

# Partial Equilibrium Trade Applications

## Addendum: the Krugman trade structure (a primer)

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- 1 Background
- 2 Monopolistic competition with homogeneous firms producing symmetric varieties
- 3 Equilibrium conditions

- Contemporary trade analysis includes additional margins of adjustment (variety and productivity adjustments)
- As an elementary introduction, consider that imports in our simple COMPAS model are *Krugman varieties*.
- Baby steps: assume the structure of the domestic import-competing industry is unchanged.

# Monopolistic competition with homogeneous firms producing symmetric varieties

- Dixit-Stiglitz (CES) demand over a number  $N$  of *small* varieties:

$$Q = \left( \int_{i \in N} x_i^\rho di \right)^{1/\rho}$$

- Dual price index (unit cost of a unit of the *composite* good)

$$P = \left( \int_{i \in N} p_i^{1-\sigma} di \right)^{1/(1-\sigma)} = (Np^{1-\sigma})^{1/(1-\sigma)},$$

where  $p = p_i = p_j \forall i, j$  by symmetry.

- Costs (in real *input* units) of a firm producing  $q$  units of output:

$$TC = f + q; \quad AC = f/q + 1; \quad MC = 1$$

# Equilibrium conditions

- Price index:

$$P = (Np^{1-\sigma})^{1/(1-\sigma)},$$

- Compensated demand for an individual variety:

$$q = Q \left( \frac{P}{p} \right)^\sigma.$$

- Optimal markup ( $MR = MC$ ) for the individual monopolistic competitor:

$$p = \frac{c}{1 - 1/\sigma}.$$

- Free entry ( $\pi^* = pq/\sigma$ ):

$$cf = \frac{pq}{\sigma}$$

- Demand for inputs across all firms:

$$D = N(f + q)$$