

Macro II/Aussenwirtschaft

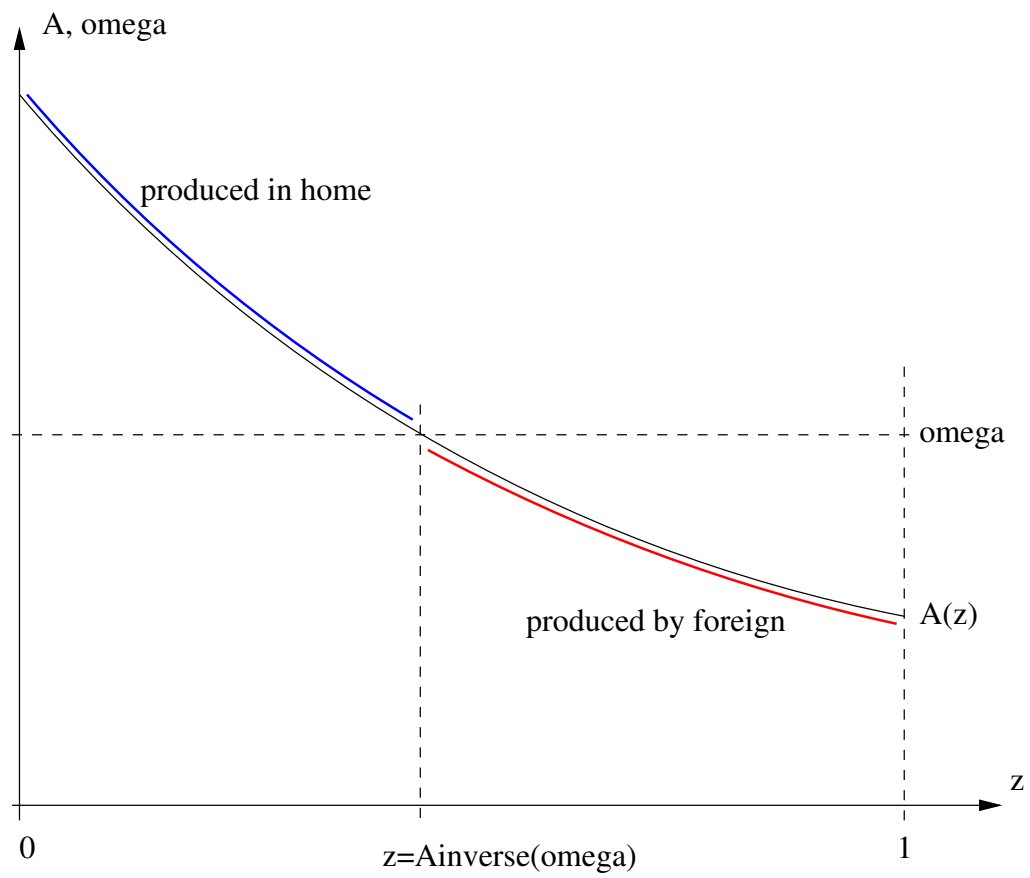
Lecture Slides No 2

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Generalized Ricardo by DFS

- Dornbusch/Fischer/Samuelson (Samuelson w/ continuum of coauthors)
- generalize from $1 \times 2 \times 2$ to $1 \times \infty \times 2$ (# factors, # sectors, # countries)
- i.e. infinitely many sectors/goods instead of only 2
- denote each good by $z \in [0, 1]$
- ratio of unit input requirements: $A(z) \equiv a^*(z)/a(z)$
- wlog (without loss of generality — well, w/o much loss) assume $A'(z) < 0$
- which does assume A is differentiable, smoothing the model

- you get $A'(z) < 0$ by simple reordering of sectors
- reordering is wlog, but only for 2 countries, not for many countries!
- now determine which country produces what
- cost at home $a(z)w$ vs. foreign cost $a^*(z)w^*$
- home produces z with $a(z)w \leq a^*(z)w^*$, foreign z w/ $a(z)w \geq a^*(z)w^*$
- knife-edge case $A = \omega$ doesn't matter (zero mass)
- useful to define $\omega \equiv w/w^*$
- home produces if $A(z) \geq \omega$

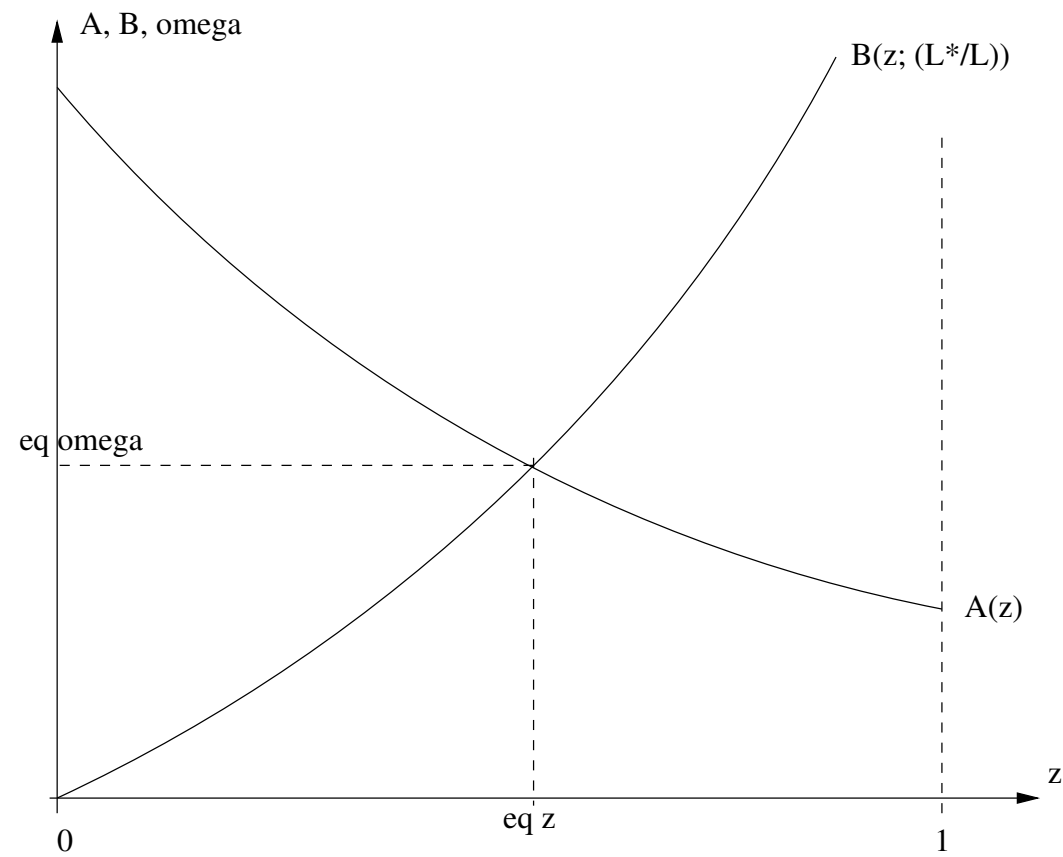


Demand Side

- where does equilibrium ω come from?
- bring in demand side, say Cobb-Douglas
- constant (by homotheticity), identical budget shares
- $b(z) = P(z)C(z)/Y = b^*(z)$
- expenditure share on home products $v(\tilde{z})$
- $v(\tilde{z}) \equiv \int_0^{\tilde{z}} b(z)dz$
- share spent on goods produced by foreign: $1 - v(\tilde{z})$

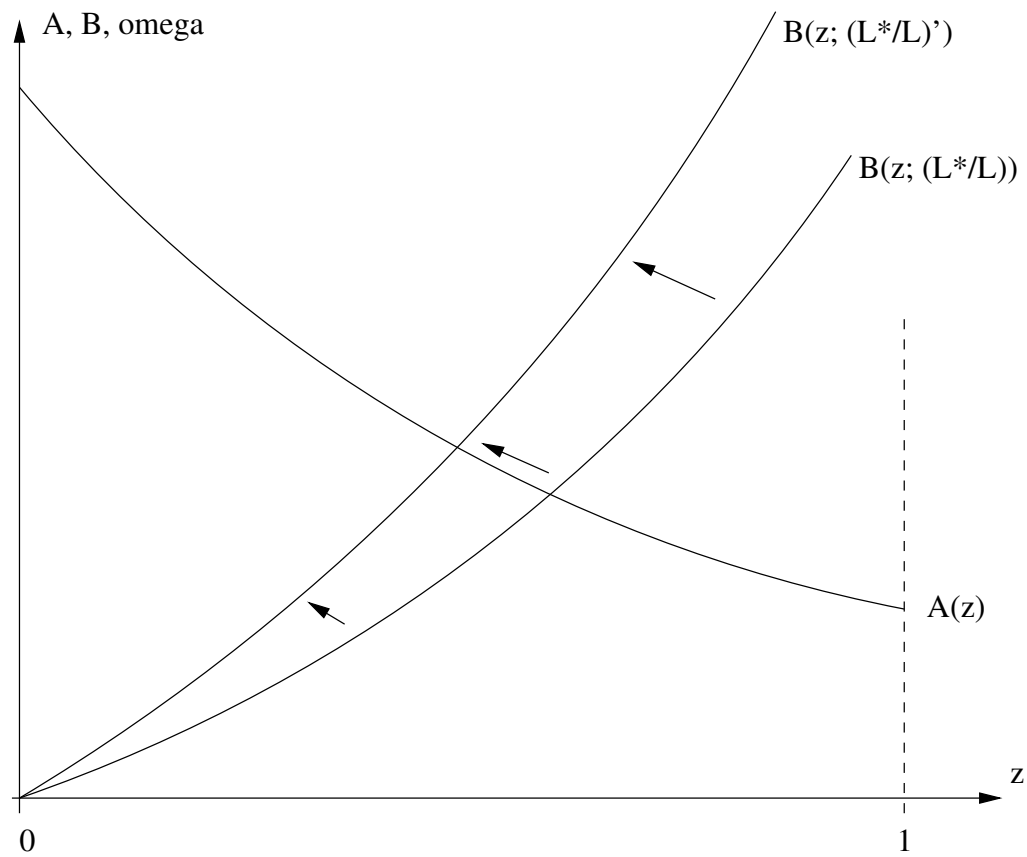
Equilibrium

- put supply and demand together
- budget constraint: $wL = v(\tilde{z})(wL + w^*L^*)$
- trade balance: $(1 - v(\tilde{v}))wL = v(\tilde{z})w^*L^*$
- that is: value of imports equals value of exports (other's imports)
- $\omega = w/w^* = \frac{v(\tilde{z})}{1-v(\tilde{z})} \frac{L^*}{L} = B(\tilde{z}; (L^*/L))$
- $\tilde{z} = 0$, home produces nothing, $B = 0$
- $\tilde{z} = 1$, $B \rightarrow \infty$, i.e. B upward sloping



Extension: large and small

- let's do comparative statics on L^*/L
- does not affect A schedule, as it doesn't affect productivities
- by contrast, it does affect the B schedule, i.e. the demand side
- recall definition of B : $\frac{v(\tilde{z})}{1-v(\tilde{z})} \frac{L^*}{L}$
- if foreign country gets relatively larger, B shifts/turns up
- home country produces smaller range of products, but is better off



Extension: transport costs

- introduce a transportation cost of 'iceberg style'
- super common, even though horse transporting hay captures it better: transport sector with output as input
- formally: of 100 percent shipped, only $g < 1$ arrives
- for home to produce: $wa(z) \leq w^*a^*(z)/g$ or $A(z)/g \geq \omega$
- for foreign: $w^*a^*(z) \leq wa(z)/g$, or $A(z)g \leq \omega$
- finding equilibrium ω more involved

