

# Menu Cost Models

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# Chapter A

## Golosov and Lucas Jr (2007) with aggregate volatility

### A.1 Impulse Resonse Function

The impluse response of the economy to a one grid point nominal shock is shown in Figs A.1.1 and A.1.2. The IRF on impact is 98.5% in this economy (as a fraction of the nominal shock). The IRF dies out in eight to ten periods but it takes a couple of months for the small variations to die out completely.

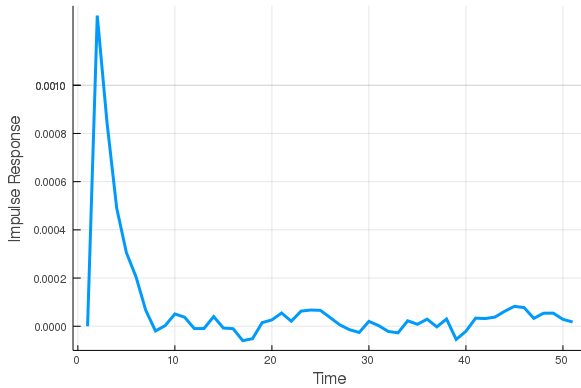


Figure A.1.1: IRF till 50 periods after the shock

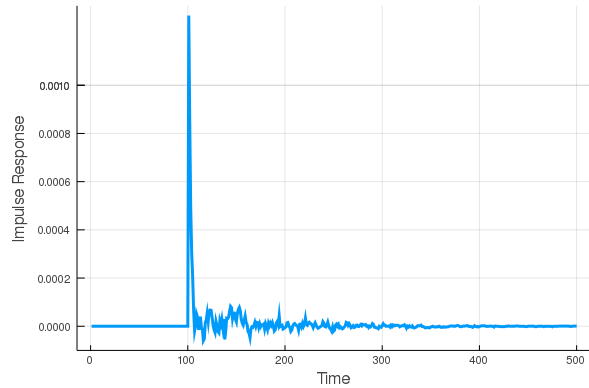
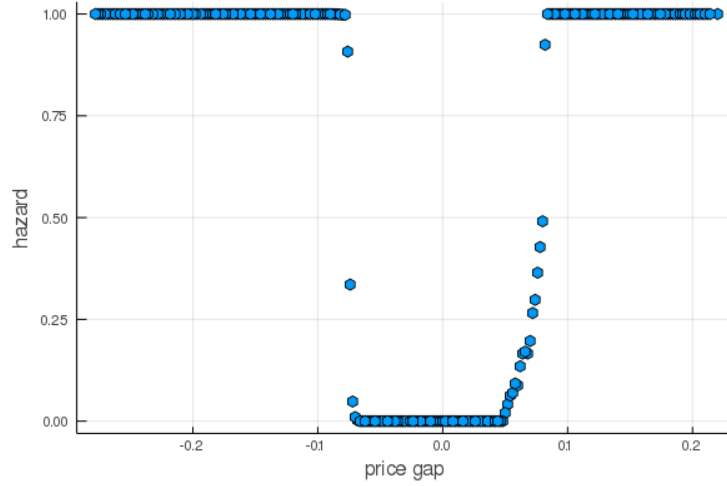


Figure A.1.2: IRF for the entire simulation

The variance of the output in the baseline economy is . When we double the menu cost from 0.045 to 0.09 the variance of the output increases by 3.038 times. On doubling the menu cost from 0.045 to 0.09 the variance of output increase by 3.038 times.

### A.2 Hazard

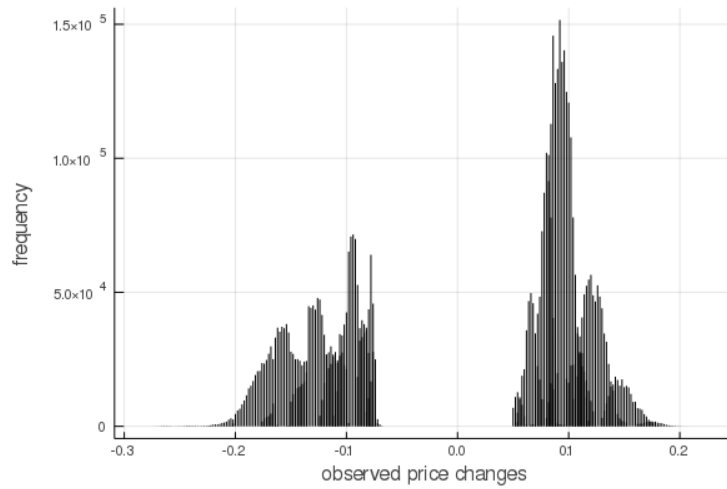
The Hazard Function of the economy is as expected from the theory. The firms essentially follow a sS rule and adjust only when the price gaps get more than a certain thresholds. The probability of adjustment is zero within this interval and then jumps immediately to one outside this boundary.



**Figure A.2.1:** Hazard

### A.3 Price Change Distribution

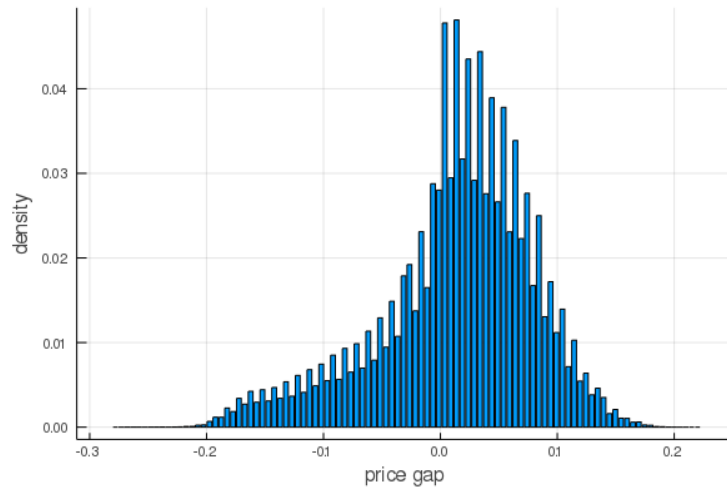
Once the firm's price gap gets beyond the inaction interval, they immediately adjust to the optimal. However, due to the presence of aggregate shocks we do not get just the two mass points in the case of standard golosov lucas. Rather we get the distribution as in Fig A.3.1.



**Figure A.3.1:** Observed Price Changes

### A.4 Ergodic Price Gap Distribution

In the presence of a positive drift and aggregate shocks to nominal spending, we get the following distribution of the price gaps in the model.



**Figure A.4.1:** Price Gap Distribution

# Chapter B

## Calvo Plus

### B.1 Hazard Function

In the Calvo plus extension described in the problem set, the model essentially turns to the standard Calvo model. In that model, the firms only adjust with an exogenous probability (when the calvo fairy arrives). With  $1 - \alpha = 0.1$ , we get that the probability of adjustment is always equal to 0.1. This can be seen in the Fig B.1.1. The deviations towards the extremes of the x-axis are due to the fact that bins at those locations are relatively sparse.

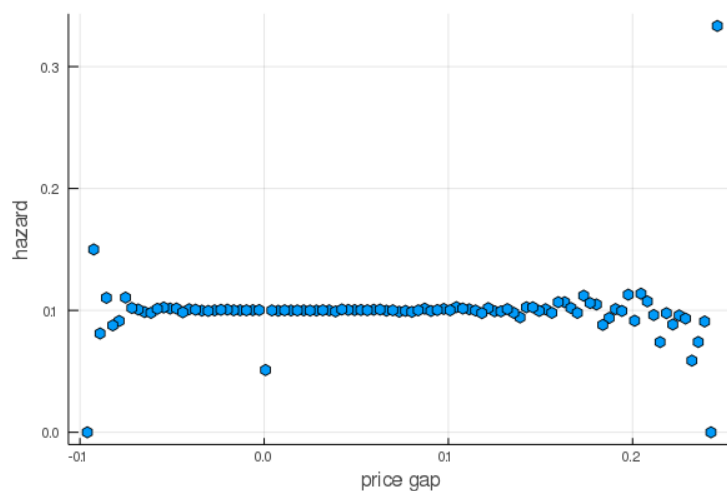
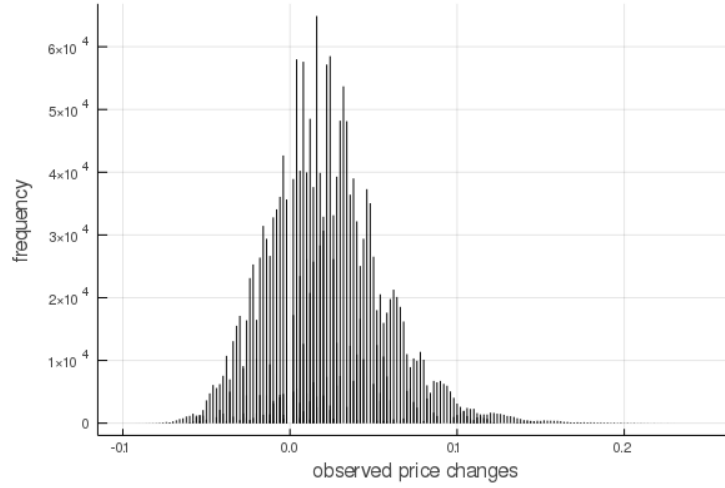


Figure B.1.1: Hazard

### B.2 Observed Price Change Distribution

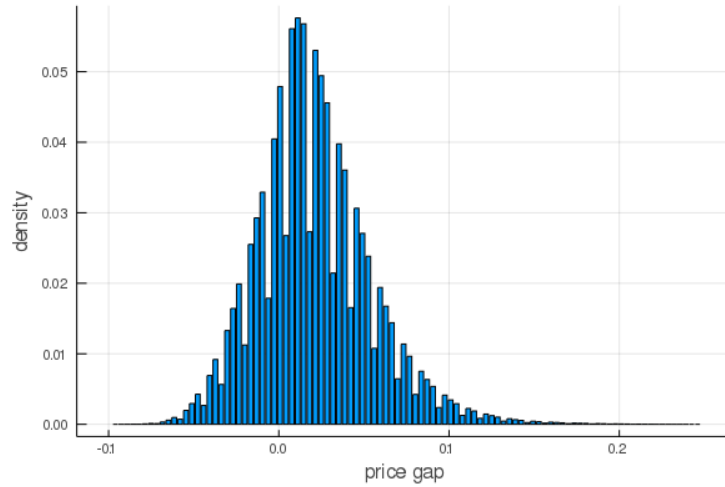
The observed price change distribution is shown in Fig B.2.1.



**Figure B.2.1:** Observed Price Changes

### B.3 Price Gap Distribution

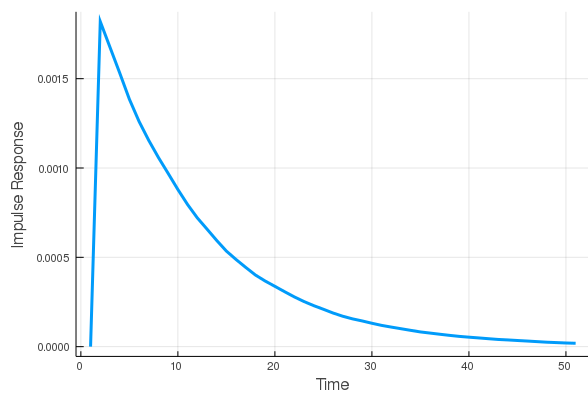
The price gap distribution is shown in Fig B.3.1.



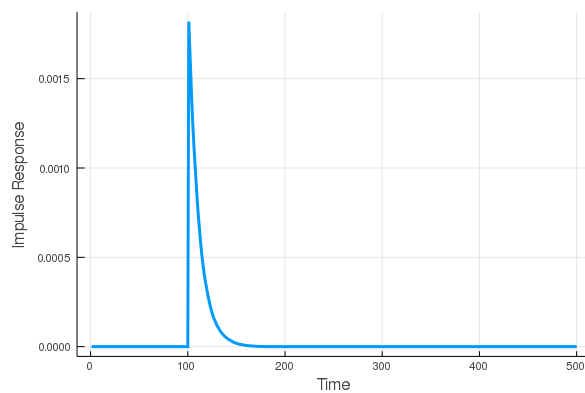
**Figure B.3.1:** Price Gap Distribution

### B.4 Impulse Response

The IRF for the Calvo Plus economy is shown in Fig B.4.1 and Fig B.4.2. Notice that this response is larger than in the Golosov-Lucas economy. Moreover, after the initial periods there is no variance in the relatively output and it fades away smoothly.



**Figure B.4.1:** IRF till 50 periods after the shock



**Figure B.4.2:** IRF for the entire simulation



# Bibliography

Golosov, Mikhail, and Robert E Lucas Jr. 2007. “Menu costs and Phillips curves.” *Journal of Political Economy*, 115(2): 171–199.