Assignment 1 Writeup

Yixin Sun

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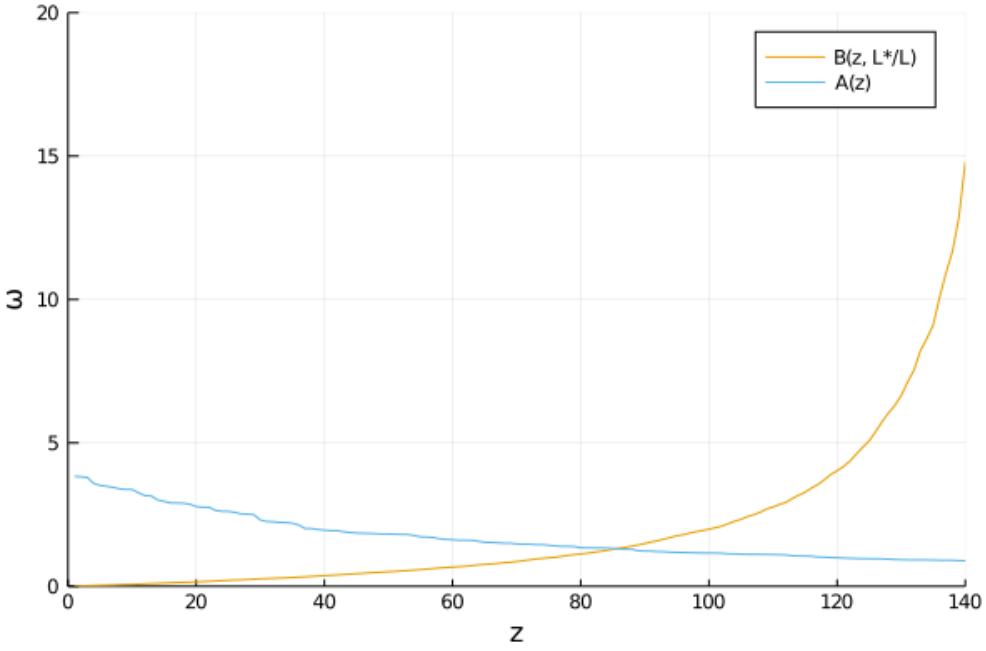
1 Figure 1



2 Solving for Equilibrium

Table 1: Equilibrium ω and Specialization

Var	$g = 1$	$g = 0.9$
$\bar{z}^*$	86	72
$\bar{z}$	86	95
ω	1.306	1.314

3 Calculating Welfare

From class, we can calculate welfare using:

$$\ln(U/L) = \ln w - \int_0^1 b(z) \ln p(z) dz$$

Reformulating this equation, setting $w = 1$ and $L = L^* = 1$, Home's welfares in autarky and trade are:

$$\begin{aligned}
\ln(U^a/L) &= \ln w - \int_0^1 b(z) \ln(a(z) w L) dz \\
&= -\int_0^1 b(z) \ln(a(z)) dz \\
\ln(U^t/L) &= \ln w - \int_0^{\bar{z}} b(z) \ln(w a(z)) dz - \int_{\bar{z}}^1 b(z) \ln\left(a^*(z) \frac{w^* L^*}{g}\right) dz \\
&= -\int_0^{\bar{z}} b(z) \ln(a(z)) dz - \int_{\bar{z}}^1 b(z) \ln\left(\frac{a^*(z)}{\bar{\omega} g}\right) dz
\end{aligned}$$

Similarly, Foreign's welfares are:

$$\begin{aligned}
\ln(U^{*a}/L^*) &= \ln\left(\frac{1}{\bar{\omega}}\right) - \int_0^1 b(z) \ln(w * a^*(z)) dz \\
\ln(U^{*t}/L^*) &= \ln\left(\frac{1}{\bar{\omega}}\right) - \int_{\bar{z}^*}^1 b(z) \ln\left(\frac{a^*(z)}{\bar{\omega}}\right) dz - \int_0^{\bar{z}^*} b(z) \ln\left(\frac{a(z)}{g}\right) dz
\end{aligned}$$

Table 2: Welfare

Var	$g = 1$	$g = 0.9$
Home - Autarky	0.421	0.421
Home - Trade	0.527	0.487
Foreign - Autarky	0	0
Foreign - Trade	0.26	0.202

4 Volume of Trade and Gains from Trade

To calculate the amount traded, we want to find

$$Volume = \int_0^{\bar{z}^*} p(z) c(z) dz + \int_{\bar{z}}^1 p(z) c(z) dz$$

We have that $b(z) = \frac{p(z)c(z)}{wL}$ and $w = 1$, so we can write

$$Volume = \int_0^{\bar{z}^*} b(z) w^* L^* dz + \int_{\bar{z}}^1 b(z) L dz$$

Table 3: Changing $b(z)$

Var	Economy 1	Economy2	Economy 3
$\bar{z}$	72	75	67
$\bar{z}^*$	95	102	90
ω	1.314	1.28	1.364
Volume	0.734	0.734	0.734
Gains - Home	0.066	0.068	0.073
Gains - Foreign	0.475	0.449	0.527