Problem Set 3

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1 Problem 2

Variable	Standard	TV1 Shock $\alpha = 1$	TV1 Shock $\alpha = 2$
Price level	0.739	0.691	0.719
Mass of Incumbents	6.658	6.735	6.039
Mass of Entrants	2.639	4.223	3.511
Mass of Exits	1.662	2.813	2.310
Aggregate Labor	179.833	188.890	182.623
Labor of Incumbents	142.859	139.506	136.648
Labor of Entrants	37.207	49.384	45.975
Fraction of Labor in Entrants	0.207	0.261	0.252

Without random disturbances in action values, only firms with the lowest productivity exit. With the EV shocks with variance parameter $\alpha = 1$, the value of staying is higher for low incumbent firms but decreases for medium productivity firms. We see that firms with the lowest productivity exit with a lower probability compared to the baseline model while firms with medium productivity exit with a higher probability.

The price is lower with EV shocks since the value of exiting is lower for medium productivity firm. Since less low productivity firms exit less frequently, or equivalently low productivity firm enter more frequently, the mass of entrants increases. The law of motion for the mass of incumbents is increasing in M, so the mass of incumbents increases with EV shocks.

The lower equilibrium price lowers labor demand on the intensive margin, but the higher mass of firms increases aggregate labor on the extensive margin. Since there are more entrants relative to incumbents with EV shocks, the fraction of labor by entrants increases.

When we set $\alpha = 2$, the variance of the EV shock decreases, so we see higher probabilities for the actions implied by the standard model (the modal action). We see that the results for price level and aggregate labor with $\alpha = 2$ are in between the results of the standard model and the results with $\alpha = 1$.

2 Problem 3

Figure 1 illustrates the exit decisions when the fixed cost is 10. In the benchmark case, all of the smallest firms choose to exit while none of the larger firms exit. With the higher variance ($\alpha = 1$) case, about half of the smallest firms exit and only the largest firms (states greater than or equal to 3) never exit. As we decrease the variance of the decision shock ($\alpha = 2$), firms choices are closer to the benchmark case in which there is no variance in decisions across firms within a size category.
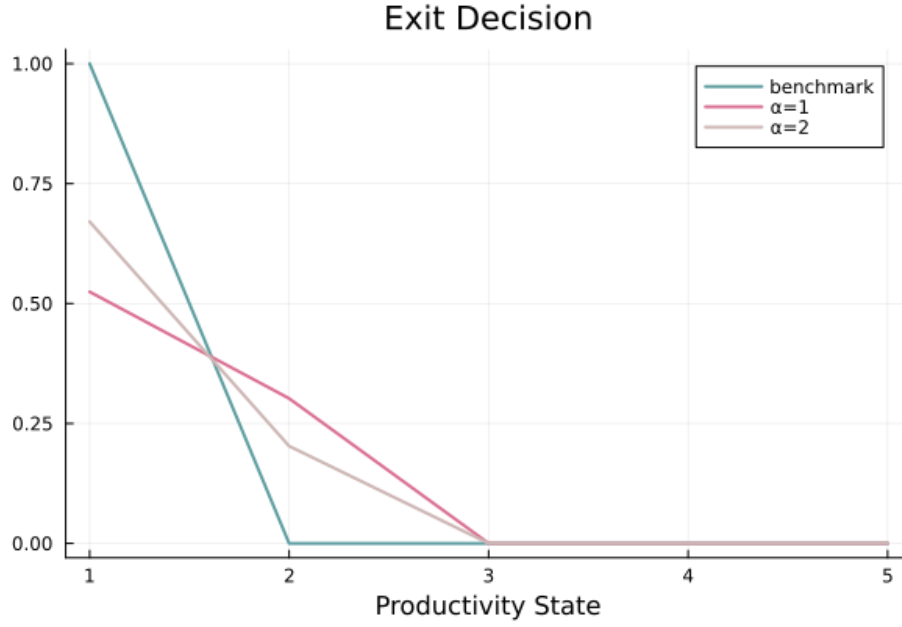
Figure 1: Exit decision with fixed cost $= 10$
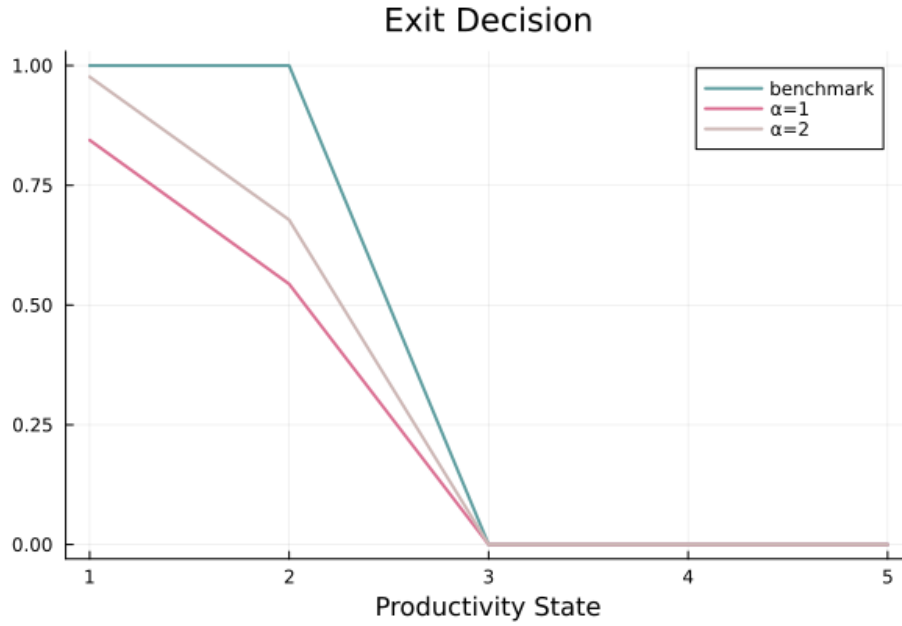
3 Problem 4

Figure 2: Exit decision with fixed cost $= 15$

Figure 2 shows the exit decisions when the fixed cost is raised to 15. The probability of exit increases for the model specification with EV shocks, and in the standard model, firms with the second lowest productivity also exit with the higher fixed cost. The fixed cost decreases the immediate flow profits and the continuation value by affecting all future profits. A higher productivity is needed to induce the firm to stay.