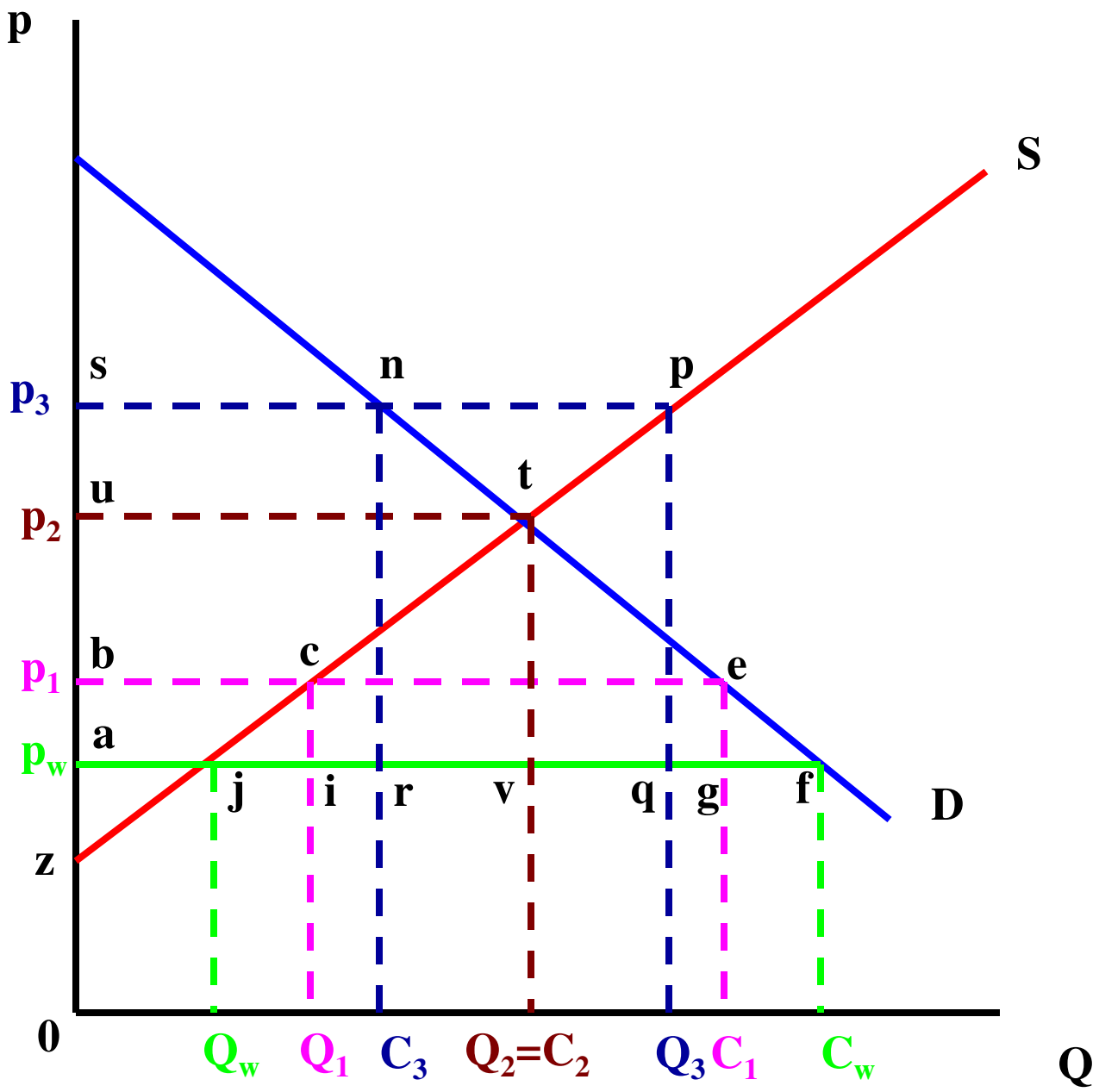
PARTIAL EQUILIBRIUM EFFECTS

FIGURE 1: EFFECTS IN A SMALL ECONOMY



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 suplus* 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 suplus 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

<u>Distorting a Commodity Market in a Large Country</u>

- **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