Parameterization of Shapley Economy

Two types of agent, 1 and 2.

$$\begin{aligned} u_1(x_1, y_1) &= dx_1 + a_1\left[1 - exp\left(-\frac{y_1}{b_1}\right)\right] \\ u_2(x_1, y_1) &= y_2 + a_2\left[1 - exp\left(-\frac{dx_2}{b_2}\right)\right] \end{aligned}$$

These are "Shapley utilities." We use the following monotonic transformation of these utilities in order to pay subject i v_i dollars.

$$\begin{aligned} v_1(u_1) &= g_1 u_1 - h_1 \\ v_2(u_2) &= g_2 u_2 - h_2 \end{aligned}$$

Global Parameters:

- $w_1^x = \frac{5000}{d}$ (endowment of good x, type 1
- $w_1^y = 3000$
- $w_2^x = \frac{2000}{d}$
- $w_2^y = 6000$

We consider four economies, A-D.

In the "continuous" version of each economy, $d = 1$. In the discrete version, $d = 200$. The only impact of changing d is in the utility function and endowments. Importantly, no other parameters are affected.

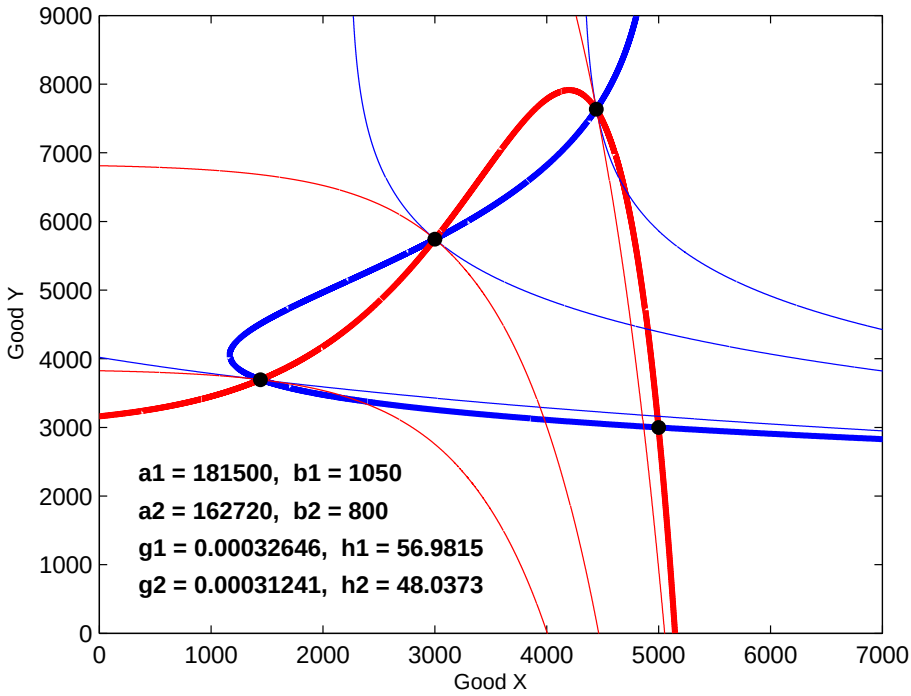

Figure 1: Economy A - Continuous Offer Curves

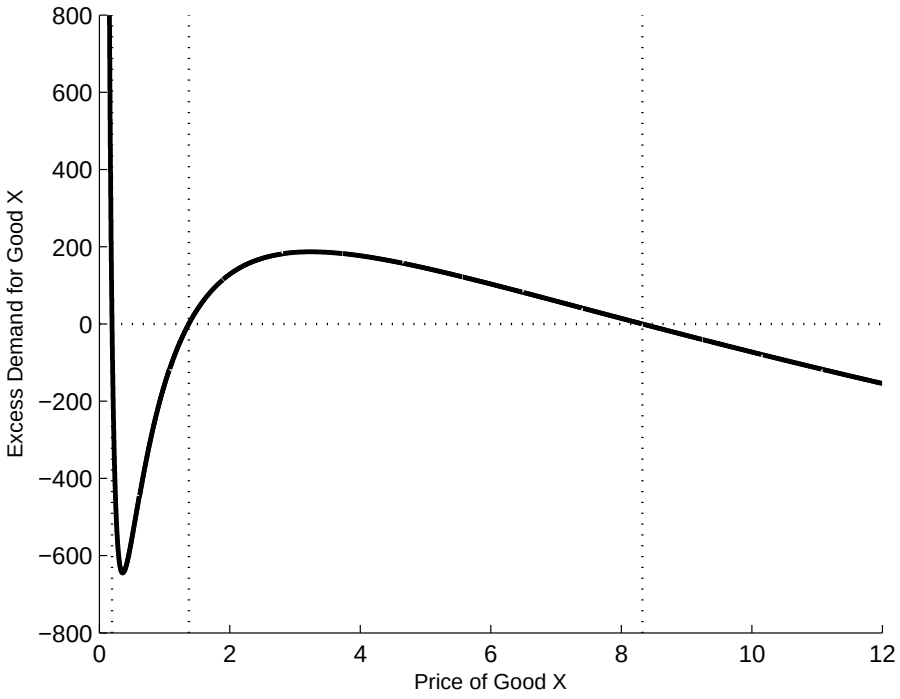

Figure 2: Economy A - Continuous Excess Demand

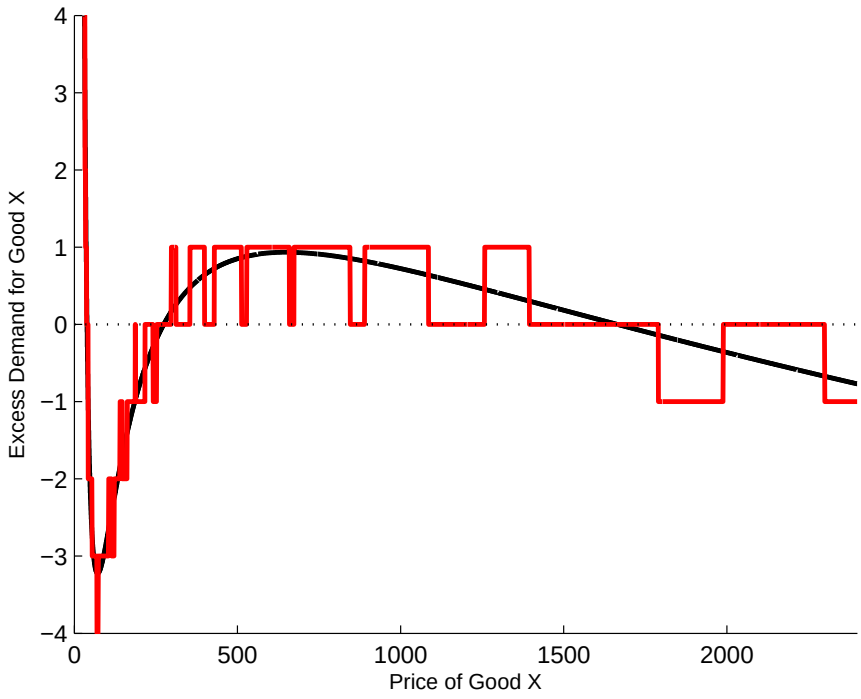

Figure 3: Economy A - Discrete Excess Demand

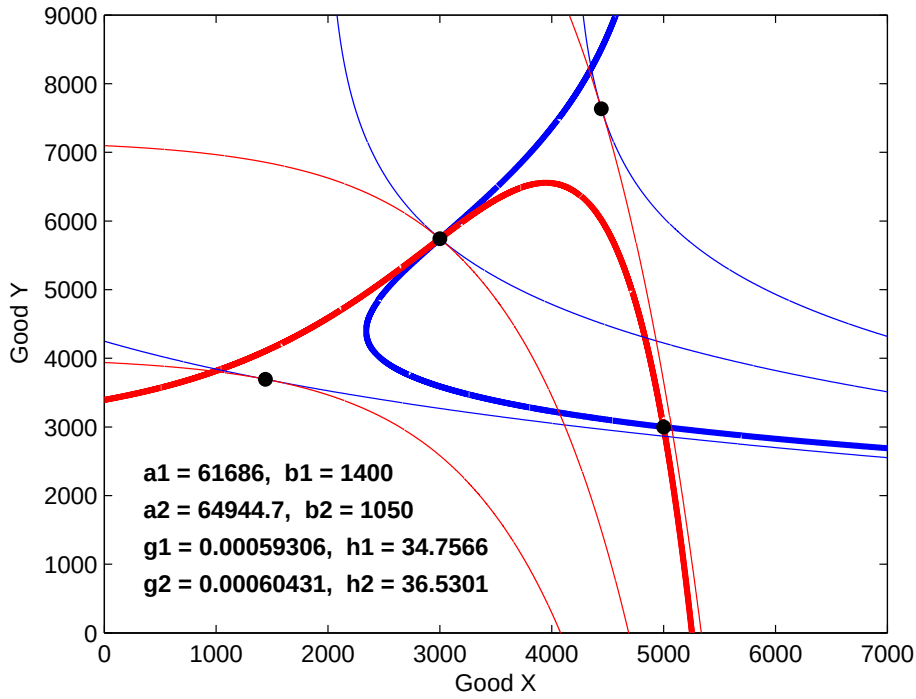

Figure 4: Economy B - Continuous Offer Curves

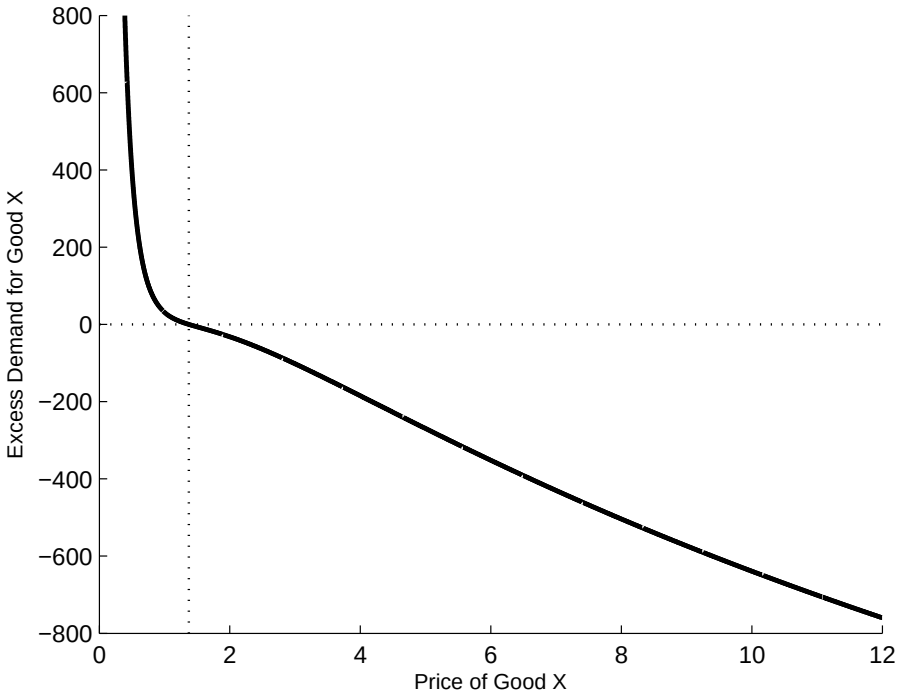

Figure 5: Economy B - Continuous Excess Demand

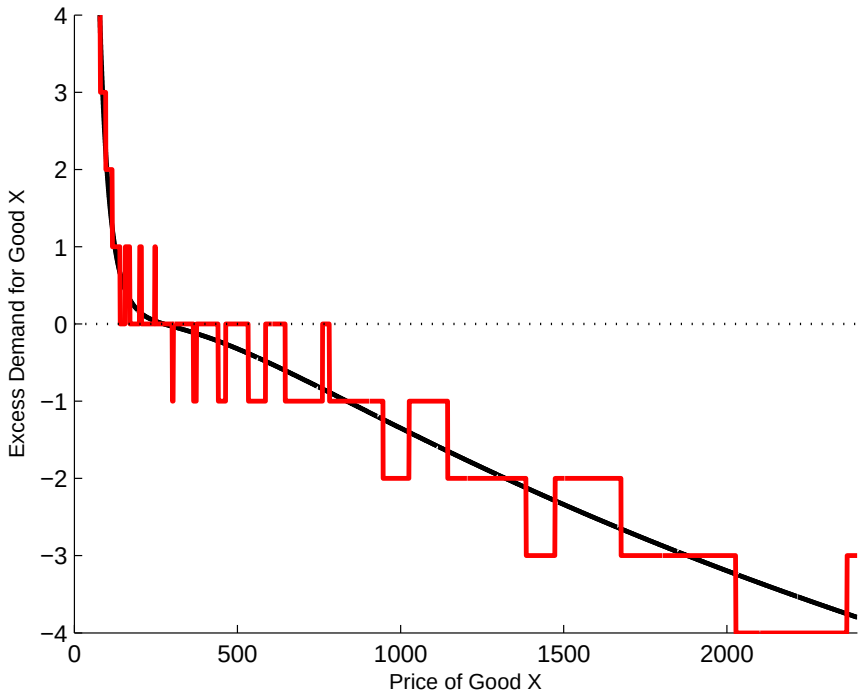

Figure 6: Economy B - Discrete Excess Demand

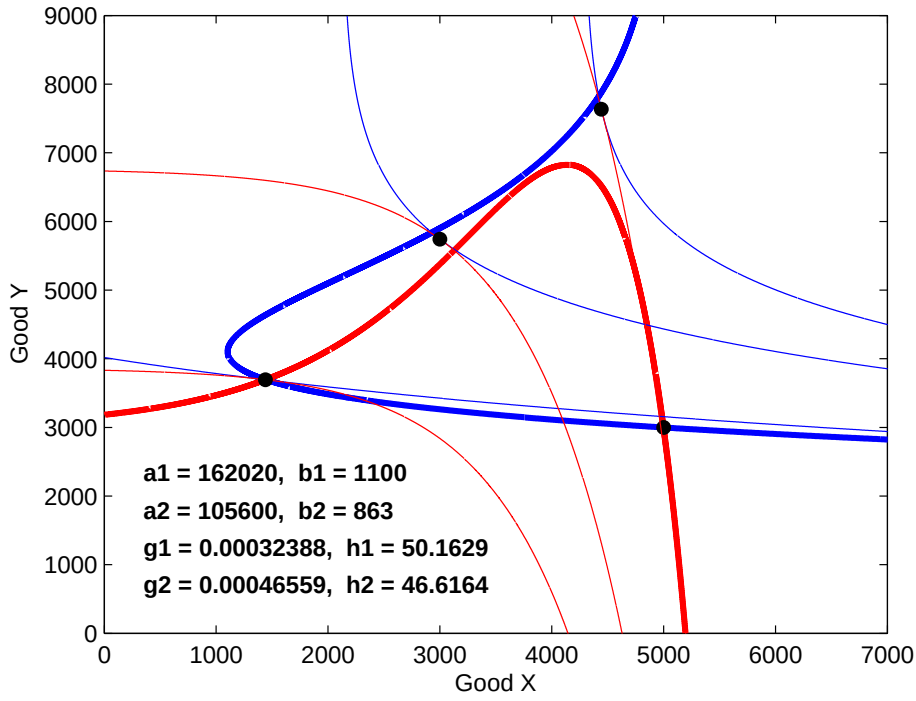

Figure 7: Economy C - Continuous Offer Curves

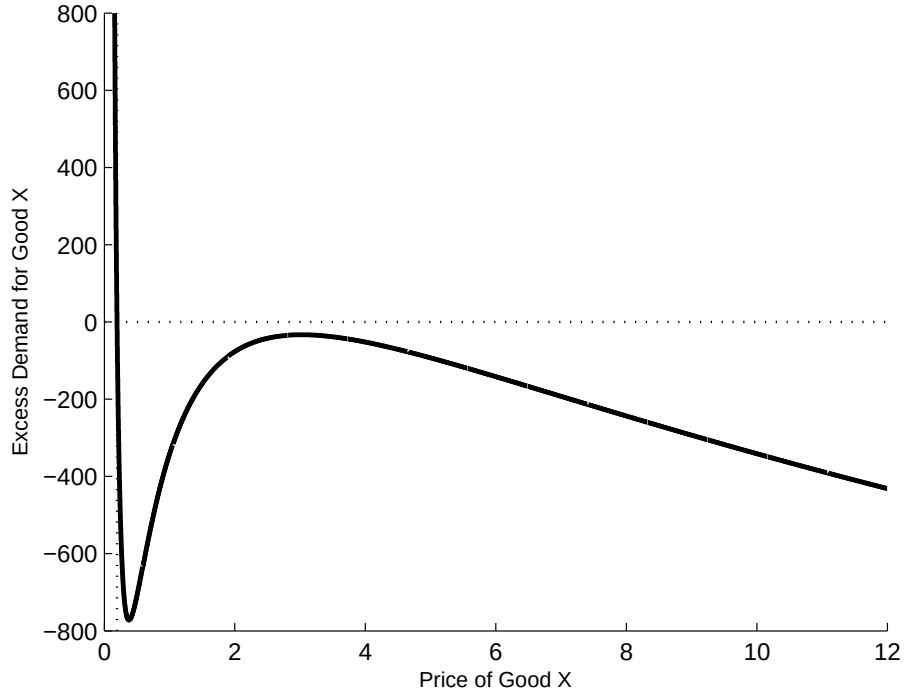

Figure 8: Economy C - Continuous Excess Demand

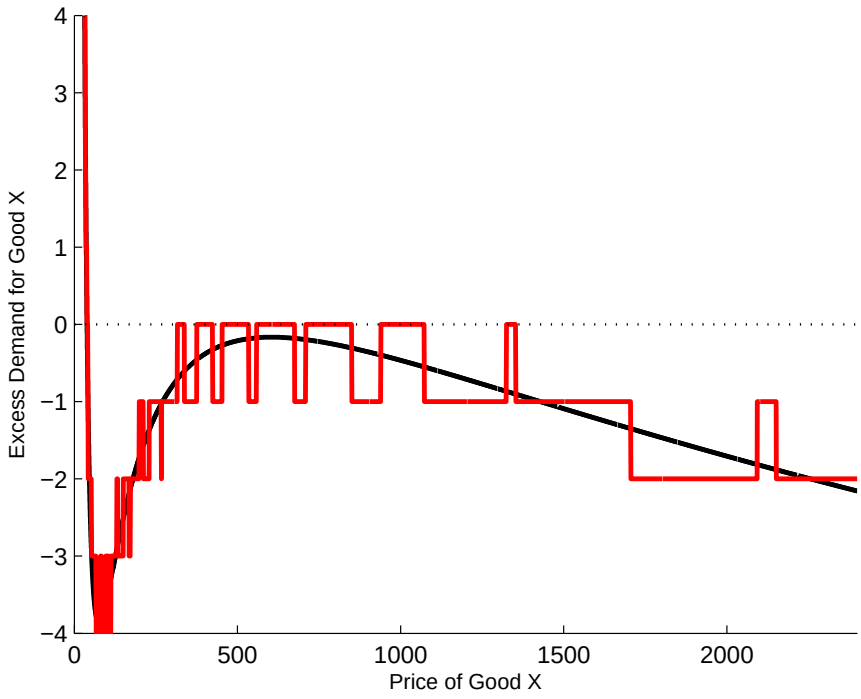

Figure 9: Economy C - Discrete Excess Demand

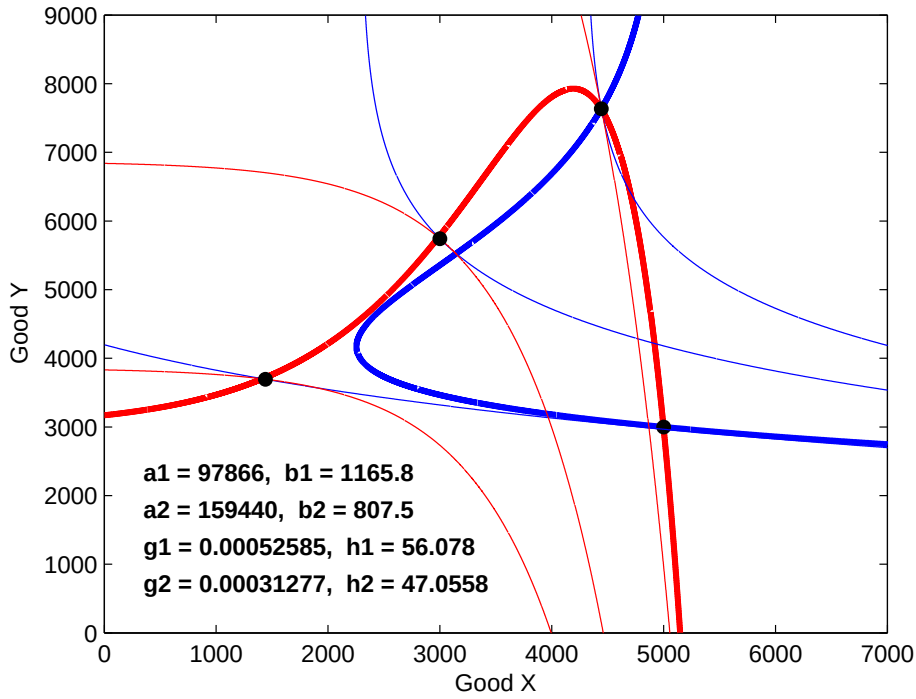

Figure 10: Economy D - Continuous Offer Curves

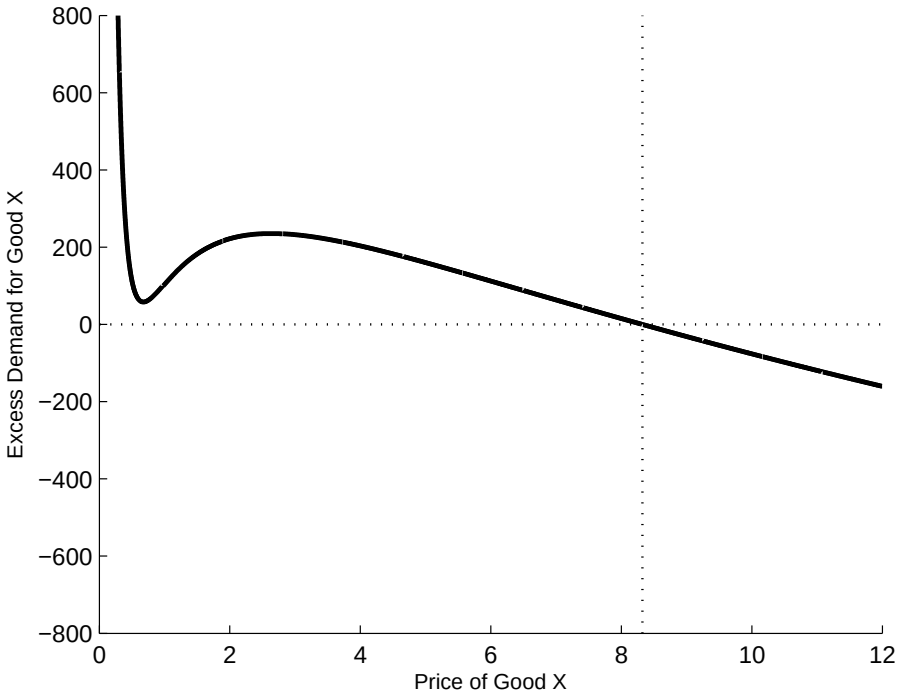

Figure 11: Economy D - Continuous Excess Demand

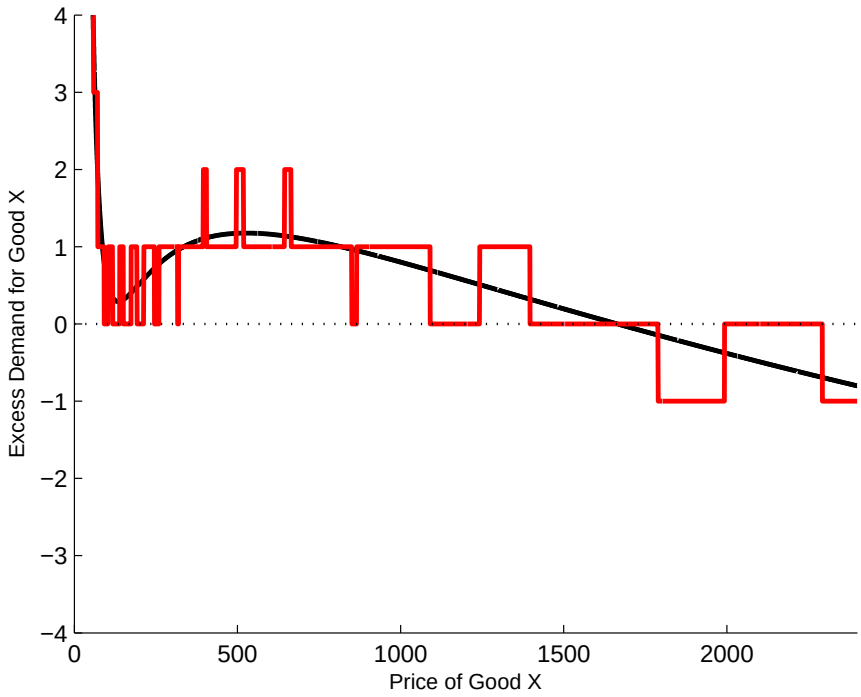

Figure 12: Economy D - Discrete Excess Demand