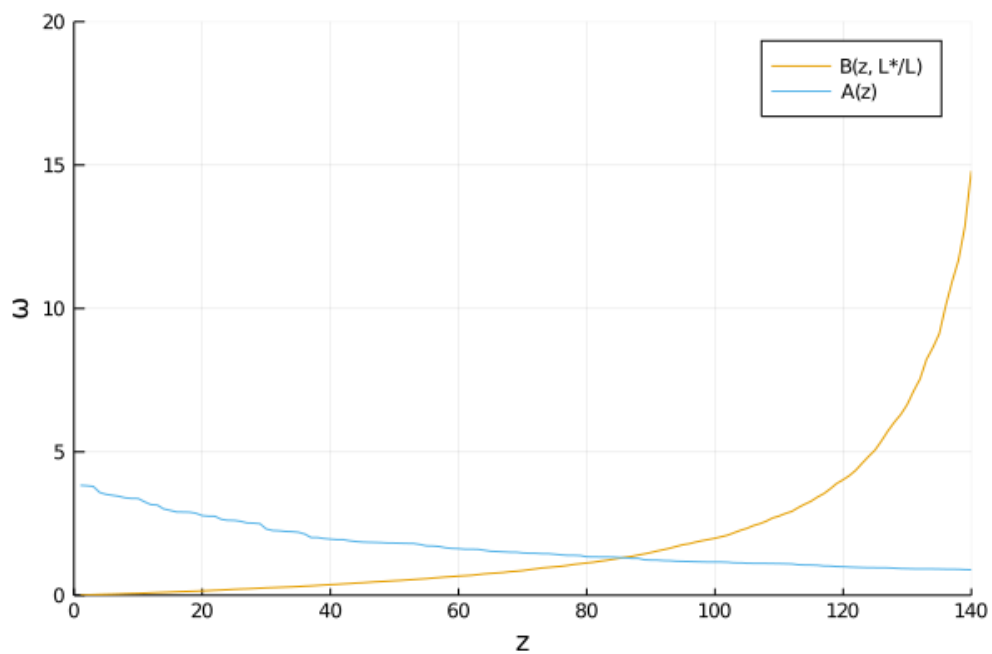


# Assignment 1 Writeup

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## 1 Figure 1



## 2 Solving for Equilibrium

Table 1: Equilibrium  $\omega$  and Specialization

Var	$g = 1$	$g = 0.9$
$\bar{z}^*$	86	72
$\bar{z}$	86	95
$\omega$	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:

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

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

Table 3: Changing  $b(z)$

Var	Economy 1	Economy2	Economy 3
$\bar{z}$	72	75	67
$\bar{z}^*$	95	102	90
$\omega$	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