PARTIAL EQUILIBRIUM EFFECTS

FIGURE 1: EFFECTS IN A SMALL ECONOMY

Diagram showing supply (S) and demand (D) curves with various price levels and quantities.
Distorting a Commodity Market in a Small Country

In Figure 1, small economy faces world price $p_w$, $0Q_w$ is supplied by domestic farmers, $OC_w$ is consumed, $Q_wC_w$ is imported.

$0ajQ_w$ is gross farm income, $0zjQ_w$ is variable cost (i.e. area under the supply curve), and $ajz$ is producer surplus, i.e return to farmers’ labor and capital assets.

Suppose government provides a direct price subsidy to farmers, raising the price farmers get to $p_1$, the consumer price remaining at $p_w$.

- extra output of $Q_wQ_1$, imports reduced to $Q_1C_w$

- gross farm income rises to $0bcQ_1$, the variable costs of producing $Q_wQ_1$ at home are $Q_wjcQ_1$, and increase in producer surplus is $abcj$

- treasury outlay for the subsidy is $abci$, so the net cost of the policy is $cij$, i.e. the extra variable cost of home production vs. imports
Suppose government imposes an import tariff, which raise the domestic price to $p_1$

- as well as production effects, total consumption falls to $0C_1$, imports falling to $Q_1C_1$

- consumer surplus falls by abef, but part of this is a transfer to the treasury of tariff revenue of cegi, and part is a transfer to producers of abcj

- the net loss from the policy after accounting for the transfers is the extra production cost cij, and the deadweight loss efg

- a tariff causes a larger net loss than a direct subsidy to farmers

Suppose a tariff is prohibitive, raising price to $p_2$, production being equal to consumption at $0Q_2 = 0C_2$

- producer surplus increases by autj, while consumer surplus falls by autf

- as there is no tariff revenue, the net loss to the economy is made up of jtv, the extra cost of production, and tvf, the deadweight loss
If government wants farmers to get a price higher than \( p_2 \), it will be necessary to subsidize exports

- a per unit export subsidy of \( p_3 - p_w \) will raise domestic prices to \( p_3 \), production expanding to \( 0Q_3 \), consumption falling to \( 0C_3 \), \( C_3Q_3 \) being exported

- the treasury cost of the subsidy is \( npqr \), the consumer surplus loss is \( asnf \), and the producer surplus gain is \( aspj \)

- the export subsidy, which would require a border tariff to prevent arbitrage, would add further to the redistribution from consumers to producers, and from taxpayers to producers, the net loss being \( jpq \) plus \( nfr \)

**Distorting a Commodity Market in a Large Country**

Consider in Figure 2 a large exporting country that faces a downward-sloping excess demand curve

- if country uses an export subsidy to raise its domestic price from \( p_w \) to \( p_1 \)
- exports expand from $C_wQ_w (0X_w)$ to $C_1Q_1 (0X_1)$, which drives down the world price to $p_w'$, which requires a larger per unit export subsidy in equilibrium of $p_1$ to $p_w'$

- Gain to producers is $cijd$, loss to consumers is $cghd$, the gain being $gijh$, which is equivalent to $acdb$

- taxpayers have to pay $acef$, resulting in a net loss of $abdef$

- some of the loss $bdef$ is transferred to foreign consumers because of the lower world price, the rest is a pure loss $abf$, where $abn = (ghm+ijk)$, and $bfn$ is the corresponding sum of triangles for the rest of the world

- large exporting country has more to lose than a small country by raising its domestic price above the world price as it depresses the world price
Consider in Figure 3 a large importing country that has a downward-sloping excess demand curve

- if country uses an import tariff to raise its domestic price from $p_w$ to $p_1$

- production increases from $0Q_w$ to $0Q_1$, consumption falls from $0C_w$ to $0C_1$, imports falling from $Q_wC_w (0M)$ to $Q_1C_1 (0M_1)$

- the decline in excess demand to $ED'$ causes world price to fall to $p'_w$, so a tariff of $p_1$ to $p'_w$ is needed, raising revenue of $ebcf$ or $mnrk$

- producer surplus increases by $jkba$, while consumer surplus falls by $jkcd$

- the net effect depends on whether $abcd$ ($krsj$) is greater (less) than area $ebcf$ ($mnrk$), which will depend on the elasticity of the excess demand curve

- the rest of the world is worse off by the area $mnsj$