TRADE POLICIES TO COUNTER DOMESTIC DISTORTIONS

GENERAL PRINCIPLES

[1] Many market failures justify corrective policies.

[2] Each market failure is best countered by the policy that is directly targeted to the margin where it creates a distortion.

[3] Other policies can have a beneficial effect on this margin but will create another distortion elsewhere.
They are a less good (second-best or worse) response to the problem.

[4] If the targeted (first-best) policy instrument is unavailable, a small dose of a second-best policy is better than no policy at all.

[5] But second-best optimal policy should stop short of fully correcting the distortion.

Will examine the role of trade policies in this context.

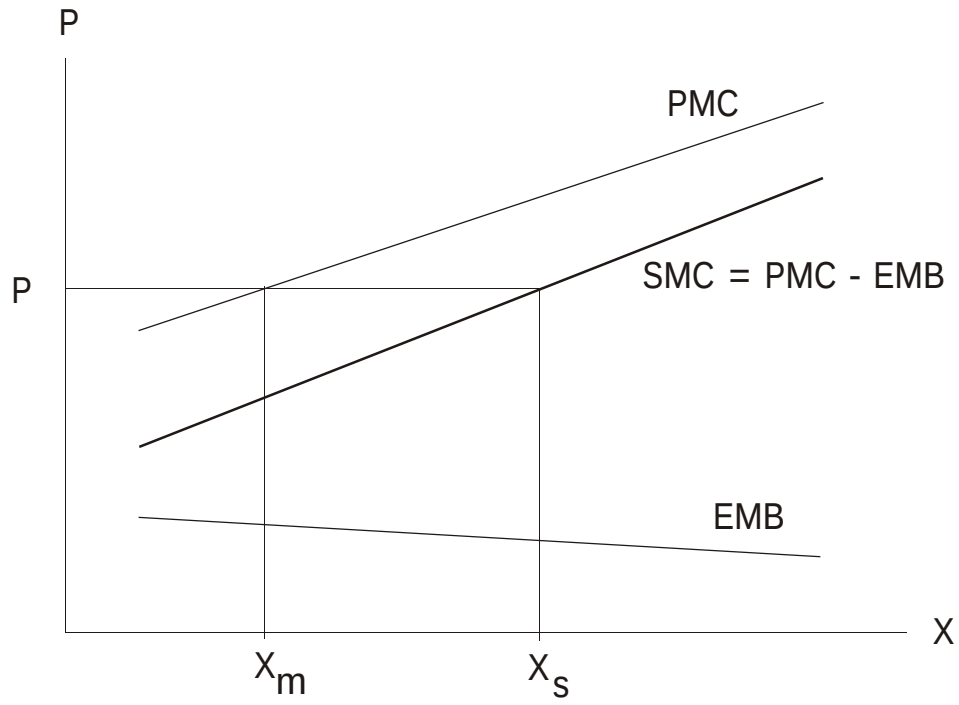
BENEFICIAL PRODUCTION EXTERNALITY IN DOMESTIC ECONOMY

Production of good X creates a spillover benefit elsewhere
Examples: workers acquire skills that raise their productivity,
entrepreneurs get ideas they use for developing new products …
Social marginal cost (SMC) = Private marginal cost to firms (PMC)
– External marginal benefit (EMB)

At a price P, private profit-max producers will supply X_m ,
socially optimal to supply X_s

(PMC is market supply curve,
SMC is optimal supply curve.)

Will consider and compare policies to achieve optimal production, or at least increase it above X_m , toward X_s



FIRST-BEST OPTIMAL SUBSIDY

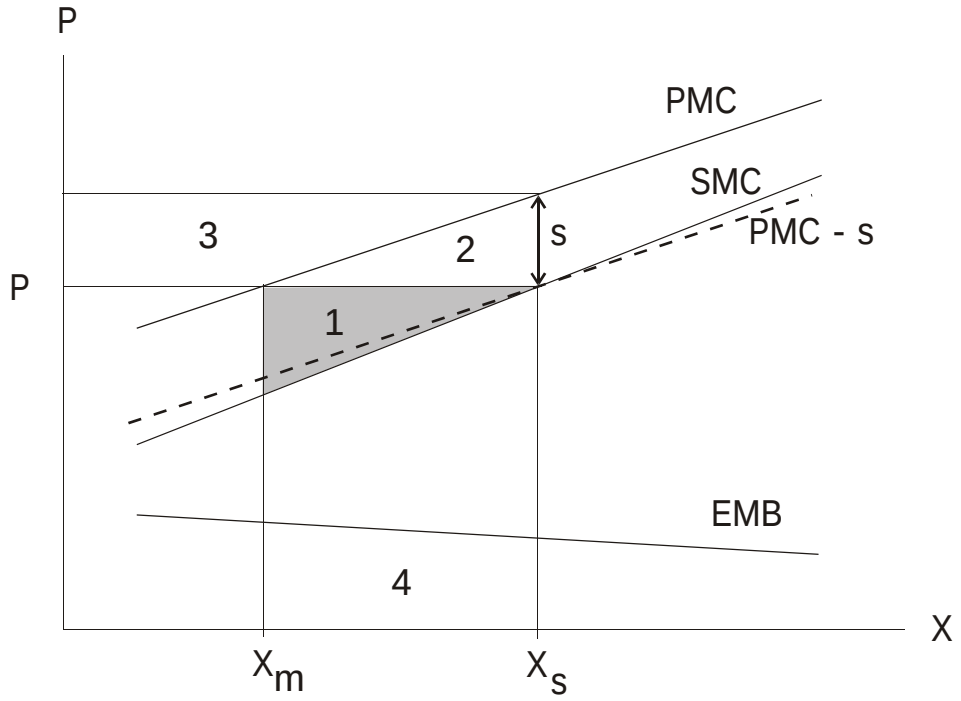
Offer a specific (per unit quantity) subsidy to producers

s = vertical difference between PMC and SMC at X_s

PMC shifts down vertically parallel by s. At price P, X_s is supplied

Social gain = shaded area 1 (between P & SMC from X_m to X_s)

Alternative perspective showing division of gains, losses



Producer surplus gain = area 3
Externality benefit = area 4
= areas 1 + 2
Subsidy cost = areas 2 + 3
Net gain = areas 1 + 2 + 3 – (2+3) = area 1

SECOND-BEST IMPORT TARIFF

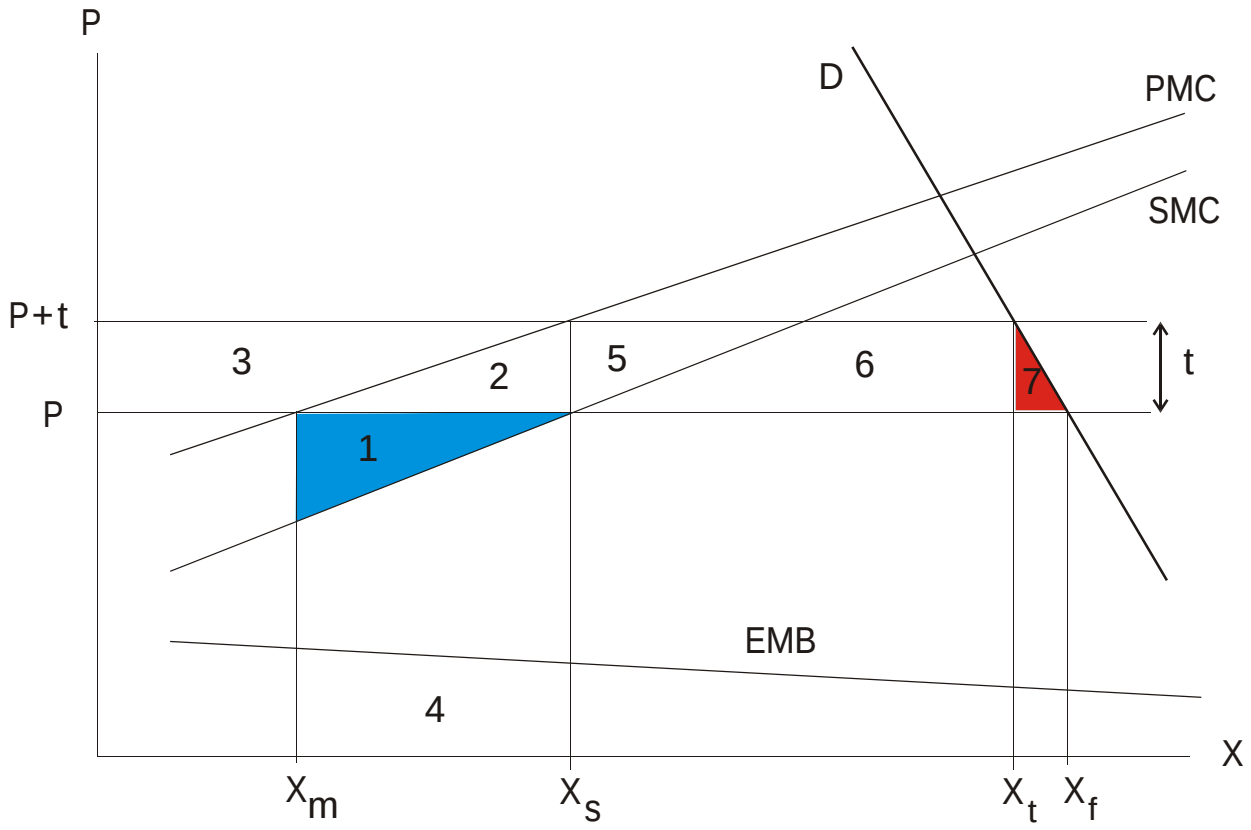
Suppose this is a small country facing given world price P, importing good X
(to avoid mixing in separate consideration of optimal tariff)

Levy an import tariff t so that production rises to optimal X_s

Consumption falls from X_f to X_t . Resulting gains and losses:

Producer surplus gain
= area 3
Externality gain = area 4
= areas 1 + 2
Consumer surplus loss
= areas 3+2+5+6+7
Tariff revenue gain
= areas 5 + 6
Net gain =
area 1 – area 7

Area 7 is the extra
by-product distortion
caused by the tariff

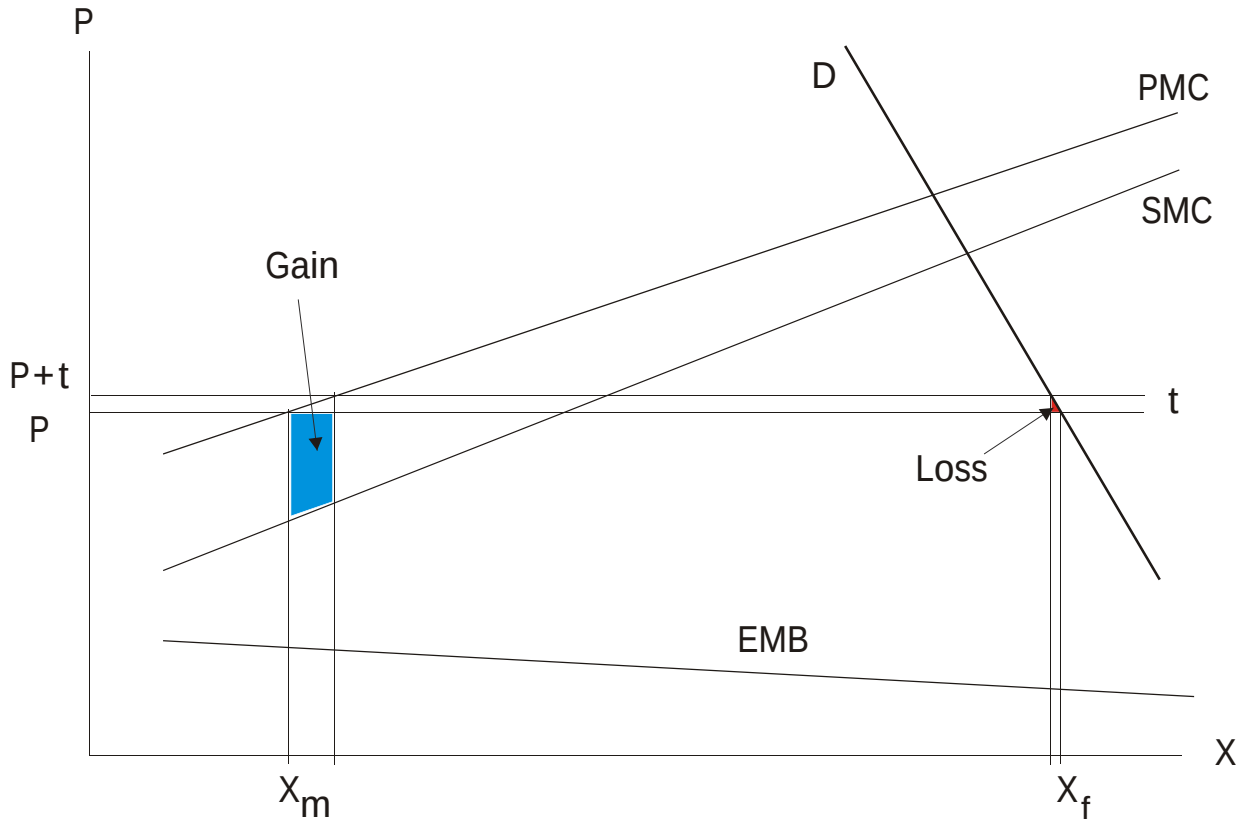


A SMALL TARIFF YIELDS A (SMALL) NET BENEFIT

A small import tariff t increases domestic production
and decreases consumption, both by small amounts

The gain from higher production is t times the initial gap between P and SMC; therefore proportional to t

The consumption dead-weight loss is triangle: height t, width prop. to t
Area prop. to t^2



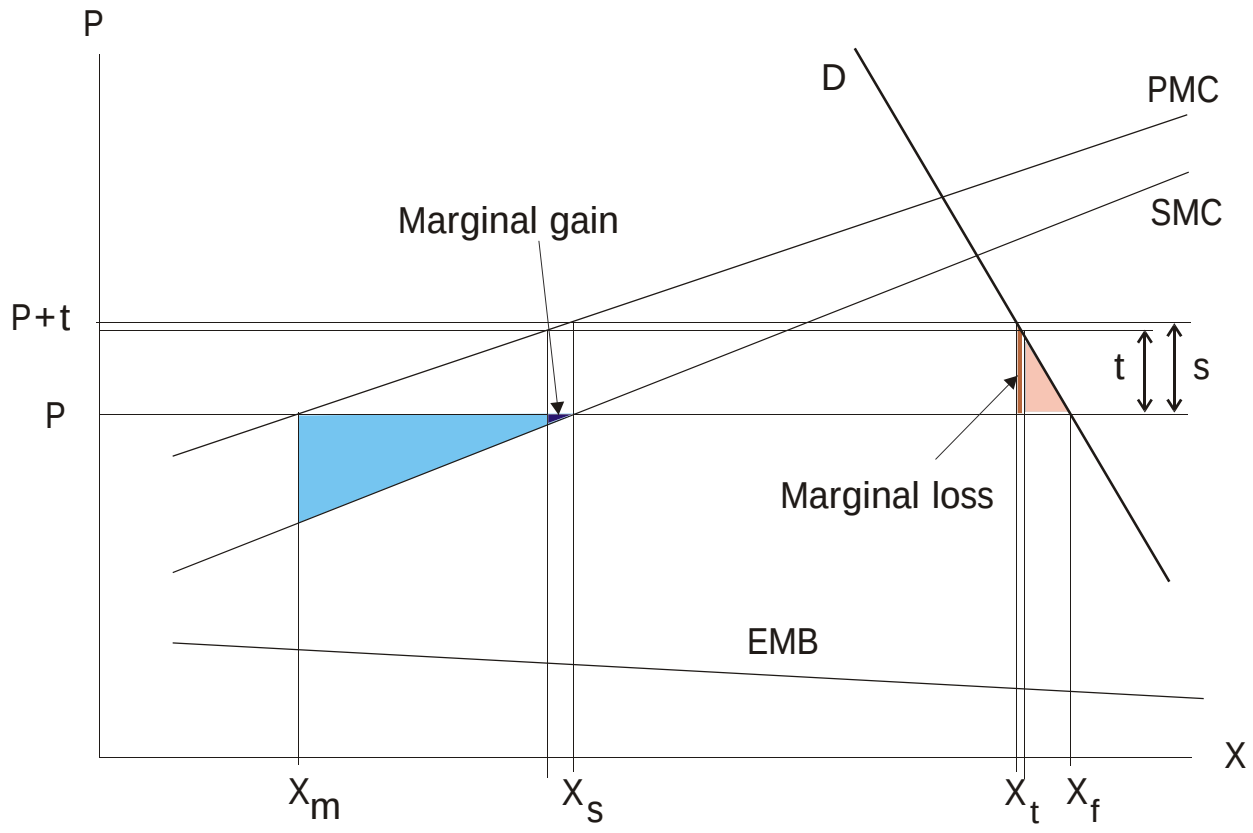
Therefore for small t, gain exceeds loss:
small tariff is improvement over no policy at all.

TARIFF SHOULD STOP SHORT OF FULLY CORRECTING PRODUCTION DISTORTION

If s is the optimal subsidy, the last increment of an import tariff t will yield

Marginal gain on
production-side
is second order
of smallness
(darker triangle)
By-product
marginal loss on
consumption side
is of first-order
(darker vertical bar)
Therefore net loss

Second-best optimal
tariff will balance
gain and loss
at the margin



VALUATION OF GOVERNMENT REVENUE

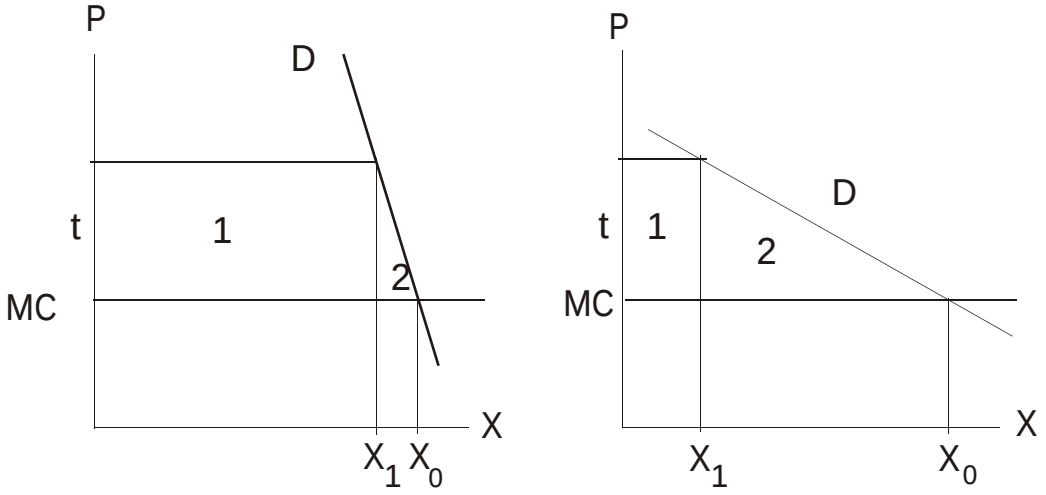
The above analysis valued government's gain or loss of revenue dollar-for-dollar
equivalently to the gains or losses of consumer / producer surpluses
Background assumption: revenue needed for subsidy is raised, and
revenue gained from taxes disbursed, without any distortion (lump-sum transfers)

What if this is not possible? The “shadow price” of government revenue is > 1
Does this strengthen the case for a tariff because it raises revenue,
while a production subsidy would lose revenue?

An import tariff is exactly equivalent to an equal-rate combination
of a production subsidy and a consumption tax
So correcting a production distortion using an import tariff is equivalent to
correcting it with a production subsidy and raising (in fact over-raising)
the revenue to finance the subsidy by taxing consumption of the same good
Consider the more general possibility of levying the consumption tax
at a different rate, or even levying it on a different good
This makes it a more general problem in public finance:
What is the optimal base and rate for commodity taxation?

Will briefly explain the general idea of this analysis for case of
constant marginal cost (horizontal supply curve) to focus on consumption DWL

Contrast cases of low and high demand elasticities:
Tax reduces quantity
consumed from X_0 to X_1



Area 1 = tax revenue; Area 2 = dead-weight loss

For a given tax rate t
Higher demand elasticity
greater quantity reduction
greater tax revenue loss
greater dead-weight loss

Suppose $X = X_0 - k\,t$

Tax revenue $R = t\,(X_0 - k\,t)$

Dead-weight loss $DWL = \frac{1}{2}\,k\,t^2$

Marginal tax revenue $= X_0 - 2\,k\,t$

Marginal dead-weight loss $= k\,t$

Optimal tax structure will equate marginal DWL / marginal R across commodities

Need to do this more generally. For good i, let demand $X_i = D_i(P_i) = D_i(MC_i + t_i)$

When t_i rises by Δt_i , X_i changes by $\Delta X_i = D_i'(P_i)\,\Delta t_i < 0$. Therefore

marginal $DWL_i = -\,t_i \Delta X_i$, and marginal $R_i = t_i\,\Delta X_i + X_i \Delta t_i$

Let common ratio of marginal DWL_i / marginal $R_i = c$ for all i

Simplifying, $(1+c)\,t_i\,\Delta X_i = c\,X_i \Delta t_i$ for all i , or

$$\frac{t_i}{P_i} = \frac{c}{1+c}\,\frac{X_i}{P_i D'_i(P_i)} = \frac{c}{1+c}\,\frac{1}{e_i}$$

where e_i denotes the price elasticity of demand for good i .

Corrections needed with more rigorous analysis:

[1] the elasticities should be substitution elasticities, excluding income effects,

[2] need to include effects arising from cross-elasticities among goods.

But the general intuition remains valid.

Taxing imports: If domestic consumption = 100, production = 80, demand elasticity = 0.5, supply elasticity = 1, then a 1% increase in price changes demand to 99.5, supply to 80.8, so imports reduce from 20 to 18.7, which is a 6.5% decrease. So elasticity = 6.5, which is quite large.

Imports are not good candidates for taxation to raise revenue.

SOME APPLICATIONS OF THE PRINCIPLE OF POLICY TARGETING

[1] Infant industries in LDCs should be nurtured using subsidies
or investment coordination and provision of credit if capital market failures

[2] Macroeconomic unemployment should be tackled by fiscal and monetary policies
If cause is micro (labor market failure), use employment subsidy

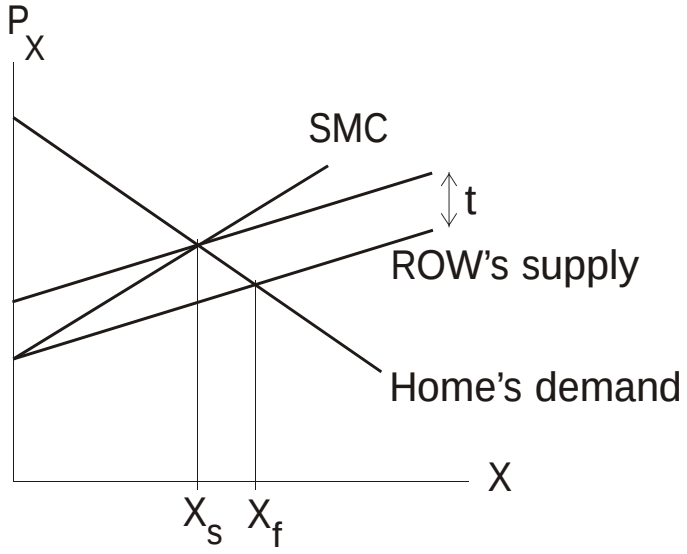
[3] Secure supplies of food, defense materials etc. should be achieved using subsidy
Energy independence using strategic reserve

POSSIBLE LIMITATION OF THE PRINCIPLE OF TARGETING

If the private sector consists of large strategic players,
they may game against the government's policy
For example, if the labor market failure consists of a high wage set by unions,
the unions will only further exploit a subsidy
But they can likewise exploit a policy offering trade barriers

OPTIMAL TARIFF AS A "DISTORTION" CORRECTING POLICY

When a country faces an upward-sloping supply curve of its import good from ROW,
each marginal unit imported increases the price paid by all infra-marginal units
The importer of the marginal unit does not take this into account
From the country's perspective, the marginal cost of imports > price of marginal unit
The ROW's supply curve of home's imports
is like the home's average cost (AC) curve
Then home's SMC of imports is the
corresponding marginal



The optimal level of imports X_s
(from home country's point of view, is where
the SMC cuts the home's demand curve
The optimum tariff raises the private cost of
importing so the AC + t meets the
home demand curve at the optimum

Here trade is the margin of distortion, that is why a trade policy is first-best

Of course this is not optimal from a worldwide perspective