Comment on: "The U.S. Trade Deficits: Myths and Realities" by Maurice Obstfeld*

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1 Introduction

I have rarely seen a more timely paper than this work by Maury Obstfeld. With his usual nose for relevant and important issues, Maury wrote this paper way before the White House brought the trade deficit and tariffs on the first page of the world news. The first contribution of this paper, as I see it, is to stress that trade deficits and tariffs are not necessarily as tightly connected as it has been argued by the current administration.[1] Tariffs do make foreign goods more expensive for domestic residents, but do not necessarily reduce trade (or current account) deficits, as the current account is the result of intertemporal investment/consumption decision relative to the income profile of the residents of a country. Another important insight from the paper is that, in an economy at full employment like the U.S. is currently, the link between tariffs and job creation is tenuous. Supporters of tariffs use the very influential China Syndrome work (Autor et al. 2013) to argue that imposing tariffs on China will bring jobs back to many communities that have lost these jobs to import competition. Maury points out

*The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

[1]See the note issued by the Office of the United States Trade Representative 2025

that while tariffs may shift jobs to sectors competing with imports, with the economy close to full employment those jobs must come from elsewhere in the economy, implying offsetting job losses. Although the trade literature has extensively examined the microeconomic impact of tariffs, there has been, so far, relatively less work on their broader macroeconomic effects. The change in trade policy that took place on April 2^{nd} 2025 has brought tariffs and trade deficits at the forefront of the macro debate, and one can argue that this paper by Maury got things started.[2] The objective of this discussion is to present a simple extension of a standard textbook framework of international macro that allows to asses how tariffs affect trade deficits, net foreign asset position, jobs and the response of key variables to future shocks. The overall objective is to build and expand on the work of Maury, of providing more light on the myths and realities surrounding the causes of trade deficits and their connection with tariffs.

2 A textbook framework

The framework I use to discuss the macro implications of tariffs is a simple extension of the standard international business cycle set-up of Backus et al. (1994). I extend the standard set-up along two dimensions. First, as a big motivation for tariffs is to increase jobs in sectors which are competing with imports, I will introduce, in each country, a sector which produces a good which is vulnerable to foreign competition, and which therefore benefits from tariffs. Second I will introduce, in a simple way, international equity diversification, so that the set-up can speak not only about the impact of tariffs on trade deficits but also on net foreign asset positions, through valuation effects.

Consider a two country (home and foreign) symmetric economy where in each country competitive firms produce, using capital, labor and a constant returns to scale technology, 2 varieties of 2 intermediate goods, *a*luminum and *b*ricks. Home firms produce varieties a and b, while foreign firms produce varieties a^* and b^*. Good a is the "dominant" good for home, in the sense that home firms have higher TFP in producing a than in producing b, while good b is the dominant good for foreign firms, which have higher productivity in producing b^* than a^*. The following equations describe the production of the 4 intermediate varieties in the two

[2]Recent contribution include, among others, Waugh (2019), Barattieri et al. (2021), Bergin and Corsetti (2023), Bianchi and Coulibaly (2025), Auray et al. (2025), Auclert et al. (2025), Itskhoki and Mukhin (2025), Kalemli-Özcan et al. (2025)

countries

$$\begin{aligned} y_{a,t} &= e^{z_t+\gamma} k_{a,t-1}^{\alpha} l_{a,t}^{1-\alpha} \\ y_{b,t} &= e^{z_t} k_{b,t-1}^{\alpha} l_{b,t}^{1-\alpha} \\ y_{b^*,t} &= e^{z_t^*+\gamma} k_{b^*,t-1}^{\alpha} l_{b^*,t}^{1-\alpha} \\ y_{a^*,t} &= e^{z_t^*} k_{a^*,t-1}^{\alpha} l_{a^*,t}^{1-\alpha} \end{aligned}$$

where $y_{j,t}, l_{j.t,}, k_{j,t-1}$, with $j = a, b, a^*, b^*$ represent output, labor and installed capital for each of the four varieties, z_t and z_t^* are country specific productivity shocks, $\gamma > 0$ is the parameter that determines the productivity advantage of the home country in producing good a (and of the foreign country in producing good b). Each variety produced in the two countries is either destined for domestic use ($d_{j,t}$) or for export in the other country ($x_{j,t}$) so the following equations hold

$$\begin{aligned} y_{a,t} &= x_{a,t} + d_{a,t} \\ y_{b,t} &= x_{b,t} + d_{b,t} \\ y_{a^*,t} &= x_{a^*,t} + d_{a^*,t} \\ y_{b^*,t} &= x_{b^*,t} + d_{b^*,t} \end{aligned}$$

In each country another set of competitive firms operate constant return to scale technologies to combine all 4 varieties to produce country specific final goods F_t and F_t^*. The technologies are described by

$$\begin{aligned} F_t &= \left(G(d_{a,t}, x_{a^*,t})\right)^{\theta} \left(G(d_{b,t}, x_{b^*,t})\right)^{1-\theta} \\ F_t^* &= \left(G(d_{b^*,t}, x_{b,t})\right)^{\theta} \left(G(d_{a^*,t}, x_{a,t})\right)^{1-\theta} \end{aligned}$$

where the parameter $\theta > 0$ captures the importance of each intermediate in the production of the final and $G(d, x)$ is a CES function of the following form

$$G(d, x) = \left[\omega d^{\frac{\sigma-1}{\sigma}} + (1-\omega) x^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}}$$

The parameter σ governs the elasticity of substitution between varieties, which is assumed to be larger than 1, capturing the fact that home and foreign varieties of the same good are

relatively easy to substitute in the production of the final good. The parameter ω governs the degree of home bias, and is assumed to be larger than 0.5, capturing an import share which is typically less than 50%. Notice that sector b at home (and sector a^* abroad) is vulnerable to foreign competition: the variety it produces can be easily ($\sigma > 1$) substituted with the foreign variety b^*, which is also produced more efficiently (As b is the dominant sector in foreign).

The final goods are used for consumption (c) and investment (i) in each of the two intermediate sectors so that

$$\begin{aligned} F_t &= c_t + i_{a,t} + i_{b,t} \\ F_t^* &= c_t^* + i_{a^*,t}^* + i_{b^*,t}^* \end{aligned}$$

Moving now to prices, the price of the domestic final good F_t is normalized to 1, while the price of the foreign final in terms of the domestic final (the real exchange rate) is denoted by e_t. Prices (at the dock, i.e. before tariffs are levied) of each of the four varieties relative to the final good in each country are denoted by $\chi_{j,t}$ and $\chi_{j,t}^*$ with $j = a, b, a^*, b^*$.

2.1 Firms' problem and tariffs

Intermediate goods firms operate the capital stocks, which are owned by domestic and foreign households. Their problem is standard, as they maximize the present discounted value of payouts. Here I write only the problem of firms producing variety a, as the problems of the producers of the other varieties are similar. Firms choose employment $l_{a,t}$ and investment $i_{a,t}$ to solve

$$\max_{l_{a,t}, i_{a,t}} \mathbb{E} \sum_{t=0}^{\infty} M_{a,t} p_{a,t} \qquad (1)$$

$$s.t.$$

$$\begin{aligned} p_{a,t} &= \chi_{a,t} y_{a,t} - w_{a,t} l_{a,t} - i_{a,t} \\ y_{a,t} &= e^{z_t + \gamma} k_{a,t-1}^{\alpha} l_{a,t}^{1-\alpha} \\ z_{t+1} &= \rho_z z_t + \varepsilon_{z,t} \\ k_{a,t+1} &= (1-\delta) k_{a,t} + i_{a,t} \end{aligned}$$

$k_{a,-1}, z_0$ given

where $p_{a,t}$ is the payout (in units of the home final good) of domestic firms that produce the a variety, $M_{a,t}$ is the stochastic discount factor the firms use to value future payouts, $w_{a,t}$ are wages (in units of the home final good) received by workers in the a sector, $\rho_z > 0$ is a parameter capturing the persistence of country specific productivity shocks, $\varepsilon_{z,t}$ is a zero mean normally distributed shock and δ is the depreciation rate of capital. Firms producing the final good also have a standard static problem for each period t, and, again for brevity, here we write the problem of the home firms, as the problem of foreign firms is symmetric

$$\begin{aligned} & \max_{d_{a,t}, x_{a^*,t}, d_{b,t}, x_{b^*,t}} F_t - d_{a,t}\chi_{a,t} - d_{b,t}\chi_{b,t} - (1+\tau_t)\left(x_{a^*,t}\chi_{a^*,t} - x_{b^*,t}\chi_{b^*,t}\right) \qquad (2) \\ & s.t. \\ F_t \;=\; & \left(G(d_{a,t}, x_{a^*,t})\right)^{\theta} \left(G(d_{b,t}, x_{b^*,t})\right)^{1-\theta} \end{aligned}$$

where τ_t is the tariff rate imposed by the home country on all its imports. All agents in the model expect domestic tariffs to follow an autoregressive process of the form

$$\tau_t = \rho_\tau \tau_{t-1} + \varepsilon_{\tau,t}$$

where $\rho_\tau > 0$ captures the expected persistence of tariffs and $\varepsilon_{\tau,t}$ is a zero-mean normally distributed shock.

2.2 Households

Both countries are inhabited by infinitely lived households, which derive utility from consumption, disutility from labor, supply labor to firms in both sectors and receive wage payments in exchange. Households also hold a fixed, diversified portfolio of claims to the capital of the intermediate producing firms, that each period deliver payouts $p_{j,t}$ with $j = a, b, a^*, b^*$. Consistently with data, I assume that this portfolio is biased toward firms of their own country and denote with the parameter $\lambda > 0.5$ the share of firms of their own country owned by households. Households also receive tariff revenues and trade internationally a one period bond B_t (denominated in units of the domestic good) at price q_t. The problem of domestic households

can then be written as

$$\max_{c_t, l_{a,t}, l_{b,t}, B_t} \mathbb{E} \sum_{t=0}^{\infty} \beta^t \left[\log(c_t) - (l_{a,t} + l_{b,t})^2 \right] \tag{3}$$

$$s.t.$$

$$\begin{aligned} c_t + q_t B_{t+1} &= w_{a,t} l_{a,t} + w_{b,t} l_{b,t} + \lambda(p_{a,t} + p_{b,t}) + (1-\lambda)(e_t p^*_{a^*,t} + e_t p^*_{b^*,t}) \\ &\quad + \tau_t(x_{a^*,t}\chi_{a^*,t} + x_{b^*,t}\chi_{b^*,t}) + B_t \\ B_0 &= 0 \end{aligned}$$

where β is the households' discount factor. The assumption that $\lambda > 0.5$ implies that the majority of the intermediate firms are owned by housholds of their own country, so I assume that stochastic discount factor that firm use to value future payouts is simply the stochastic discount factor of households in their country so that

$$\begin{aligned} M_{a.t} &= M_{b,t} = \beta^t \frac{c_0}{c_t} \\ M_{a^*,t} &= M_{b^*,t} = \beta^t \frac{c^*_0}{c^*_t} \end{aligned}$$

Finally, the net foreign asset position (NFA_t) for the home country is given by

$$NFA_t = (1-\lambda)(e_t\,(k_{a^*,t} + k_{b^*,t}) - k_{a,t} - k_{b,t}) + B_t$$

2.3 Equilibrium

An equilibrium for this economy is standard. It is a sequence for all prices, quantities, tariffs and productivities, such that: given prices and expectations of tariffs and productivities, consumers solve problems 3, firms solve problems 1 and 2, all markets clear and paths for tariffs and productivities are consistent with expectations. Given parameter values and realization of shocks, equilibrium paths can be computed using standard linearization techniques.

2.4 Parameterization

A period in the model is one year. All values of the parameters are reported in Table 1 below.[3] Most parameter values are standard in this literature. Here I briefly discuss the parameters that are more important for determining trade flows and the impact of tariffs. The parameters

[3]Codes used to run the experiments are available on the author's website.

Table 1: Parameter Values

Symbol	Name	Value
α	Capital exponent in production	0.36
β	Discount factor	0.98
δ	Depreciation of capital	10%
θ	Exponent on home good	0.55
λ	Home bias in firms ownership	0.6
ω	Weight on domestic varieties	0.65
γ	Productivity gap	20%
σ	Elasticity of substitution between home and foreign varieties	3
ρ_τ	Persistence of tariffs	0.9
ρ_z	Persistence of productivity	0.95

θ and γ determine the size of the dominant sector in each country. I set $\theta = 0.55$ and $\gamma = 20\%$, and these values imply a size of the dominant sector which is around 60% of value added in each country. These choices imply that the larger size of the dominant sector is due both to preferences ($\theta > 0.5$ implies that in each country the intermediate dominant good has a larger share in the production of the final) and to productivity ($\gamma > 0$ implies that in each country TFP in the production of the dominant good is higher). I set $\omega = 0.65$ so to get an overall trade share of around 15%. I set the elasticity of substitution between home and foreign varieties to 3. This relatively high value is chosen so to give tariffs a better chance to create more jobs in the sector vulnerable to foreign competition. The parameter λ is set to 0.6 to reflect a share of US equity owned by foreigners of around 40% (Atkeson et al. 2025). Finally, as it is clear from the policy discussions and trade negotiations in early 2025, there is large uncertainty regarding the parameter ρ_τ, namely the persistence of the tariff shock. In the first experiment I will set it to 0.9, implying that tariffs have an half life of about 6 years, and in the second experiment I will consider a scenario in which tariffs are permanent.

3 Experiments

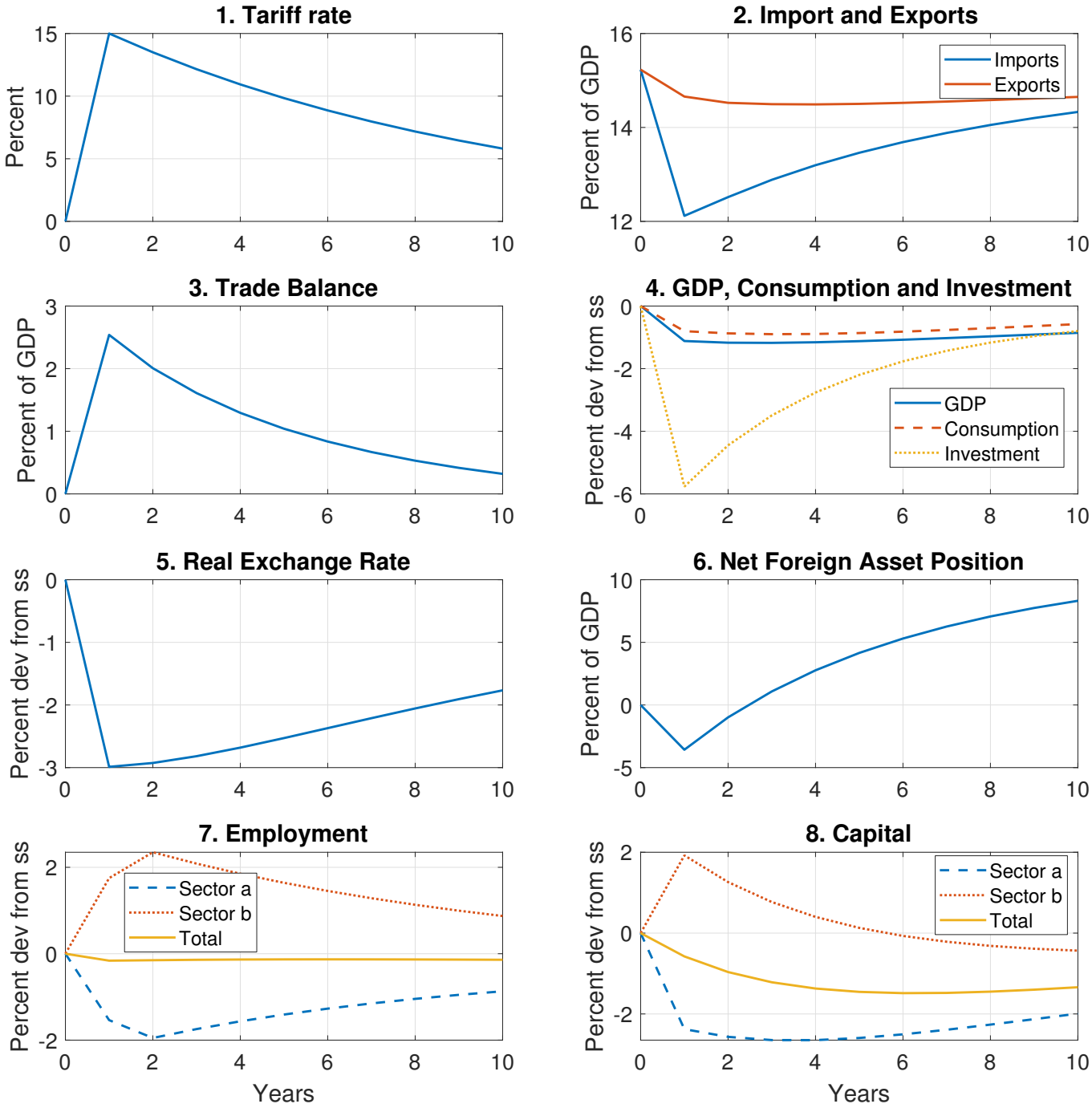
I am now in the position of analyzing the impact of tariffs in this standard international macro set-up.

3.1 Unilateral increase in tariffs

I will first consider an unilateral persistent increase of tariffs by the home country, from 0 to 15% and discuss its impact on the external balance of the home economy and on the employment outcomes, which are the main stated objectives of the implementation of the 2025 U.S. tariffs. The results are presented in Figure 1.

Panel (1) shows the expected path of tariffs after the initial shock is realized, showing that tariffs are expected to fall but to remain elevated for a number of years. Panel (2) shows that tariffs cause a sharp fall in imports and a milder fall in exports. Tariffs make the foreign varieties more expensive at home, so firms producing the final good substitute the imports with domestic varieties. This in turn makes domestic varieties more expensive on the international markets and foreign final producers use less of those, leading to a decline in exports. Since the decline in imports is larger than the decline in exports, panel (3) shows that the trade balance improves by about 3% of GDP. To understand the economics behind the trade balance improvement it is useful to consider panel (4) that shows the response of GDP, consumption and investment. As the tariffs distort the efficient allocation of resources domestically, home GDP falls. Consumption also falls, albeit slightly less than GDP, due to standard consumption smoothing behavior. However the driver of the current account is, as it is well understood, investment. Domestic producers want to cut production during the periods when tariffs are high and the economy is inefficient, and want to resume production later. This give rise to a large drop in investment, which results in a trade surplus. So, as Maury stresses in his paper, tariffs affect the trade surplus not because the make foreign goods more expensive but because they, temporarily, reduce the desire to invest in the domestic economy much more than they reduce output. Panel (5) plots the impact on real exchange rate. As tariffs redirect demand of the final good producers toward domestic varieties, which are more intensively used at home, they drive up their international price and drive appreciation of the real exchange rate. The impact appreciation of the exchange rate acts a negative valuation effect for the home country, as it reduces the value of its holdings of foreign capital. So on impact tariffs cause a decline of the home net foreign asset position. Over time however, due to the accumulated trade surplus (which drives an increase in the domestic bond position B_t) the net foreign asset position turns positive (see panel 6). Finally panels (7) and (8) shows the reallocation impact of the tariffs. As the home country is mainly an importer of variety b^*, which can be substituted with domestic variety b, the tariff leads to reallocation of labor and capital from sector a (which

Figure 1: Impact of Tariffs on the home economy



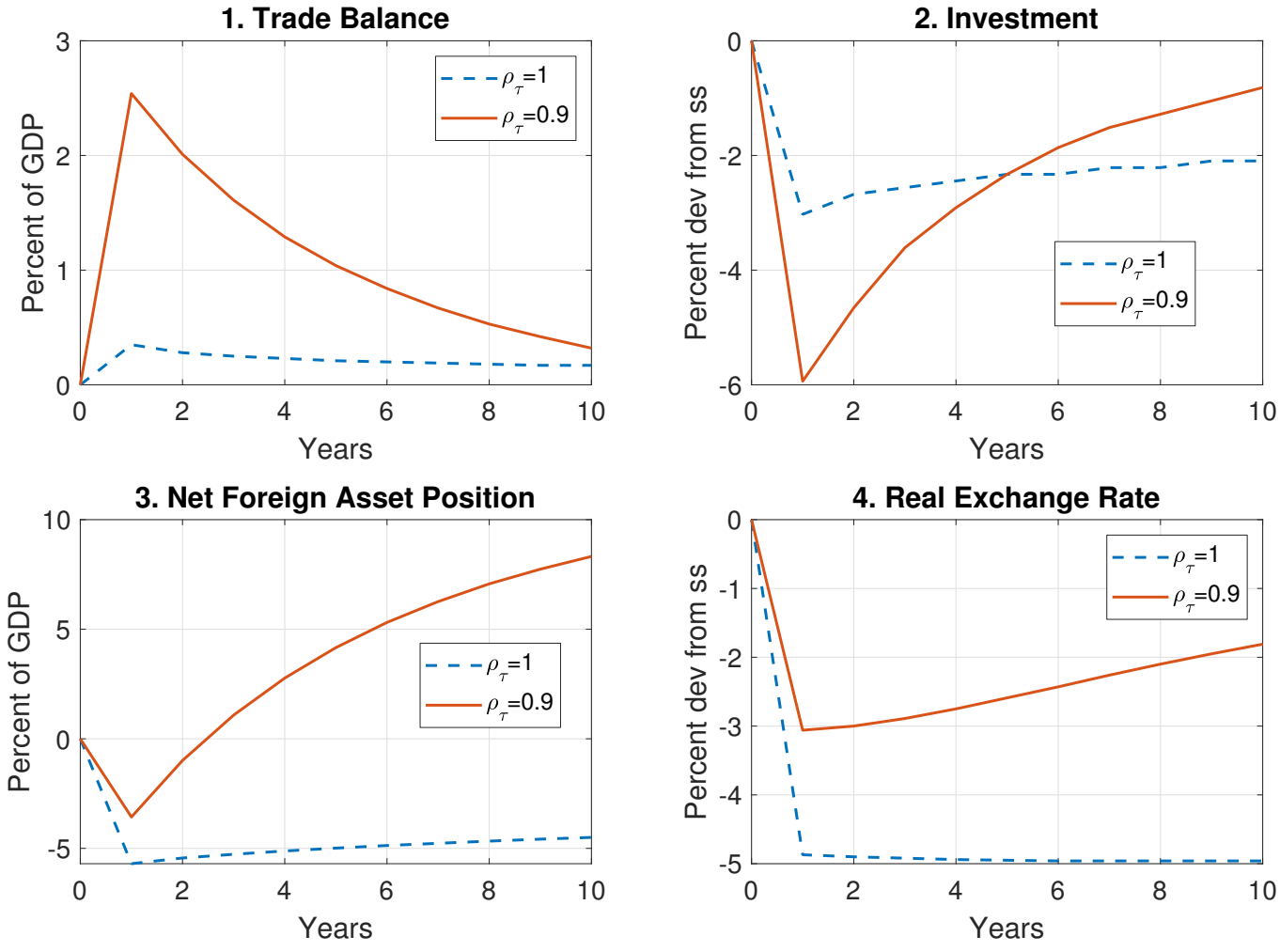
is the sector that also exports more) to sector b. Note however, that the overall employment effect is negative, as higher tariffs induce reallocation from the more efficient a sector to the less efficient b sector, making the overall economy less productive and leading to overall decline in employment and capital. To sum up, a unilateral tariff shock is similar to a negative productivity shock for the home country. It reduces overall output of home goods, increases their prices, reduces employment, investment and improves the trade balance. If the reduction of the trade deficit and the increase in employment in the less efficient sectors (vulnerable to foreign competition) are explicitly policy goals, then tariffs do the job; however results shown here highlight that achieving these objectives comes at the cost of reducing in employment in other sectors of the economy, and overall reduction of employment, investment, consumption and output in the country that adopts the tariff. Next I use the framework to present two additional results on the impact of tariffs on trade deficits. The first regards the importance of the persistence of tariffs, and the second regards deficit responses to shocks, with or without tariffs.

3.2 The role of tariff persistence

The positive impact of tariffs on trade deficits is driven by the fact that temporarily high tariffs induce a temporary large fall in home investment and a corresponding increase in the desire of saving in the international bond. If tariffs are, and are perceived to be, permanent then they cause a more muted response of trade balance and a persistently negative impact on the net foreign asset position. Figure 2 illustrates the response of trade balance (Panel 1), Investment (Panel 2), Net Foreign Asset position (Panel 3) and Real Exchange Rate (Panel 4) to tariff in the baseline case (as in Figure 1 above) and in the case with permanent tariffs ($\rho_\tau = 1$). Panel (1) shows that the response of the trade balance is much more muted when tariffs are permanent. The reason for the muted response is that when tariffs are permanent the home country does not want to temporarily drop investment, to resume it later when tariffs are gone. It just wants to do a smaller, but more persistent reduction in investment (see Panel 2). With permanent tariffs the economy moves to a new steady state with lower efficiency, and the home country will have slightly lower capital and slightly more international bonds. Interestingly, Panel (3) shows that the persistence of tariff is also very important for the response of the net foreign asset position. In the case of non permanent tariffs ($\rho_\tau = 0.9$), initial negative valuation effects on the net foreign asset position are offset over time by positive trade balances and by depreciation of the domestic currency after the first period. In the case of permanent tariffs

both the positive trade balances (Panel 1) and the real exchange rate depreciation are much smaller (see Panel 4), so the impact of tariffs on the net foreign asset position is persistently negative. Beside the persistence of tariffs there is another important factor that limits the impact of tariffs on trade imbalance, namely retaliation. From the discussion so far it should be clear that tariffs improve the trade balance only when they increase the saving motive of home households relative to the one of foreign ones. In the event of foreign retaliation (that is the case in which $\tau_t^* = \tau_t$ for every t) the model can be used to show that saving motive in both countries increase, so overall there is no impact on trade balance, but only a reduction in the world interest rate.

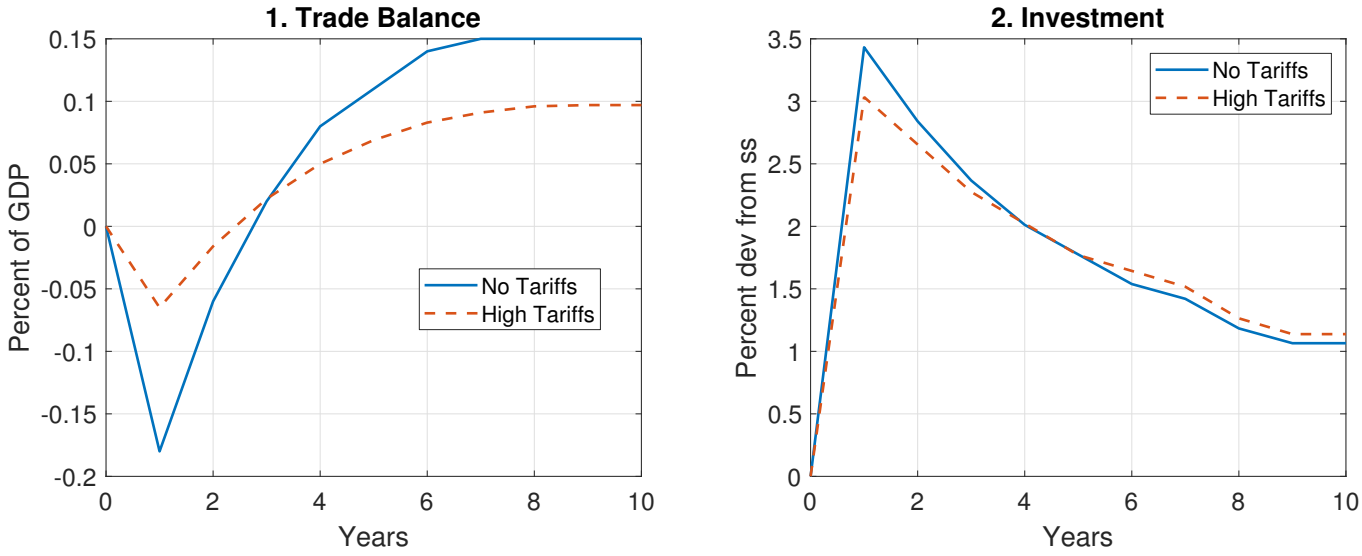
Figure 2: The Role of Tariff Persistence



3.3 Trade deficit responses with high tariffs

Although a tariff war by itself might not impact trade balance, some have argued (see Alessandria et al. (2024) and Krugman (2024)) that bilateral tariffs (in general openness to trade) might be important in determining the trade balance response of the economy to standard shocks. To analyze this issue I consider the trade balance response to a standard domestic productivity shock (z_t in the model). Figure 3 plots the response of trade balance (Panel 1) and investment (Panel 2) in a version of the economy where tariffs are always zero ($\tau_t^* = \tau_t = 0$ for every t) and in a version of the economy where home and foreign economy are in a trade war and tariffs are set to a positive constant level ($\tau_t^* = \tau_t = \bar{\tau}$ for every t) so that the trade share in the steady state is only one half of the one in the baseline (no tariff) case (7.5% instead of 15%). The figure shows that, without tariffs, a productivity shock implies the standard response: investment boom partly financed by a negative trade deficit. In an economy with higher tariffs the response is directionally similar, but more muted, as the home economy borrow less internationally and increase investment by less. High tariffs, making international trade more costly, make it harder to use the trade balance to allocate resources to the more productive country. So, overall it can be argued that tariff will reduce future imbalances in response to shocks, but at the cost of a less efficient world economy.

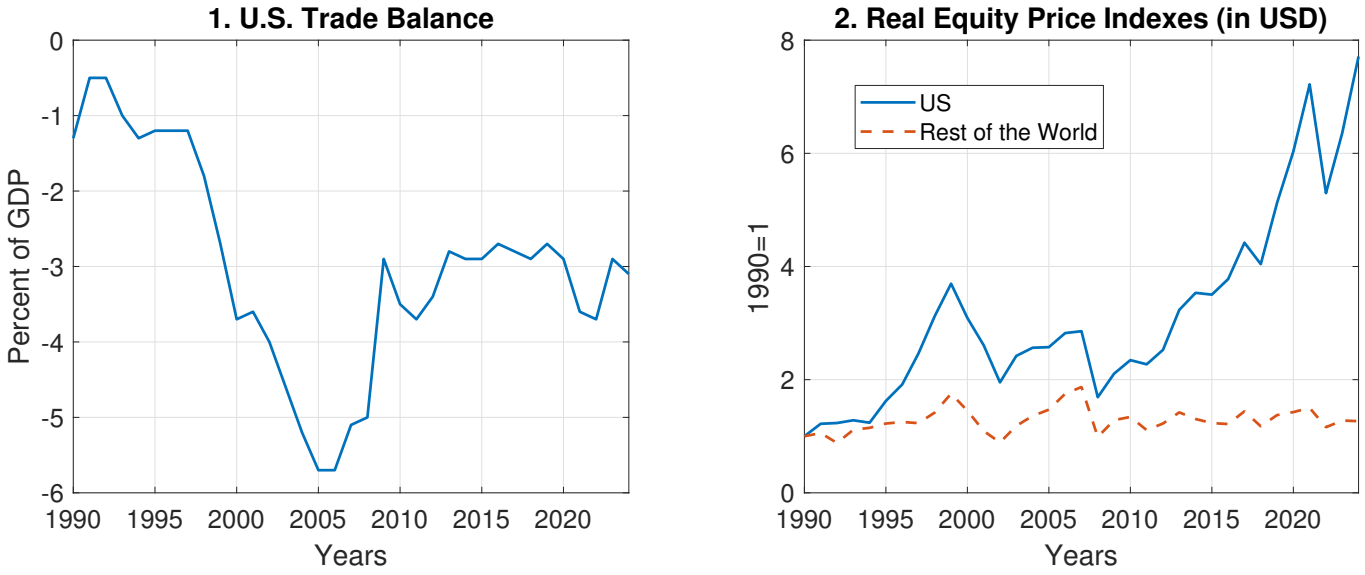
Figure 3: Responses to a 1% productivity shock



4 Conclusion

One important lesson from many years of research in international macro is that current accounts deficits are tightly connected to investment.[4] The left panel of Figure 4 shows that the United States have run a significant trade deficit for all the period going from 1990 to 2024. The right panel shows the performance of the U.S. equity market and equity markets in the rest of the world, over the same period. [5] The panel shows that the U.S. equities have outperformed equities in the rest of the world by a factor of 6. It is obviously hard to assess all the causes of the U.S. equity market boom, but it is reasonable to believe that two important drivers were the two, U.S. centered, technological innovations that happened during those years, namely the Internet and AI. It is also reasonable to say that the U.S. investment has had an important role in developing and diffusing these innovations, and that the borrowing that the U.S. has done internationally made it easier for U.S firms and households to finance this investment.

Figure 4: Current Account and Equity Performance



[4]This point was established early by Sachs (1981)

[5]The indexes are the Morgan Stanley Capital Index (MSCI) US Price Index and the MSCI All Country World Price Index ex USA, which comprises stock market indexes (including large and midcap stocks) for 22 developed economies and 27 emerging markets, weighted by market capitalization, in US dollars, both deflated by the U.S. CPI

Tariffs, by making it harder for countries to run current account imbalances to finance investment, have the potentially damaging consequence of dampening future investment and technological innovations. In a world of deep international equity diversification, this would be a loss not just for the United States, but for the global economy.

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