International Trade and Policy

WEEK 2 - **Supply and Demand in Global Markets**

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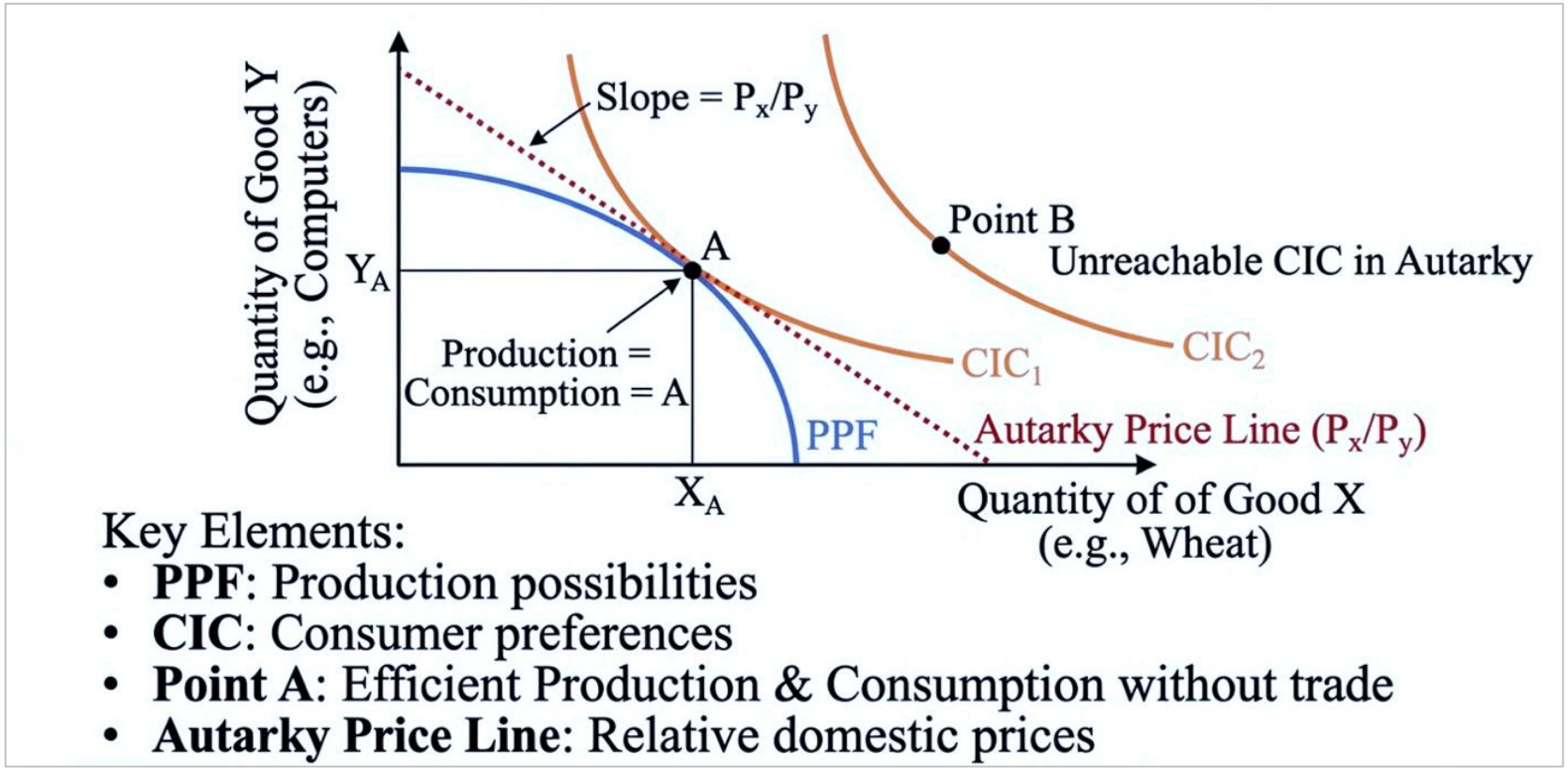
The foundation of global trade rests on the intricate interplay of shared human need, the pursuit of comparative advantage, and the enduring structures of cooperation that transform geographic distance into economic interdependence.

The Framework - From Autarky to Global Trade

The Closed Economy Equilibrium

Figure 1. Autarky Equilibrium in a Closed Economy



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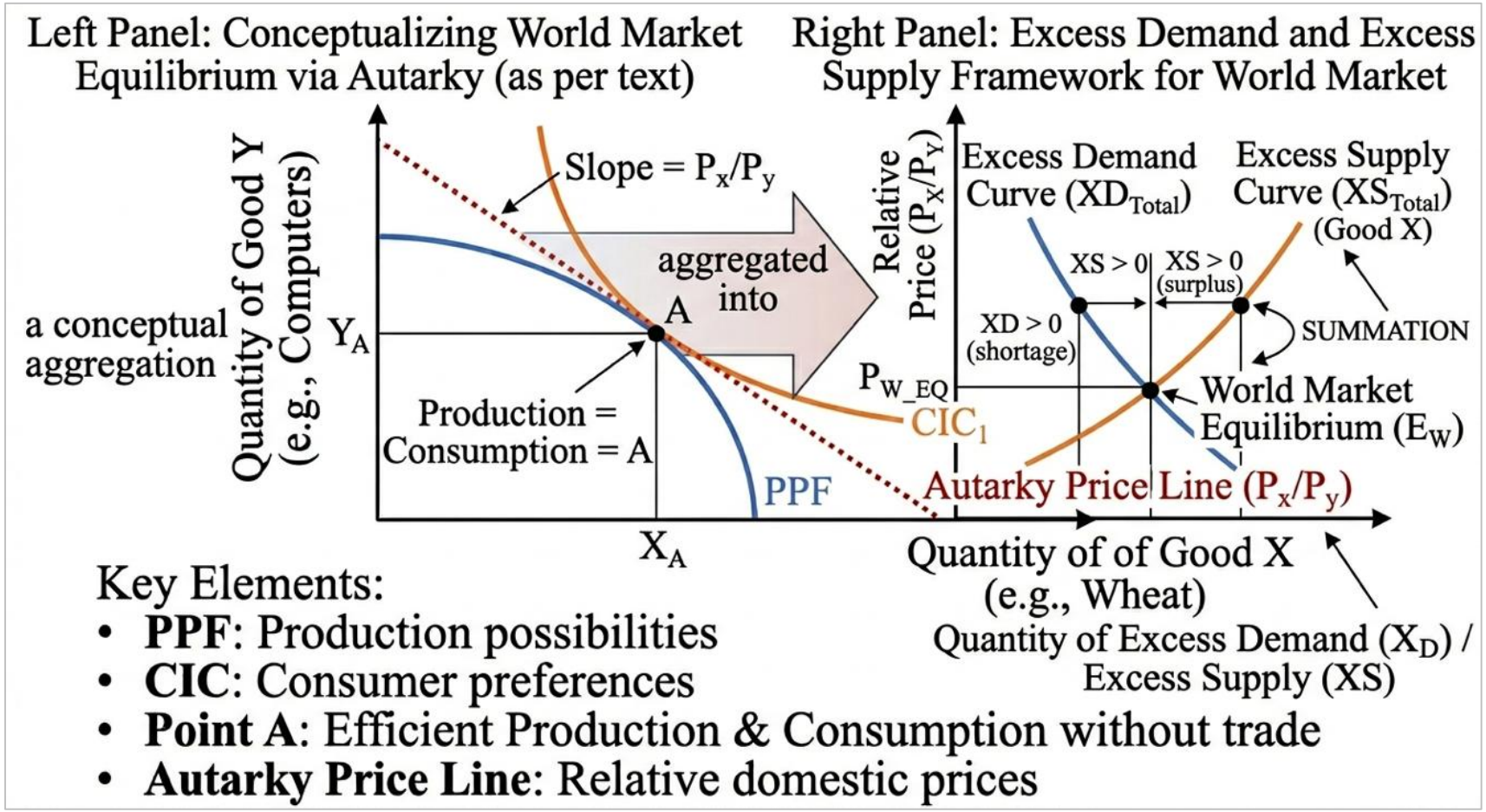
Defining the World Market

- ✓ The world market is the global arena where the aggregate supply and demand from all countries interact to determine a single equilibrium world price for a traded good.
- ✓ Global demand is the sum of the demand from all countries at each possible price, while global supply is the sum of the supply from all producing nations.
- ✓ The world market functions as the arbitrage mechanism that eliminates price differentials across countries, subject to trade costs and policy barriers.

Figure 2. General Equilibrium of World Trade



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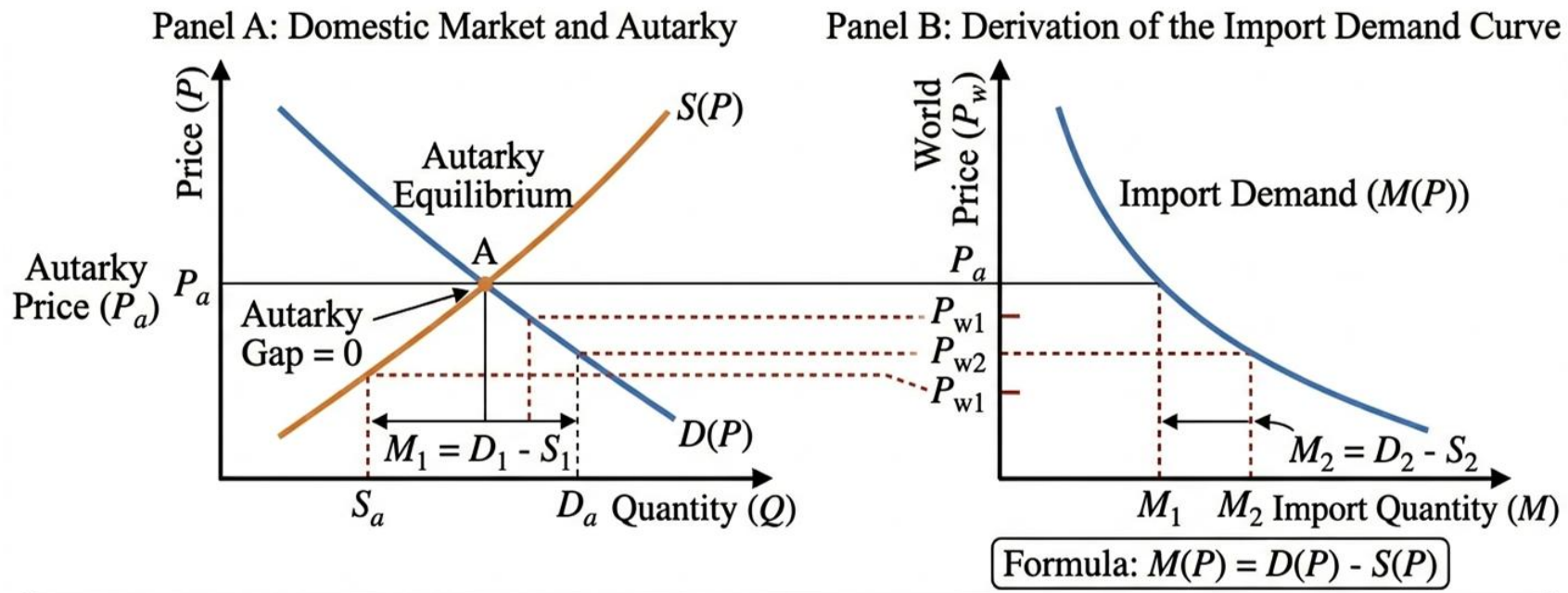
Deriving Import Demand and Export Supply

Figure 3. Import Demand Curve Derivation: Domestic Gap vs World Price



Interpretation: At prices below the Autarky Price(P_a), domestic consumers want more (D_1), and domestic producers make less (S_1). The difference is the **Import Quantity** ($M_1 = D_1 - S_1$).
The **Gap** (Imports) widens as the World Price falls.
Properties: The import demand curve is downward sloping because if the world price falls, domestic consumers buy more (demand and domestic producers produce less (supply decreases). The gap (imports) widens.

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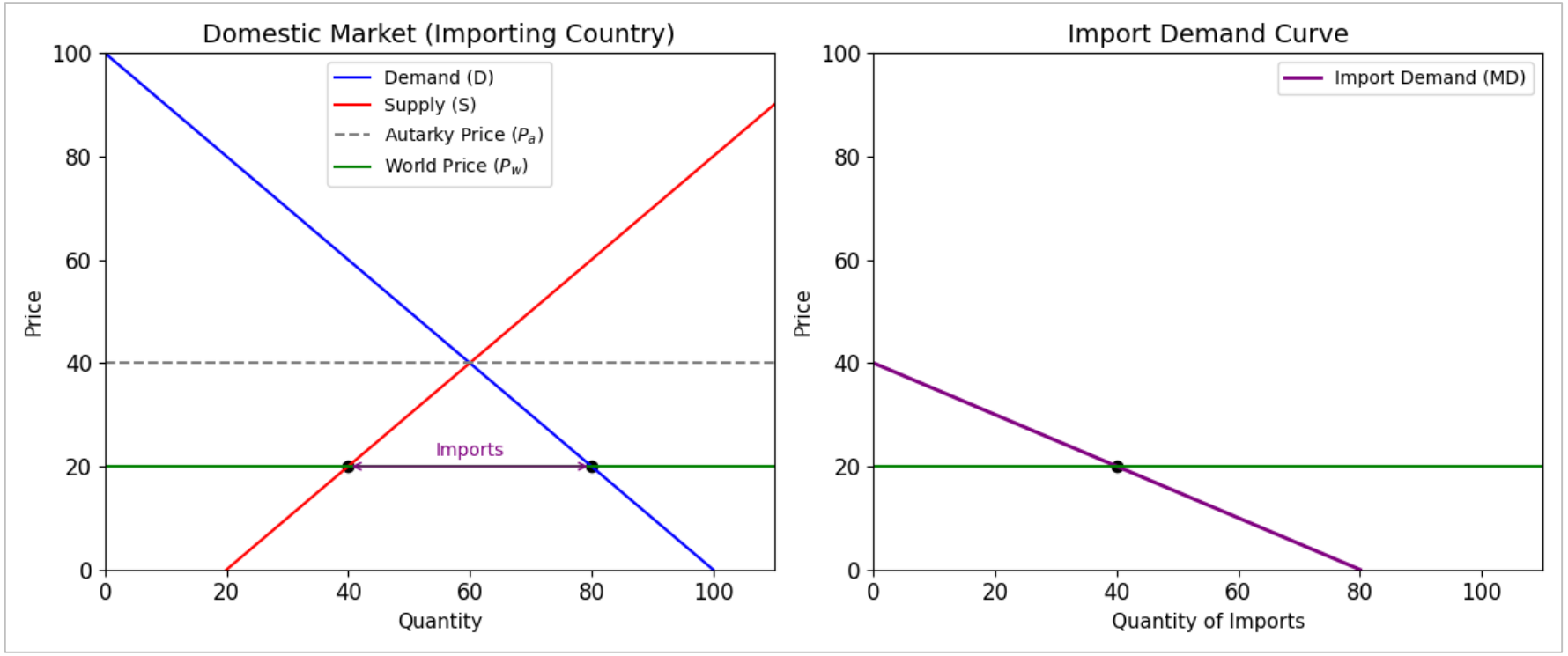
The Import Demand (MD)

MD curve illustrates how a country's internal shortage creates a demand for foreign goods. When the world price falls below a nation's autarky price, local consumers buy more while local producers cut back, creating a gap.

This gap is plotted as the MD curve, which slopes downward because a lower price makes imports more attractive and necessary to satisfy domestic demand.

Figure 4. The Derivation of the Import Demand Curve



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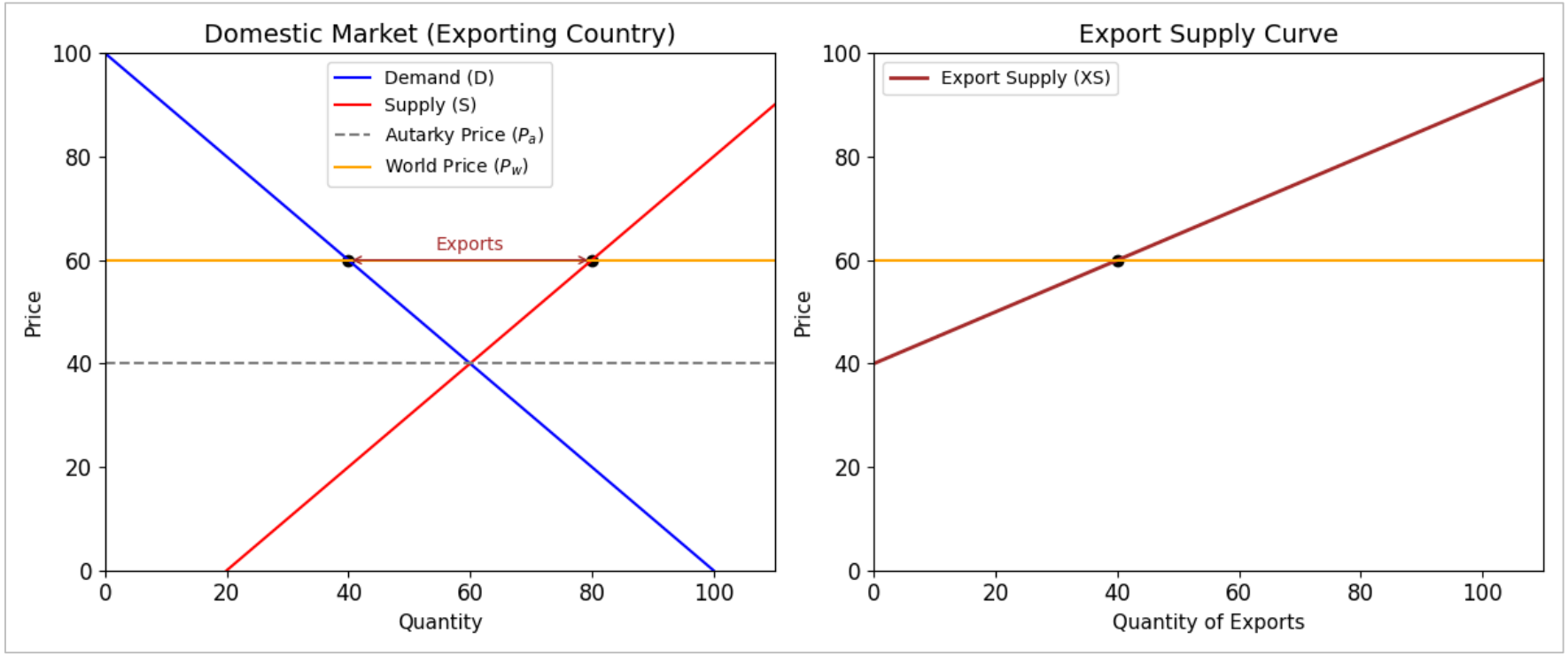
Export Supply Curve

- The Export Supply curve represents the quantity a country is willing to export at each world price, derived from the gap between domestic supply. and domestic demand, expressed as $X(P)=S(P)-D(P)$.
- The Export Supply curve shows how a country's internal surplus is offered to the global market.
- When the world price rises above the autarky price, domestic production exceeds domestic consumption, leaving a surplus.

Figure 5. The Derivation of the Export Supply Curve



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World Market Equilibrium

Figure 6. Partial Equilibrium Model of International Trade. The Intersection

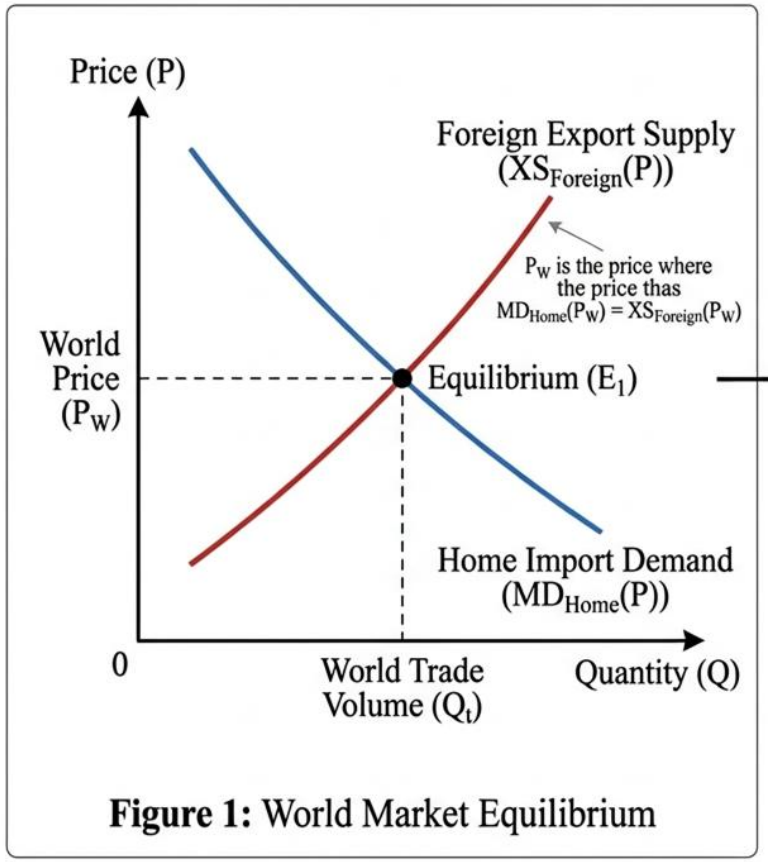

Figure 1: World Market Equilibrium

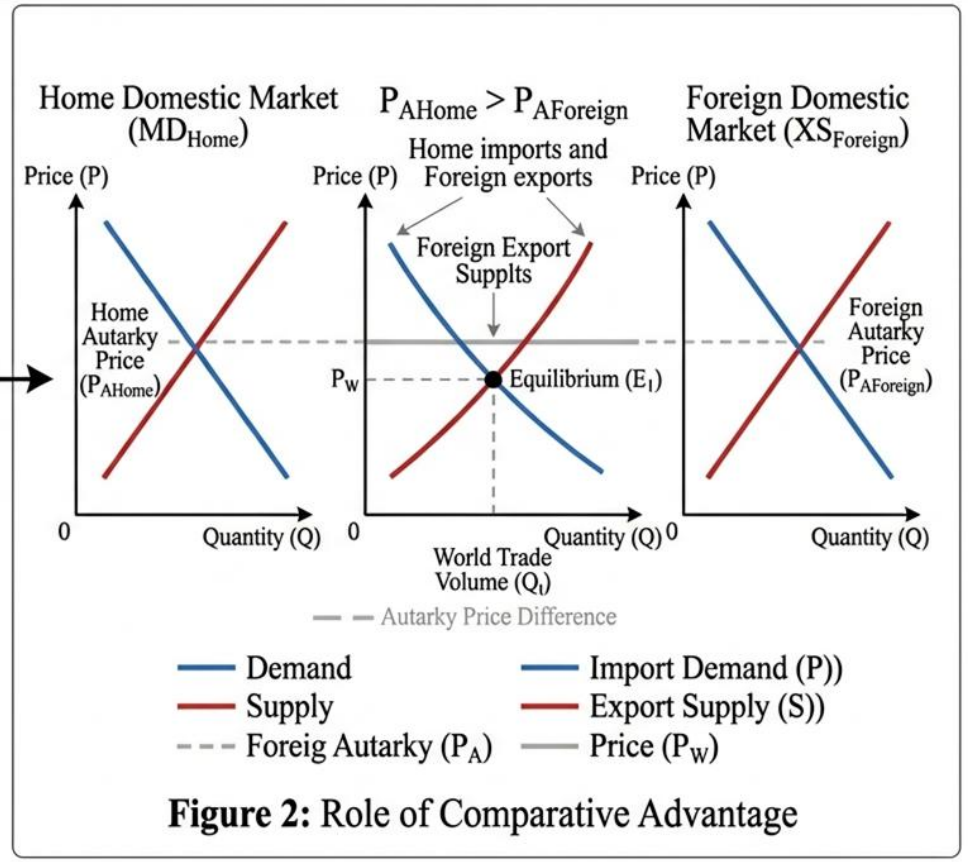

Figure 2: Role of Comparative Advantage

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Determinants of Import Demand and Export Supply

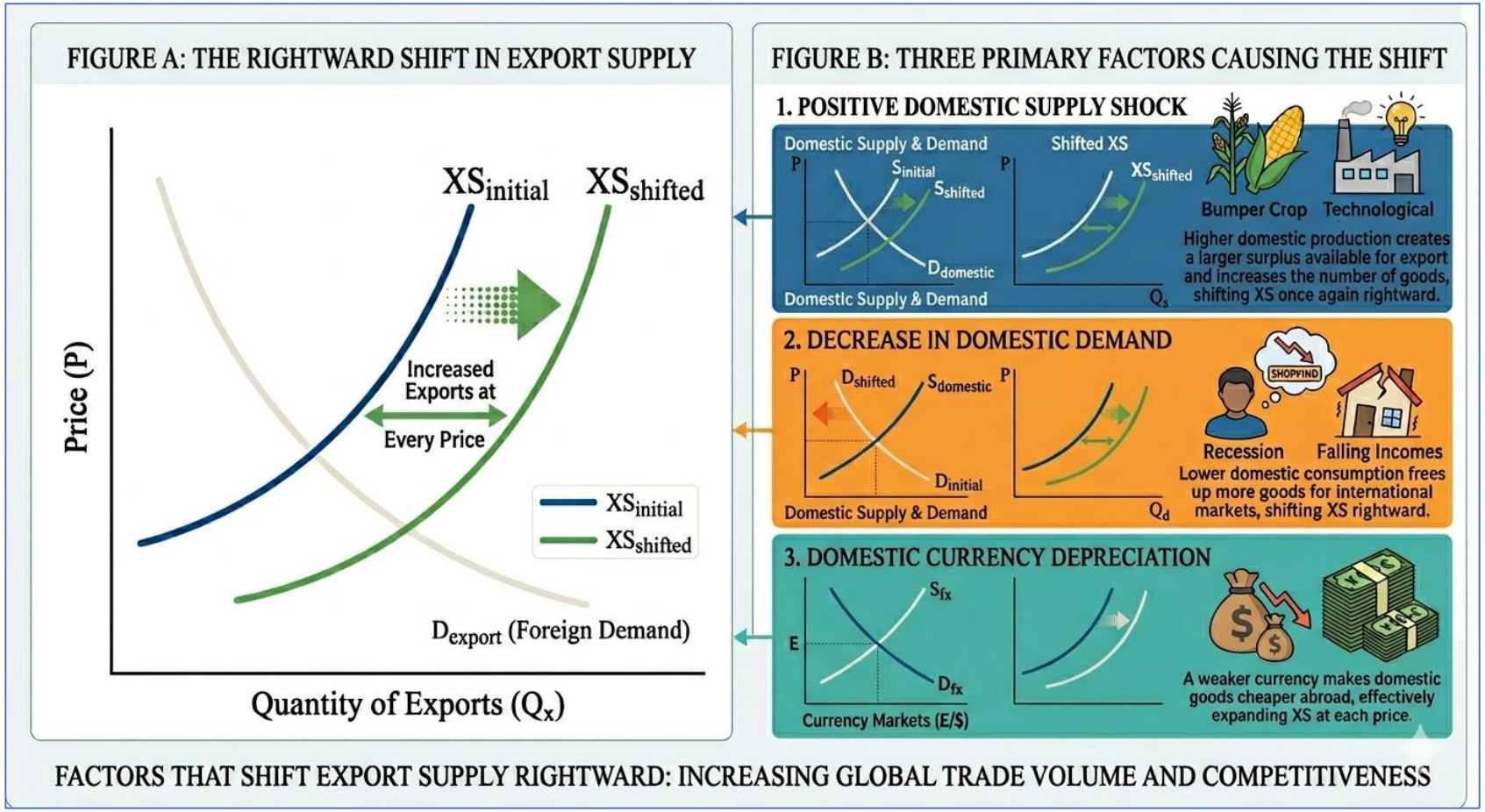
Determinants of Import Demand

A shift in the **import demand** curve is driven by three key factors: changes in domestic demand (such as rising income or shifting tastes), which increase imports and shift the curve outward; changes in domestic supply (like technological improvements), which reduce the need for imports and shift the curve inward; and changes in the price of domestic substitutes, where a cheaper substitute reduces import demand and also shifts the curve inward.

Determinants of Export Supply

A rightward shift in the export supply curve meaning greater exports at every price can stem from three key factors: an increase in domestic supply (like a technological breakthrough), a decrease in domestic demand (such as during a recession), or a depreciation of the domestic currency that makes goods cheaper for foreign buyers.

Figure 7. A rightward shift in export supply is driven by a positive supply shock, a drop in domestic demand, or a depreciation of the domestic currency.



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Trade Policy – Tariffs

- ✓ Governments intervene in trade for three main reasons: generating revenue (especially for developing economies), protecting domestic industries from foreign competition, and gaining strategic leverage in diplomatic negotiations with tariffs being the most common tool used to achieve these goals.
- ✓ Regardless of the motivation, the most common policy instrument used to achieve these goals is the tariff a tax imposed on imported goods.

The Small Country Case (Tariff)

A **small country** faces a perfectly elastic export supply curve. It is a "price taker." Its imports are an infinitesimal fraction of the world market, so its purchasing decisions do not affect the world price

In the small country case, a tariff raises the domestic price to the world price plus the tariff, reducing imports and creating a deadweight loss from consumption and production inefficiencies without improving the country's terms of trade.

Welfare Analysis (Small Country)

Figure 8. Welfare Analysis of a Tariff in a Small Country

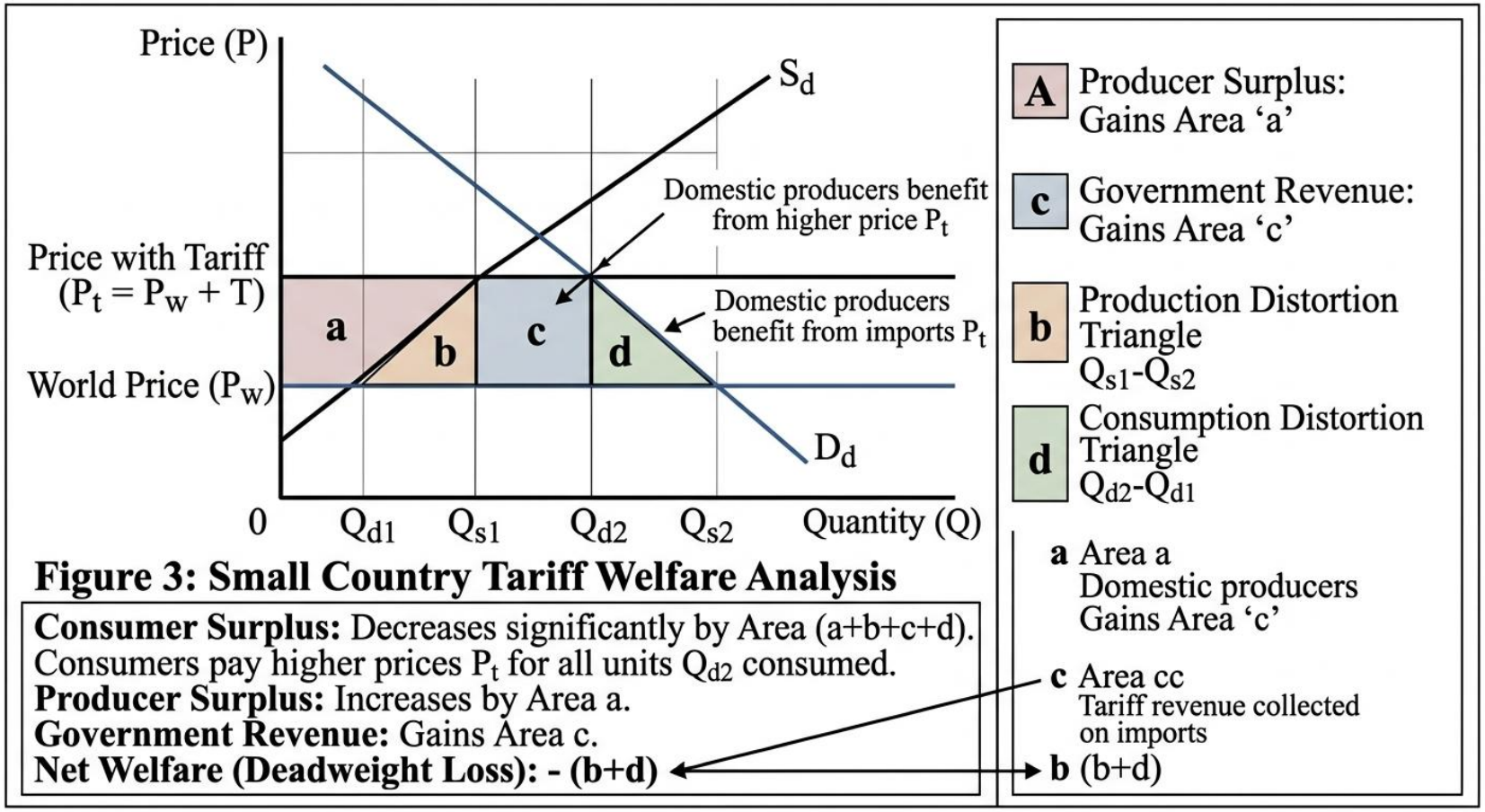

Figure 3: Small Country Tariff Welfare Analysis

Consumer Surplus: Decreases significantly by Area (a+b+c+d). Consumers pay higher prices P_t for all units Q_{d2} consumed.
Producer Surplus: Increases by Area a.
Government Revenue: Gains Area c.
Net Welfare (Deadweight Loss): - (b+d)

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The Large Country Case (Tariff)

- ✓ A large country has monopsony power in the import market. Its import demand is a significant share of world demand. When it imposes a tariff, its reduced import demand lowers the world price
- ✓ In the large country case, a tariff reduces import demand enough to lower the world price, allowing the importing nation to capture terms of trade gains that can potentially offset its own deadweight losses.

The Terms of Trade Effect as the Crucial Distinction

The key difference is that a large country's tariff lowers world prices due to its market power, causing domestic prices to rise by less than the full tariff amount unlike a small country, which simply accepts world prices without influencing them.

A large country possesses market power, so when it imposes a tariff, its reduced import demand drives down the world price. Consequently, the domestic price rises by less than the full tariff amount because the decline in the world price partially offsets the increase.

Price Dynamics Under a Large Country Tariff

Let PW represent the new, lower world price faced by foreign exporters after the tariff is imposed. The domestic price is then determined by the sum of this new world price and the tariff, expressed as $PDomestic = PW + t$. Because PW is lower than the original world price, the increase in the domestic price is smaller than the tariff amount t. This partial pass-through distinguishes the large country case from the small country case, where the domestic price rises by the full tariff.

Definition and Improvement of the Terms of Trade

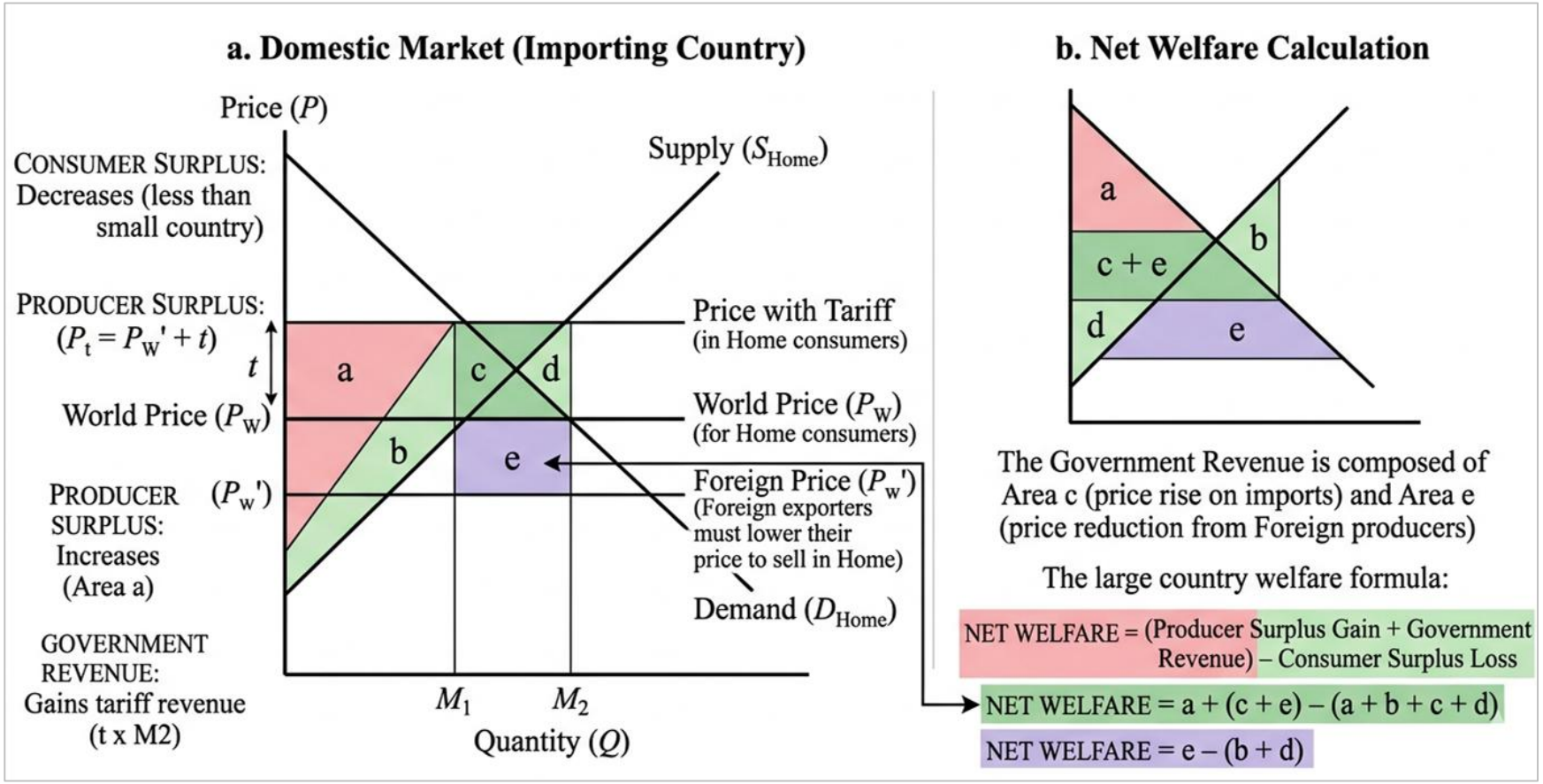
- The large country gains a terms of trade improvement as a result of this price dynamic. The terms of trade (ToT) are defined as the ratio of a cou ntry's export prices to its import prices, formally expressed as:

$$\textit{Terms of Trade (ToT)} = \frac{\textit{Price of Imports}}{\textit{Price of Exports}} \textit{ x 100}$$

This ratio measures the quantity of imports a country can obtain per unit of its exports. For an importing country, a fall in the price of imports imp roves the terms of trade because the denominator decreases, making the ratio larger.

Welfare Analysis (Large Country)

Figure 9. Large Country Tariff Welfare Analysis



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The Optimal Tariff

If the terms of trade gain exceeds the deadweight loss, the large country can increase its national welfare through a tariff. This leads to the concept of the optimal tariff the tariff rate that maximizes the difference between the terms of trade gain and the deadweight loss.

However, this comes with a caveat: the gain for the home country comes at the expense of the foreign country (who receives a lower price for their exports). This is a "beggar-thy-neighbor" policy, likely to provoke retaliation.

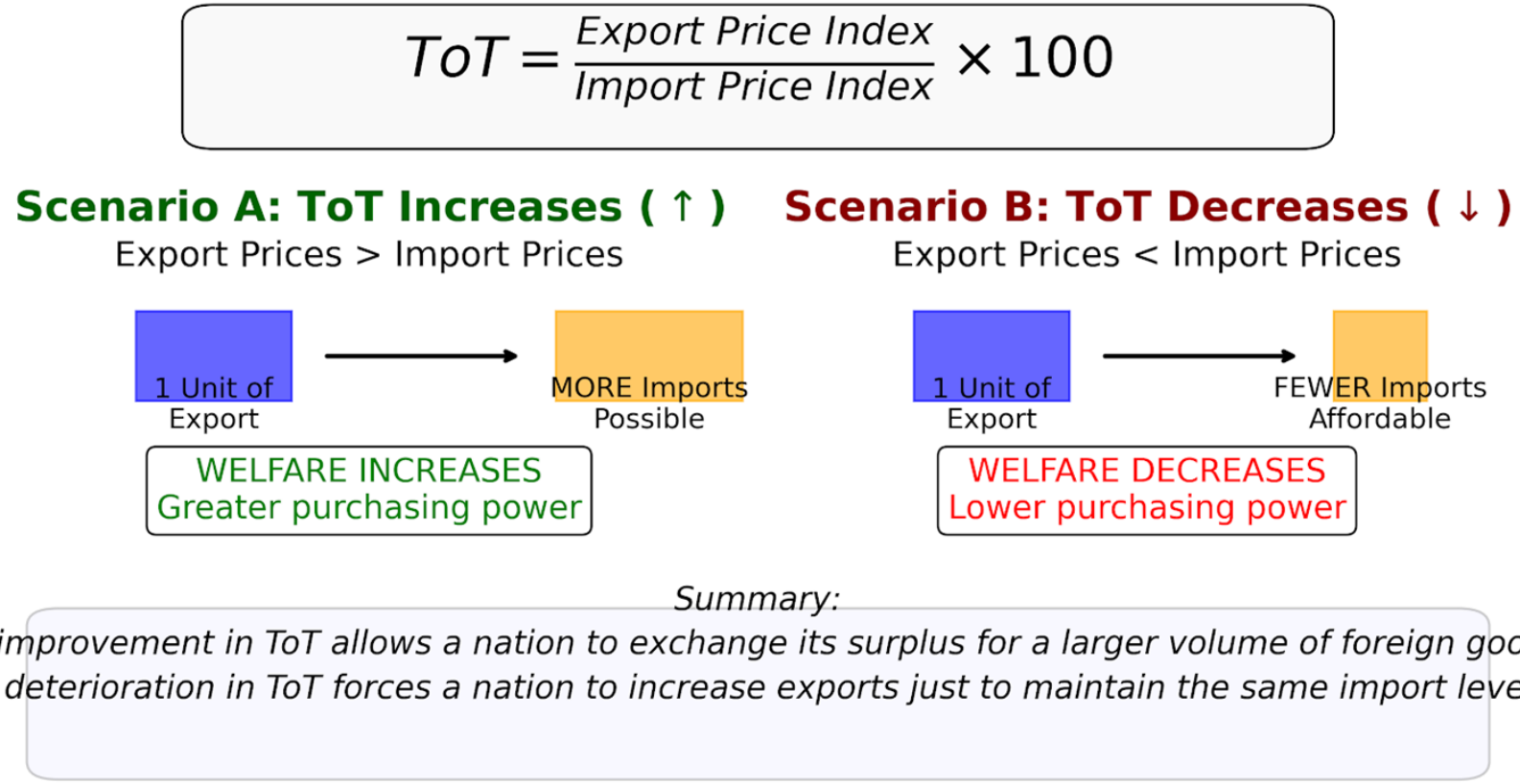
Trade Policy – Quotas

✓ A quota is a physical limit on the quantity of a good that can be imported. While tariffs generate revenue, quotas restrict volume.

✓ In theory, a tariff and a quota can have the same effect on price and quantity if the quota is set at the post-tariff import level. However, in practice, they differ significantly.

Trade Volume

Figure 10. Terms of Trade (ToT) and Welfare Effects.



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Summary:

An improvement in ToT allows a nation to exchange its surplus for a larger volume of foreign goods. A deterioration in ToT forces a nation to increase exports just to maintain the same import level.

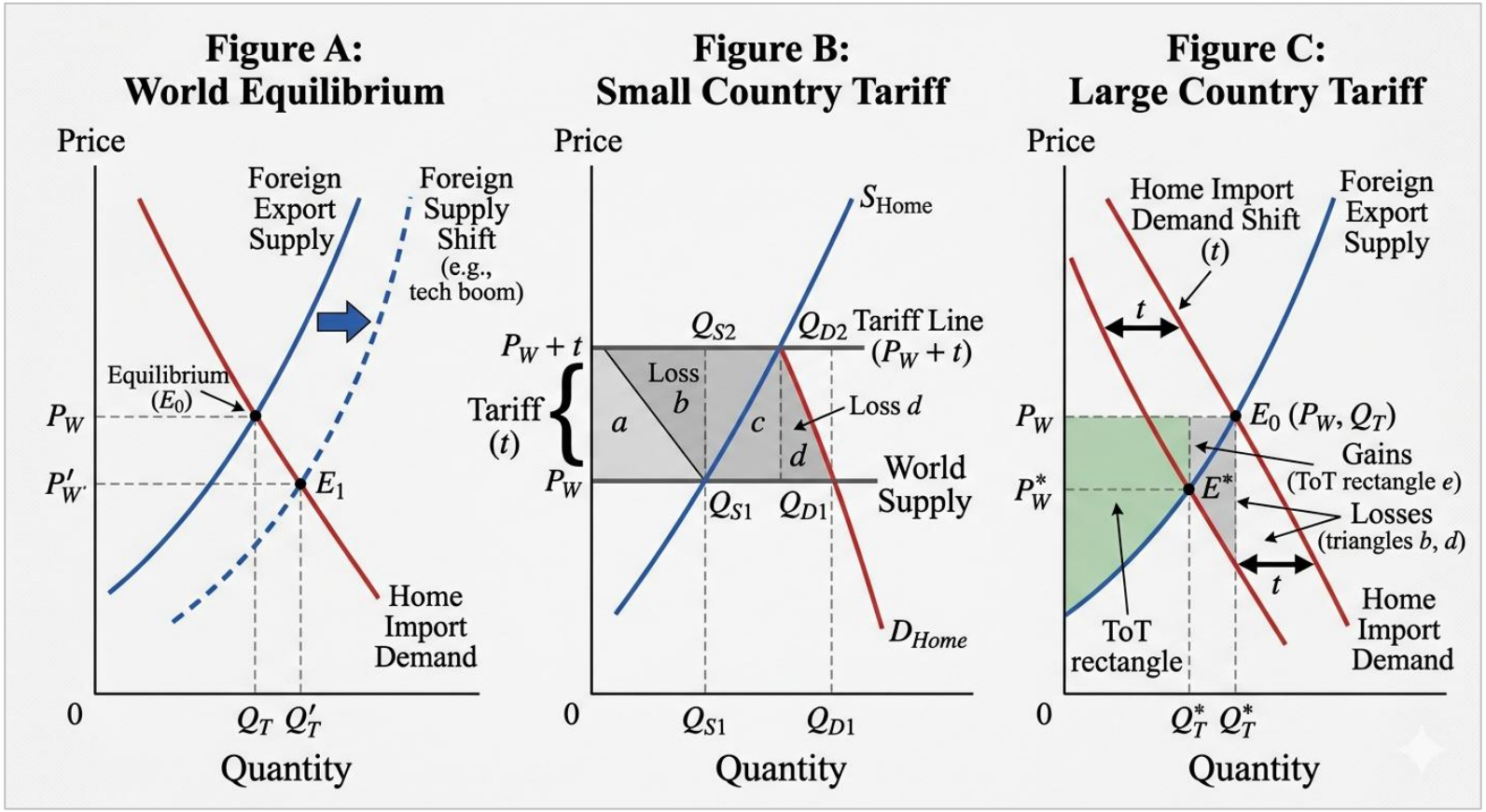
Determinants of Terms of Trade

- **Growth: Export-biased growth** (growth that expands the export sector) worsens the terms of trade (supply increases, price falls). **Import-biased growth** (growth that reduces demand for imports) improves the terms of trade.
- **Trade Policies:** As we saw with the large country tariff, restricting imports improves the terms of trade (by lowering import prices). Export subsidies worsen the terms of trade (by increasing export supply, lowering export prices).
- **Exchange Rates:** A depreciation of the domestic currency tends to lower the terms of trade in the short run (export prices fall in foreign currency, import prices rise in domestic currency) before the J-curve effect takes hold.

The Metzler Paradox

While we have covered standard theory, a nuance exists for large countries: the **Metzler Paradox**. It is theoretically possible that for a large country, a tariff can actually cause the *domestic* price of the importable good to *fall*. This happens if the foreign export supply curve is very steep (inelastic) and the tariff causes such a dramatic fall in the world price that the domestic price ($PW+t$) ends up *lower* than the original free trade price. While rare in practice, it highlights the complexity of large-country dynamics.

Figure 11. Comparative Analysis of Trade Equilibria and Tariff Welfare Effects.



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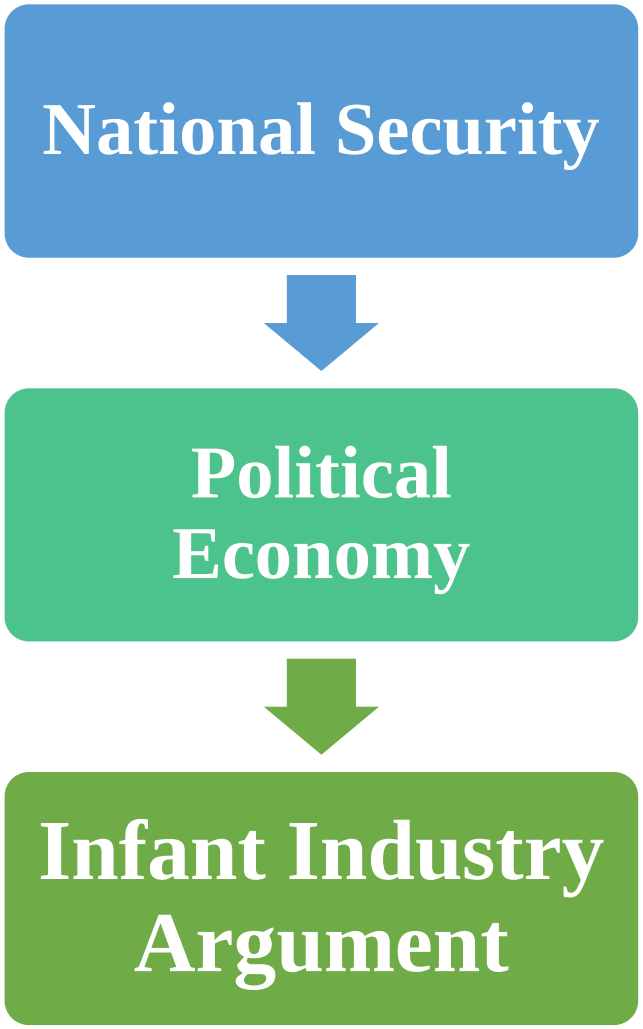
Is Free Trade Always Optimal?

- For a **small country**, the theoretical answer is "yes." Free trade maximizes national welfare by allowing consumers to purchase at the world price, maximizing consumer surplus.

- For a **large country**, theory suggests an "optimal tariff" exists. However, in practice, policymakers rarely know the precise elasticities to calculate this tariff. Furthermore, the threat of **retaliation** makes the pursuit of optimal tariffs highly risky. The post-World War II trend (GATT/WTO) has been toward multilateral reductions in tariffs precisely to avoid this destructive cycle.

Non-Economic Objectives



Modern Challenges: Supply Chains

The traditional supply/demand analysis assumes goods are finished products. However, modern global supply chains mean that components cross borders multiple times. A tariff on "imported steel" might hurt domestic auto manufacturers.

This complexity has led to the rise of **tariff engineering** and debates about reshoring.

Conclusion and Review Questions

a. **Import Demand and Export Supply** curves are derived from domestic fundamentals and determine the world price and trade volume.

b. **Tariffs** create a wedge between domestic and world prices.

c. The **size of the country** matters: small countries lose from tariffs; large countries might gain via improved **terms of trade**, but risk retaliation.

d. **Quotas** are similar to tariffs but raise the issue of **rent allocation**.

e. **Trade volume** is influenced by economic size, distance, and policy.

f. **Terms of trade** are a critical measure of a nation’s economic welfare from trade.

Review Questions

- Using a diagram, illustrate why a small country loses welfare when it imposes a tariff. Identify the producer surplus gain, consumer surplus loss, and the deadweight loss triangles.
- Explain the difference between a small country and a large country in the context of an import tariff. How does the large country's ability to affect world prices change the welfare outcome?
- A large country imposes a quota on imports. Compare the welfare outcomes if the government auctions the import licenses versus if it gives them away to domestic importers.
- How does export-biased growth in a large country affect its terms of trade? How does this differ from import-biased growth?