Abdullah Ozturk[1] - CEMFI

Development Economics
Homework 2
Due: 08.02.2019

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Question 1. Praying for Rain: The Welfare Cost of Seasons.

PART1

1.1A) By looking at the result from the table, we can conclude that mean welfare gains is highest for the high seasonality and lowest for the low seasonality.

Welfare gains of removing the seasonal component

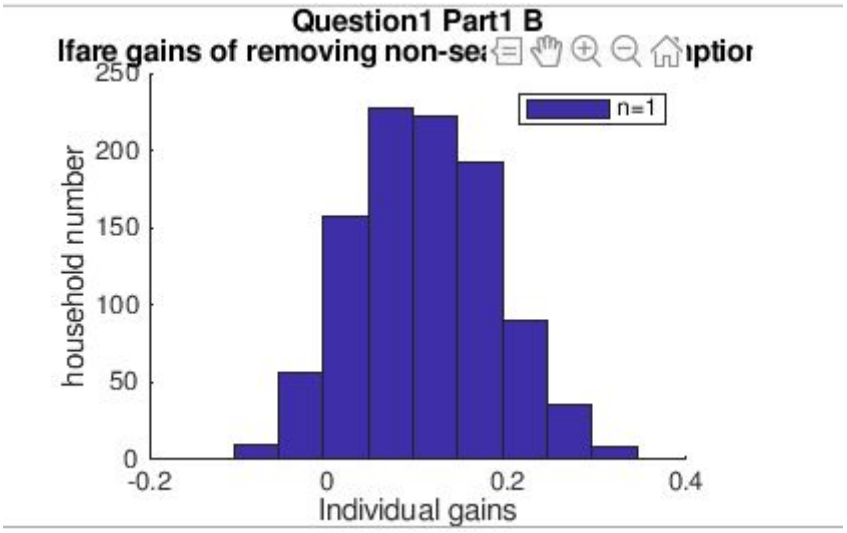
Low	Medium	High
0.0042	0.0086	0.0171

1.1B)

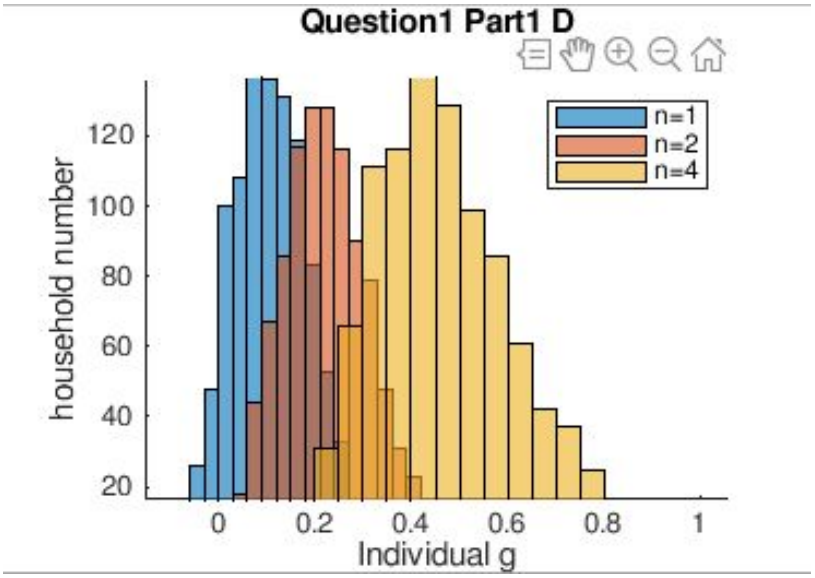
```
1.B. Welfare gains for  removing the nonseasonal consumption risk (eta=1)
    0.0077    0.0077    0.0077    0.0077
    0.1048    0.1048    0.1048    0.1048
    0.2112    0.2112    0.2112    0.2112
    0.1077    0.1077    0.1077    0.1077
    0.0782    0.0782    0.0782    0.0782

1st row: 10th prctile. 2nd row: 50th prctile. 3rd row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "gains" for low, mid, high, and no seasonality
```

1.1C) As we can see from the figure below and tables above, welfare gains of removing the seasonal component is the highest for high degree of seasonality whereas the lowest for low degree of seasonality as expected. For the value of eta=1, the welfare gains for removing the nonseasonal consumption is the same for every percentile. The figure below suggests that households are in general better off when the non-seasonal consumption risk is removed although there are few households that are negatively affected.



1.1D) As can be seen from the graphs and figures below, when eta is higher, the welfare gains are higher because eta is the risk aversion parameter.



Low	Medium	High	Eta
0.0066	0.0185	0.0601	2
0.0118	0.0426	0.1867	4

```
 RESULTS PART 1.D. Welfare gains of removing non-seasonal consumption risk (eta=2)
    0.1068    0.1068    0.1068
    0.2174    0.2174    0.2174
    0.3426    0.3426    0.3426
    0.2211    0.2211    0.2211
    0.0907    0.0907    0.0907

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
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```
 RESULTS PART 1.D. Welfare gains of removing non-seasonal consumption risk (eta=4)
    0.2881    0.2881    0.2881
    0.4520    0.4520    0.4520
    0.6884    0.6884    0.6884
    0.4742    0.4742    0.4742
    0.1580    0.1580    0.1580

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

PART2

1.2A)

```
 RESULTS PART 2.A. Welfare gains of removing deterministic seasonal component (eta=1)
    0.0086    0.0086    0.0086

Rows: Means
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.A. Welfare gains of removing stochastic seasonal components (n=1)
    0.0322    0.0752    0.1797
    0.0512    0.1042    0.2208
    0.0710    0.1358    0.2681
    0.0513    0.1055    0.2223
    0.0154    0.0237    0.0351

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.A. Welfare gains of removing both seasonality components (n=1)
    0.0411    0.0845    0.1899
    0.0602    0.1137    0.2313
    0.0802    0.1456    0.2791
    0.0603    0.1150    0.2329
    0.0155    0.0239    0.0354

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
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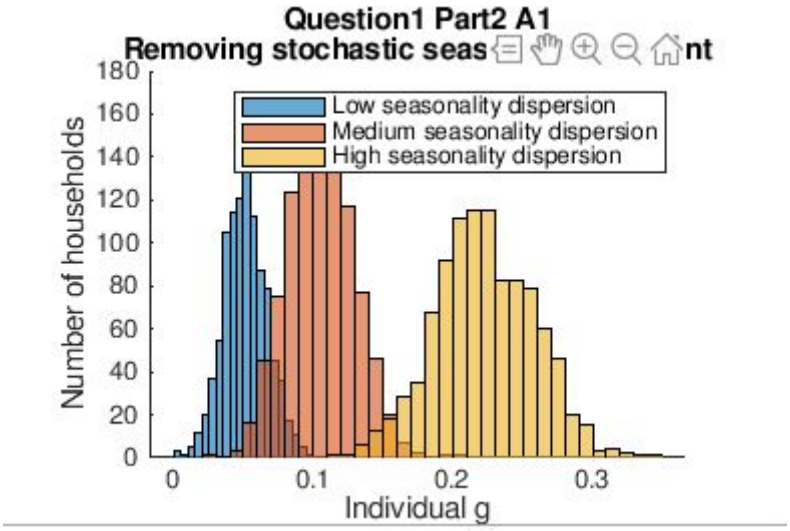

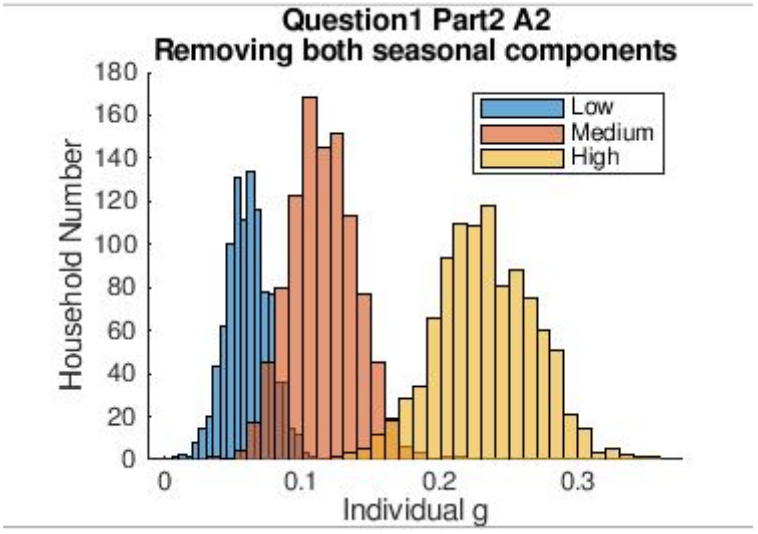

1.2B)

```
RESULTS PART 2.B. Removing non-seasonal consumption risk (eta=1)
    0.0077    0.0077    0.0077
    0.1048    0.1048    0.1048
    0.2112    0.2112    0.2112
    0.1077    0.1077    0.1077
    0.0782    0.0782    0.0782

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

1.2C) Non seasonal consumption affects the people differently and when we look at the table above we can see that the results are similar to what we have in the part a, as the degree of seasonality is getting higher, welfare gains from removing that increases.

1.2D) As can be seen from the tables and estimations below, the results are similar to the part a results.

```
RESULTS PART 2.B. Removing non-seasonal consumption risk (eta=1)
   0.0077    0.0077    0.0077
   0.1048    0.1048    0.1048
   0.2112    0.2112    0.2112
   0.1077    0.1077    0.1077
   0.0782    0.0782    0.0782

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
RESULTS PART 2.D. Removing deterministic seasonal component (eta=2)
   0.0137    0.0090   -0.0002

Rows: Means
Each column: "g" for low, mid and high seasonality
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```
RESULTS PART 2.D. Removing deterministic seasonal component (eta=4)
   0.0114   -0.0123   -0.0451

Rows: Means
Each column: "g" for low, mid and high seasonality
```

```
RESULTS PART 2.D. Welfare gains of removing stochastic seasonal components (eta=2)
   0.0779    0.1759    0.4096
   0.0999    0.2126    0.4774
   0.1220    0.2514    0.5485
   0.1001    0.2130    0.4794
   0.0173    0.0293    0.0545

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
RESULTS PART 2.D. Welfare gains of removing stochastic seasonal components (eta=4)
   0.1423    0.3406    0.8571
   0.1881    0.4293    1.1053
   0.2377    0.5538    1.5776
   0.1907    0.4415    1.1863
   0.0414    0.0983    0.3809

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.D. Removing both seasonality components (eta=2)
    0.0978    0.1976    0.4356
    0.1202    0.2350    0.5047
    0.1427    0.2745    0.5771
    0.1204    0.2354    0.5067
    0.0176    0.0299    0.0555

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.D. Removing both seasonality components (eta=4)
    0.1909    0.3976    0.9361
    0.2387    0.4902    1.1949
    0.2904    0.6200    1.6874
    0.2414    0.5029    1.2794
    0.0432    0.1024    0.3971

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.D. Removing non-seasonal consumption risk (eta=2)
    0.1066    0.1055    0.1044
    0.2159    0.2178    0.2152
    0.3384    0.3428    0.3442
    0.2206    0.2210    0.2203
    0.0907    0.0906    0.0926

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
```

```
 RESULTS PART 2.D. Removing non-seasonal consumption risk (eta=4)
    0.2857    0.2688    0.2183
    0.4484    0.4434    0.4136
    0.6779    0.6727    0.7204
    0.4716    0.4681    0.4513
    0.1621    0.1771    0.2438

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid and high seasonality
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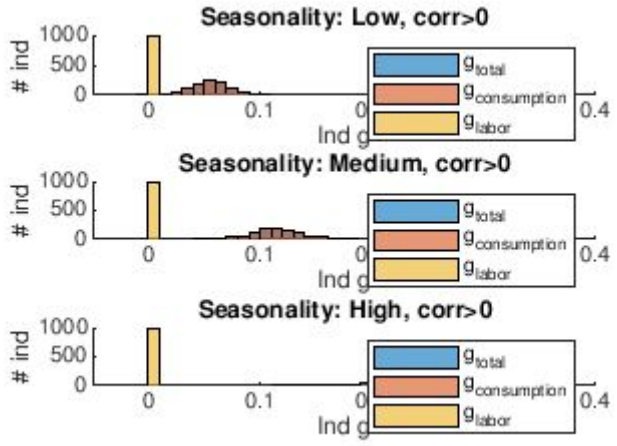
Question 2. Adding Seasonal Labor Supply

2.A) As already discussed above in the first question as the degree of seasonality is higher, potential gains are increasing.




```
RESULTS PART A. TOTAL
    0.0354    0.0848    0.1969
    0.0553    0.1137    0.2438
    0.0748    0.1439    0.2900
    0.0553    0.1150    0.2433
    0.0157    0.0230    0.0359

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

```
RESULTS PART A. CONSUMPTION
    0.0354    0.0847    0.1966
    0.0553    0.1137    0.2437
    0.0748    0.1439    0.2899
    0.0553    0.1150    0.2433
    0.0157    0.0230    0.0359

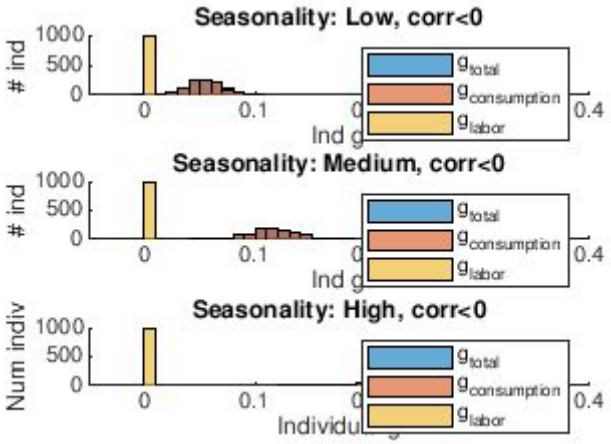
First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

```
RESULTS PART A. Labor effects
  1.0e-03 *

    0.0160    0.0187    0.0254
    0.0206    0.0297    0.0563
    0.0365    0.0686    0.1646
    0.0244    0.0388    0.0822
    0.0118    0.0287    0.0840

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

2B) We can see from the graphs and estimations that if there is a negative correlation between consumption and labor supply, welfare gains from removing seasonality.

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RESULTS PART B. Total effects
   0.0366    0.0864    0.1990
   0.0545    0.1155    0.2422
   0.0736    0.1432    0.2903
   0.0549    0.1158    0.2439
   0.0150    0.0223    0.0355

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

```
RESULTS PART B. CONSUMPTION
   0.0366    0.0864    0.1990
   0.0545    0.1155    0.2420
   0.0736    0.1431    0.2901
   0.0549    0.1157    0.2438
   0.0150    0.0223    0.0355

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

```
RESULTS PART B. LABOR
  1.0e-03 *

   0.0160    0.0186    0.0258
   0.0208    0.0295    0.0569
   0.0375    0.0664    0.1500
   0.0245    0.0375    0.0777
   0.0120    0.0264    0.0688

First row: 10th prctile. Second row: 50th prctile. Third row: 90th prctile. Fourth row: Means. Fifth row: sd
Each column: "g" for low, mid, high, and no seasonality
```

2C) From the discussion above related to first question and the tables and graphs above from the second question part a and part b, we can expect that overall results would be similar to part a and part b.