Preventing domestic deflation in the presence of foreign tariffs

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Abstract

In this paper, I build upon the previously established results on the correct definition of deflation and the conditions under which deflation occurs. I extend these ideas to an open-economy setting where foreign tariffs distort domestic trade, thereby introducing contractionary pressures. I derive the functional conditions under which tariff-induced shocks may trigger domestic deflation, and I propose theoretical and policy mechanisms to prevent such outcomes.

The paper ends with "The End"

1 Introduction

In earlier works, I defined the correct notion of deflation as a conditional transformation of inflation, and further, I established when deflation occurs in terms of functional parameters. A natural extension arises when domestic price stability is threatened, not by internal demand contraction alone, but by external shocks in the form of foreign tariffs.

Tariffs, when imposed abroad on a nation's exports, reduce external demand. This dampens domestic production, employment, and eventually aggregate demand, creating the conditions under which deflation may emerge. The central question addressed in this paper is:

How can a nation prevent domestic deflation in the presence of foreign tariffs?

2 The correct definition of deflation

Following Ghosh (2025), the correct definition of deflation is

$$d(t) = \begin{cases} 0 & \text{if } i(t) \geq 0, \\ -i(t) & \text{if } i(t) < 0, \end{cases}$$

where $d(t)$ is deflation as a function of time and $i(t)$ is inflation as a function of time.

Deflation is not simply negative inflation but the positive magnitude of negative inflation.

3 When deflation occurs

In the same framework, inflation is given by

$$i(t) = \begin{cases} \lambda e^{-\lambda t}, & t \geq 0, \\ 0, & t < 0, \end{cases}$$

and deflation arises if

$$d(t) = D \wedge D > 0 \quad \Longleftrightarrow \quad t \geq 0 \ \wedge \ \lambda < 0 \ \wedge \ D = -\lambda e^{-\lambda t}.$$

Thus, the domestic economy enters deflation precisely when the structural parameter λ is negative, corresponding to contractionary forces overwhelming expansionary dynamics.

4 Tariff-induced deflationary pressure

Consider an open economy facing a foreign tariff τ on its exports. Let the effective demand faced by domestic producers be reduced to

$$Q^*(t) = Q(t)(1 - \tau),$$

where $Q(t)$ is baseline foreign demand without tariffs. The decline in external demand reduces λ through its effect on expected future profitability and investment.

Formally, let

$$\lambda = \lambda_0 - \alpha\tau,$$

with $\alpha > 0$ capturing the sensitivity of the domestic contraction parameter to foreign tariffs. Then,

$$\lambda < 0 \quad \Longleftrightarrow \quad \tau > \frac{\lambda_0}{\alpha}.$$

This defines the threshold tariff rate beyond which domestic deflation becomes inevitable unless countered by policy intervention.

5 Mechanisms for preventing deflation

To prevent deflation in the presence of foreign tariffs, the state must ensure $\lambda \geq 0$. Several instruments are available:

5.1 Domestic fiscal policy

Government expenditure G can offset external demand loss. Define the adjusted parameter

$$\lambda' = \lambda_0 - \alpha\tau + \beta G,$$

where $\beta > 0$ captures the fiscal multiplier effect. Prevention requires $\lambda' \geq 0$.

5.2 Monetary expansion

Similarly, an expansionary monetary stance lowering interest rates r can sustain domestic investment. Suppose

$$\lambda'' = \lambda_0 - \alpha\tau + \beta G + \gamma(-r),$$

with $\gamma > 0$. Adequate monetary loosening helps maintain nonnegative λ''.

5.3 Strategic trade diversification

Let δ denote the fraction of exports redirected to untariffed markets. Then effective tariff exposure is $\tau(1 - \delta)$. Prevention requires

$$\lambda = \lambda_0 - \alpha\tau(1 - \delta) \geq 0.$$

6 Synthesis

The generalized prevention condition is:

$$\lambda_{eff} = \lambda_0 - \alpha\tau(1 - \delta) + \beta G + \gamma(-r) \geq 0.$$

Thus, even in the presence of adverse foreign tariffs, a combination of fiscal expansion, monetary loosening, and diversification can preserve domestic stability by ensuring

$$\lambda_{eff} \geq 0$$

7 Vector Diagram: Policy–Tariff Phase Map

We summarize the prevention condition with a phase diagram.

Let the *policy mix* be

$$P \equiv \beta G + \gamma(-r) + \alpha\tau\delta + \lambda_0,$$

so the effective parameter is

$$\lambda_{\text{eff}} = \lambda_0 - \alpha\tau(1-\delta) + \beta G + \gamma(-r) = P - \alpha(1-\delta)\tau.$$

The boundary $\lambda_{\text{eff}} = 0$ is the straight line

$$P = \alpha(1-\delta)\,\tau.$$

Points above the line are **No Deflation** ($\lambda_{\text{eff}} \geq 0$); below are **Deflation**.

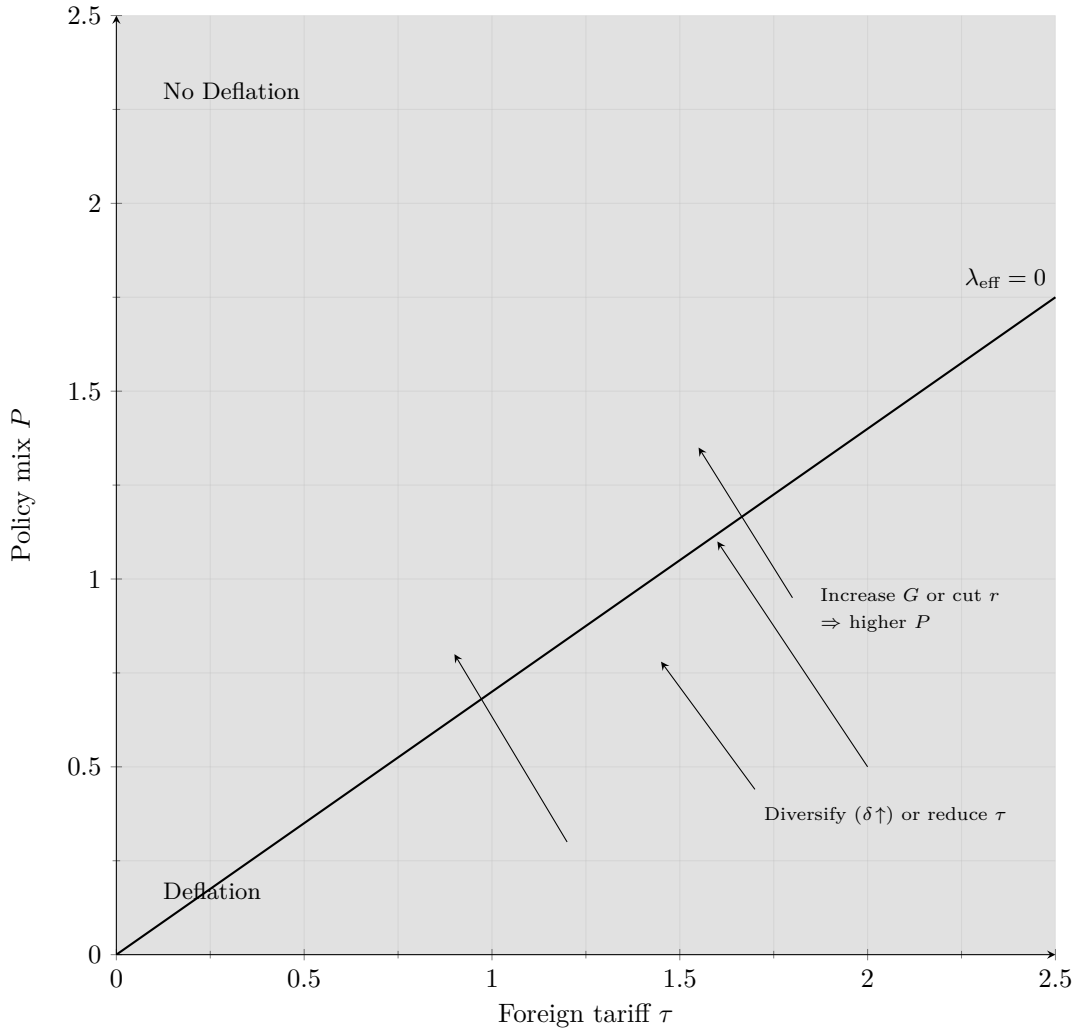

Figure 1: Phase map of foreign tariffs τ and policy mix P. Boundary $P = \alpha(1-\delta)\,\tau$ (here slope 0.7) separates *Deflation* from *No Deflation*. Arrows indicate adjustments toward stability.

8 Conclusion

In this paper, I have extended the theoretical framework of deflation to an open-economy context with foreign tariffs. By modeling tariffs as a force that can push the inflation parameter λ into the negative domain, I derived explicit conditions for when deflation arises. More importantly, I outlined a policy synthesis capable of preventing deflation: maintaining $\lambda_{eff} \geq 0$ through a balance of fiscal, monetary, and trade measures.

References

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The End