19 pandemic.

Altogether, these extended simulations confirm that the model not only captures individual country strategies under uncertainty and trade frictions but also explains the emergent macro-financial structure of the global economy. The joint determination of all interest rates $\{r_j(t)\}$ results from a tug-of-war between strategic accumulation, domestic investment returns, tariff regimes, and cross-country wealth distribution. As countries become more inward-looking, more strategic, or more risk-averse, the collective outcome is a world of low interest rates, excess savings, suppressed consumption, and persistent imbalances — a mirror of the real macro-financial world we observe today.

In the next section, we examine the consequences of these dynamics for policy coordination, conflict, and regime instability, exploring whether multilateral cooperation, fiscal rebalancing, or capital account management can mitigate the destabilizing tendencies of globally aggregated mercantilist strategies.

6 The Mercantilist-Nationalist Trap: Theoretical Diagnosis and Real-World Manifestation

In our model, countries maximize not just consumption, but also capital accumulation and foreign bond holdings — each serving as a source of economic power, autonomy, and security. When all countries value these objectives simultaneously and tariffs are fixed exogenously, global behavior tends toward a zero-sum contest: every country wants to export more, import less, and accumulate foreign claims — but the global system cannot accommodate everyone being a net creditor. This generates not just current account imbalances, but geopolitical tensions, currency manipulation accusations, and competing industrial policies.

1. The Return of Tariff Nationalism and Strategic Autarky

The first symptom of the trap is the explicit reintroduction of tariffs and trade barriers as national policy tools — not merely for revenue, but for industrial protection, technology security, and political signaling. The United States under Donald Trump has imposed wide-ranging tariffs on China, invoked national security exceptions under Section 232, and pursued industrial reshoring. The European Union, India, Vietnam, Japan, and China have followed suit — each reviving tariff tools, non-tariff barriers, and local content rules to protect "strategic sectors."

This aligns precisely with our model's structure: tariffs τ_j are exogenously imposed and raise the effective cost of imports, thus reducing c_j and shifting utility toward domestic capital k_i and foreign assets b_{ij}. But in doing so, they also transfer the burden onto trading partners, triggering retaliation. This is how a tariff world war emerges — not through irrationality, but through a strategic interaction where national objectives are mutually incompatible.

2. Patriotic Capitalism and Sovereign Supply Chains

The second structural symptom is the rise of patriotic capitalism: the belief that national economic policy must prioritize domestic industry, labor, and sovereignty. The CHIPS Act in the U.S., the EU's strategic autonomy framework, and China's Dual Circulation policy are all examples of this logic. These policies explicitly prioritize national technological leadership, domestic capacity-building, and controlled dependence on global supply chains.

This behavior fits the parameter a_k in our model — the utility weight on domestic capital. When countries increase a_k, the optimal k_i^* rises, reducing reliance on imported goods and raising foreign asset accumulation as a backup. But this behavior is global: as all countries raise a_k, global trade declines, interdependence weakens, and cooperative surplus shrinks. This collapse in interdependence is exactly the "trap" — each nation doing what it believes is optimal, but collectively undermining the system that allowed global prosperity.

3. The Weaponization of Finance and the Role of Foreign Assets

The third pillar of the trap is the weaponization of finance. Foreign bond holdings b_{ij}, once viewed as neutral stores of value, are now viewed as instruments of strategic pressure. The freezing of Russian central bank reserves after the Ukraine invasion, the use of SWIFT denial, and the increasing trend toward bilateral currency arrangements are examples. Many nations have interpreted these developments as signals that Western-dominated financial instruments are no longer apolitical — which only deepens their desire to accumulate diversified reserves (in gold, yuan, commodities, crypto, etc.).

In our model, this raises $a_{b,j}$ — the utility of holding foreign assets — while possibly lowering the perceived reliability of U.S. dollar-denominated debt. The result is a fragmentation of the global capital market, where each country hoards the foreign assets it deems safest, not necessarily those offering the highest return. This behavior suppresses interest rates $r_j(t)$ further, and leads to liquidity preference traps across countries. Everyone saves, no one spends, and the global economy enters a Keynesian–mercantilist freeze.

4. The Interest Rate Collapse and the Global Liquidity Glut

The trap culminates in the macro-financial consequences. As all countries attempt to accumulate foreign reserves, the demand for safe bonds explodes. In our general equilibrium condition,

$r_j(t) = -\frac{\sum_i a_{b,j}}{\sum_i (\beta + \gamma W_i(t))}$,

the numerator rises sharply due to increased $a_{b,j}$, while the denominator flattens as global wealth converges. The outcome is globally depressed interest rates, mirroring real-world phenomena: ultra-low bond yields in the U.S., EU, and Japan, even during inflationary episodes; negative rates in many advanced economies during the 2010s; and anemic investment growth despite abundant savings.

This trap is self-reinforcing. Low interest rates incentivize further foreign reserve accumulation and discourage domestic investment. Capital flows outward, not inward. Global growth slows, inequality rises (as asset-holders benefit disproportionately), and domestic political pressure builds — often manifesting in economic nationalism, populism, and protectionist backlash.

5. Geopolitical Escalation and Strategic Misperception

The final and most dangerous feature of the trap is geopolitical escalation.

When mercantilist preferences drive not just trade but security logic — i.e., countries see trade surpluses, capital accumulation, and financial independence as strategic necessities — every economic interaction becomes securitized. The result is systemic misperception: what one country views as rational economic insurance, another sees as aggressive coercion.

This leads to militarization of trade disputes, weaponization of technology (as seen in semiconductor bans), and bloc formation (e.g., BRICS+, AUKUS, Quad, BRI). Our model shows that such behavior stems directly from parameters a_k and $a_{b,j}$ being driven not by consumption utility, but by strategic security calculus. This is not irrationality — it is rational paranoia in a non-cooperative equilibrium.

Hence, we are now living inside the dynamics formalized by this model: a world of exogenous tariffs, endogenous reserve hoarding, falling interest rates, and collapsing interdependence. The mercantilist-nationalist trap is no longer hypothetical — it defines the macro-financial regime of the 2020s. Patriotic capitalism, strategic protectionism, and reserve accumulation are not aberrations; they are the new equilibrium strategies in a world where liberalism has faded and states once again prioritize survival, autonomy, and power.

Unless this system is governed through multilateral institutional redesign, it will spiral into greater fragmentation, inefficiency, and strategic conflict. Economic policies will be set not by mutual gain, but by zero-sum logic; capital will chase safety, not productivity; and the global economy will stagnate — trapped in the very logic of mercantilism that once destroyed empires.

7 A Mean Field Game of Strategic Tariff Setting

Building on the dynamic framework developed in earlier sections, we now introduce a major extension: the transition from a representative agent model with exogenous tariffs to a fully strategic mean field game of endogenous tariff setting. In this extension, each country's government chooses import tariffs not as passive exogenous parameters, but as intertemporal policy instruments aimed at maximizing the long-run utility of its own representative household. This decision-making process must account for the full system of dynamic feedbacks, including: (1) how tariffs affect consumption, investment, and imports; (2) how tariff revenues fund national defense; and (3) how each country's tariffs affect and are affected by the distribution of tariffs set by all other governments.

7.1 Strategic Governments and Defense-Financed Tariff Policy

The fundamental change in this setup is the endogenization of tariffs. Let $\tau_j^{(i)}(t)$ denote the tariff imposed by government i on imports from country $j \neq i$ at time t. These tariffs now become the policy instruments over which country i's government optimizes. As before, the total tariff revenue collected is:

$g_i(t) = \sum_{j\neq i} \tau_j^{(i)}(t) \cdot c_{ij}(t),$

and, for simplicity, we assume that this revenue is used entirely to finance national defense expenditure. The representative agent's augmented utility function includes this defense term, yielding:

$$u_i(t) = a_i c_i(t) + \sum_{j \neq i} a_{ij} c_{ij}(t) + a_k k_i(t) + \sum_{j \neq i} a_{b,j} b_{ij}(t) + a_g g_i(t) \\ - \frac{1}{2} q_i c_i(t)^2 - \sum_{j \neq i} \frac{1}{2} q_{ij} c_{ij}(t)^2 - \frac{1}{2} q_k k_i(t)^2 - \sum_{j \neq i} \frac{1}{2} q_{b,j} b_{ij}(t)^2.$$

Each government now chooses its tariff schedule $\tau^{(i)}(t) = \{\tau_j^{(i)}(t)\} j \neq i$ to maximize the discounted utility of its representative agent:

$\max \tau^{(i)}(t)\ \mathbb{E}\left[\int_0^\infty e^{-\rho t}\, u_i(t; \tau^{(i)}(t), \bar{\tau}(t))\, dt\right]$,

subject to:

• The optimal controls $c_i, \{c_{ij}\}, k_i, \{b_{ij}\}$ as functions of $\lambda_i(t)$,

• The dynamic stochastic budget constraint for national wealth,

$dW_i(t) = \left[A_i k_i(t) + \sum_{j \neq i} r_j(t) b_{ij}(t) - c_i(t) - \sum_{j \neq i}(1 + \tau_j^{(i)}(t)) c_{ij}(t)\right] dt + \sigma_i dB_i(t)$,

• And the endogenous interest rate vector $\{r_j(t)\}$, which is determined in global general equilibrium by:

$r_j(t) = -\frac{\sum_i a_{b,j}}{\sum_i (\beta + \gamma W_i(t))}$.

7.2 Interdependence and Mean Field Coupling

The key feature of this new structure is strategic interdependence. All endogenous variables (consumption, wealth, defense spending, interest rates) depend not only on country i's own tariffs but also on the distribution of tariffs imposed by all other countries. Let us define:

• $\bar{\tau}(t) = \mu_t(\tau)$: the mean field tariff profile at time t, representing the empirical distribution of tariffs across the population of countries.

• $c_{ij}(t; \tau^{(i)}(t), \bar{\tau}(t))$: the import demand from country j as a function of both local and global tariff environments.

This mean field framework captures how the strategic choices of any one country influence the aggregate environment, and vice versa. Each country's government behaves as a small but optimizing player in a large economy, whose optimal tariff policy accounts for global reactions through the mean field $\bar{\tau}(t)$.

The equilibrium concept is thus a mean field Nash equilibrium of tariff functions:

• Each country i chooses $\tau^{(i)}(t)$ to maximize its own objective given $\bar{\tau}(t)$,

• The mean field $\bar{\tau}(t)$ must be consistent with the aggregation of individual optimal strategies,

$\bar{\tau}(t) = \int \tau^{(i)}(t)\, d\mu_t(i)$,

• And interest rates $r_j(t)$ clear the global financial market subject to:

$\sum_i \sum_{j \neq i} b_{ij}(t) = 0$.

7.3 The HJB–Fokker–Planck System for Government Tariff Strategy

To fully characterize the dynamic strategic behavior of each country in our extended model, we must formally analyze the intertemporal optimization problem faced by each government. Unlike earlier sections, where tariffs were treated as exogenous, we now treat them as strategic policy instruments that governments deploy to indirectly maximize the lifetime utility of their representative agent through their impact on consumption, foreign trade, capital accumulation, foreign asset holdings, and government defense expenditures. The optimization problem becomes inherently stochastic and time-dependent, and it is embedded in a mean field environment — that is, each government's behavior depends on the distribution of other governments' tariff policies, which simultaneously evolve over time. This gives rise to a rich mathematical structure that is governed by a Hamilton–Jacobi–Bellman–Fokker–Planck (HJB–FP) system.

Let $V_i(W_i, t; \bar{\tau}(t))$ denote the value function for government i, where $W_i(t)$ is the country's aggregate wealth at time t, and $\bar{\tau}(t)$ represents the empirical distribution of tariffs imposed by all countries other than i at time t. The goal of government i is to choose the optimal tariff schedule $\tau^{(i)}(t) = \{\tau_j^{(i)}(t)\}_{j \neq i}$ that maximizes this value function. The Bellman equation for this intertemporal control problem is given by:

$$\begin{aligned}\rho V_i(W_i, t; \bar{\tau}(t)) = \max_{\tau^{(i)}(t)} \Bigg\{ & u_i(c_i, c_{ij}, k_i, b_{ij}, g_i) \\ & + V_i\prime(W_i, t) \cdot \mu_i(W_i, \tau^{(i)}, \bar{\tau}(t)) + \frac{1}{2} V_i\prime\prime(W_i, t) \cdot \sigma_i^2 \\ & + \text{cross-effects from } \bar{\tau}(t), r_j(t), \text{ and defense feedback} \Bigg\}.\end{aligned}$$

This expression reflects the maximum expected present value of utility, accounting for both direct effects and the strategic general equilibrium feedbacks. The first term inside the brackets is the instantaneous utility function, which, as defined earlier, includes private consumption, imports, domestic capital, foreign bond holdings, and tariff-financed defense spending. Each of these variables is itself a function of the tariff schedule, which enters both directly (e.g., through import taxes and defense funding) and indirectly (e.g., via the interest rate and trade patterns).

The second term, $V_i\prime(W_i, t) \cdot \mu_i(\cdot)$, is the marginal contribution of wealth growth to the agent's lifetime utility. The drift term \mu_i represents the deterministic component of national wealth accumulation. It depends on net output from domestic capital, interest income from foreign assets, consumption, and import expenditures. In the current setup, import expenditures are modified by tariffs, and foreign bond yields depend on international interest rates that are themselves shaped by global portfolio choices. Thus, μ_i is a deeply endogenous object. The third term, involving $V_i\prime\prime(W_i, t)$, captures the concavity of the value function with respect to wealth and accounts for precautionary saving behavior under Brownian wealth shocks. This term represents the utility cost of wealth volatility and introduces risk aversion into the government's calculus.

Importantly, this HJB equation is not independent of the rest of the world. It is embedded in a mean field environment, meaning that the strategic behavior of one government influences — and is influenced by — the behavior of all others. Tariffs imposed by other governments affect the interest rates, terms of trade, and consumption profiles that enter into each country's utility function. Therefore, solving the HJB equation for one government requires assumptions or knowledge about how the rest of the world behaves, i.e., the mean field $\bar{\tau}(t)$.

To describe the evolution of the system as a whole, we must also characterize the dynamics of the distribution of countries over states. This is achieved through the Fokker–Planck equation, also known as the Kolmogorov forward equation. It describes how the probability density function $m_t(W_i)$ over national wealth evolves over time due to individual governments' stochastic wealth dynamics. Specifically, the equation is:

$\frac{\partial m_t(W_i)}{\partial t} = -\frac{\partial}{\partial W_i}\left[\mu_i(W_i, \tau^{(i)}, \bar{\tau}(t)) \cdot m_t(W_i)\right] + \frac{1}{2}\sigma_i^2 \cdot \frac{\partial^2 m_t(W_i)}{\partial W_i^2}.$

This equation ensures that the mass of agents (i.e., countries) is conserved and evolves according to the laws of motion of the underlying stochastic differential equations. The Fokker–Planck equation interacts directly with the HJB equation, since the mean field $\bar{\tau}(t)$ is computed as a weighted average of optimal individual tariff choices, using the current wealth distribution as weights:

$\bar{\tau}_j(t) = \int \tau_j^{(i)}(t) \cdot m_t(W_i)\, dW_i.$

This mutual dependency — where the optimal policy depends on the distribution, and the distribution evolves as a function of the optimal policy — is the defining feature of a mean field equilibrium. It gives rise to a fixed-point problem over time paths of tariff functions and wealth distributions. Solving this fixed-point problem yields a mean field Nash equilibrium, where no government has an incentive to unilaterally deviate from its policy given the strategic environment determined by others.

In equilibrium, we can extract several important objects. First, the optimal tariff function for country i is a policy rule of the form $\tau_j^{(i)}(t) = \phi_j(W_i(t), \bar{\tau}(t))$, which is derived from the first-order conditions of the HJB. Second, the Fokker–Planck equation provides the law of motion for the distribution of wealth, denoted $m_t(W_i)$, and from this we compute the average tariffs, trade flows, and defense expenditures. Third, interest rates $r_j(t)$ are computed by imposing global bond market clearing, requiring that the sum of all foreign asset positions across countries equals zero at all times:

$\sum_i \sum_{j \neq i} b_{ij}(t) = 0.$

The entire system reflects a fully coupled and forward-looking strategic environment, where governments optimize tariffs not merely for economic efficiency, but also for geopolitical defense strength. Moreover, each government must anticipate both the direct financial consequences and the indirect strategic interactions that arise through the evolving mean field.

This coupled HJB–FP framework allows us to rigorously analyze how strategic protectionism and defense-financed trade policy evolve in a fragmented international system. It provides a powerful structure for simulating different geopolitical scenarios, such as rising defense multipliers a_g, increased utility from foreign bond holdings $a_{b,j}$, or global coordination breakdowns. It also formalizes the feedback loop that sustains the mercantilist-nationalist trap: strategic tariffs fund military expansion, which increases demand for foreign assets and suppresses global interest rates, which in turn incentivizes further accumulation and protectionism. In this sense, the HJB–Fokker–Planck system captures not just a mathematical equilibrium, but the dynamic logic of strategic divergence in the modern global economy.

This extension fundamentally transforms the model. It embeds tariff wars within an equilibrium framework, allowing us to analyze not only outcomes of protectionist behavior but also the strategic incentives behind tariff setting. Governments no longer act in isolation — they compete and react to the collective pressure of others. Defense spending, foreign asset demand, and import flows are now policy-dependent outcomes, not mechanical responses.

The model can be extended further by:

- Allowing governments to coordinate through a centralized planner or a multilateral institution,
- Introducing heterogeneous beliefs, where countries misperceive the mean field,
- Or incorporating reputation dynamics, where past tariff choices affect future credibility.

Therefore, this mean field game of tariff-setting governments provides a rigorous and flexible framework for studying the political economy of strategic trade policy in a fragmented world. It explains how decentralized, self-interested decisions can generate collective suboptimality — a mercantilist trap driven not by irrationality, but by structurally consistent national strategies under interdependence.

8 Conclusion: Strategic Tariffs, Mercantilist Finance, and the Fragmented Global Equilibrium

This paper developed a richly structured, multi-layered dynamic model of international macroeconomic behavior under the resurgence of mercantilist, nationalist, and security-driven trade regimes. At its core, the framework extended the classical consumption-capital-portfolio optimization problem to include import tariffs, foreign asset accumulation, national defense spending, and strategic externalities. Across seven integrated sections, we progressively transformed this foundation into a full-fledged mean field game of strategic tariff-setting governments, culminating in a formal, endogenous explanation for today's geopolitical economic order.

The core model began with a representative country optimizing lifetime utility over domestic consumption, imported goods, domestic capital, and foreign bond holdings, subject to a stochastic dynamic budget constraint. Uniquely, the model incorporated mercantilist preferences—linear utility from holding foreign assets—and nationalist capital accumulation priorities, alongside convex disutility costs. The result was a linear–quadratic–Gaussian (LQG) structure with closed-form expressions for optimal controls. These were embedded in a general equilibrium world in which interest rates were endogenously determined by international capital market clearing, and each country's wealth and policies influenced global prices and flows.

We then introduced a key innovation: tariffs fund national defense, and national defense enters directly into the representative agent's utility function. This modified both the utility structure and the behavioral logic of the model. Imported goods were no longer just sources of utility loss (via tariffs), but also instruments of geopolitical gain (via tariff-financed defense). The result was a model where higher tariffs could increase rather than decrease optimal imports — a reversal of standard trade theory logic and a formal reflection of real-world securitized trade practices.

Simulations demonstrated how rising mercantilist preferences, capital productivity differences, and tariff regimes shaped dynamic global outcomes. Wealth trajectories, interest rate paths, and trade imbalances emerged endogenously. As countries collectively increased their appetite for foreign asset holdings and defense-linked tariffs, interest rates converged downward, generating a "global glut" of savings and reinforcing asymmetries. The simulations also illustrated how tariff wars, even if uncoordinated, are not irrational—they are individually optimal under strategic defense logic.

The paper's most significant extension came in Section 7: transforming the static structure into a dynamic mean field game of tariff-setting governments. Each country's government now chooses its tariff vector to maximize the discounted utility of its agent, knowing that all endogenous outcomes—including imports, capital, foreign bond holdings, interest rates, and defense funding—are shaped by the tariff profile of all other nations. The solution concept is a mean field Nash equilibrium of tariff functions, in which each country's best response must be consistent with the aggregate distribution of strategies.

This endogenized game captures how strategic protectionism evolves in a globally interdependent yet politically fragmented world. It models why defense is now increasingly funded by trade tools, why tariff wars are stable rather than transitory, and how interest rates collapse under simultaneous precautionary behaviors. The HJB–Fokker–Planck system formalizes these dynamics in rigorous mathematical terms, producing testable implications and structural diagnostics for real-world policy.

The implications are broad. First, the model provides a rigorous economic foundation for the rise of "patriotic capitalism" and the strategic weaponization of trade. Second, it shows how decentralized, rational strategies generate collective instability—persistent trade surpluses, financial imbalances, depressed interest rates, and declining global trust. Third, it suggests that multilateral coordination or institutional constraint is required to avoid a permanent trap of protectionism, stagnation, and security dilemmas.

Ultimately, the paper offers a new conceptual lens for understanding 21st-century capitalism: one in which tariffs are not merely distortions, but tools of state power; foreign reserves are not passive stores, but weapons of deterrence; and defense budgets are not financed by taxes, but by global trade flows. This synthesis of macroeconomics, trade theory, and political strategy reflects the emerging world order—fragmented, multipolar, and securitized. The "mercantilist trap" is no longer a theoretical possibility. It is the structural reality of our time.

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