Homework 2, Development Economics

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Question 1.1 - points a), b), c) and d)

- **Welfare Gains for $\eta = 1$**

Below, we can observe the tables for the welfare gains, for the different type of seasons (Middle, High and Low, as reported in the text of the homework 2). All these values are for $\eta = 1$.

Table 1: Middle Season

	Mean	Median
No Seasons	0.0085	0.0085
No Shocks	0.1135	0.1102
No Seasons and No Shocks	0.1230	0.1197

Table 2: High Season

	Mean	Median
No Seasons	0.0437	0.0437
No Shocks	0.1135	0.1102
No Seasons and No Shocks	0.1621	0.1587

Table 3: Low Season

	Mean	Median
No Seasons	0.0020	0.0020
No Shocks	0.1135	0.1102
No Seasons and No Shocks	0.1157	0.1125

First of all, we can observe (as expected) that the welfare gains are the lowest for the low seasons (the one in which the changes between consumptions in different periods are the smallest) and are the highest for the high season. Removing individual shocks give the same welfare gain in each different specification for seasons. This is coherent from what we would expect from the theory (and by intuition): since the individual shocks are the same, in the three specification, remove them should give the same welfare gains in the three settings. Removing both shocks and seasonal components give us the same type of result given by removing only seasons (i.e.: highest welfare gain in high season, lowest welfare gain in low season, middle welfare gain in middle season).

- **Welfare Gains for $\eta = 2$**

For $\eta = 2$, we have the following Welfare Gains:

Table 4: Middle Season

	Mean	Median
No Seasons	0.0196	0.0196
No Shocks	0.2195	0.2037
No Seasons and No Shocks	0.1122	0.1008

Table 5: High Season

	Mean	Median
No Seasons	0.1167	0.1167
No Shocks	0.2195	0.2037
No Seasons and No Shocks	0.1122	0.1008

Table 6: Low Season

	Mean	Median
No Seasons	0.0046	0.0046
No Shocks	0.2195	0.2037
No Seasons and No Shocks	0.1122	0.1008

From the tables above, we can see that the welfare gains from removing either shocks, either the seasonal component alone, are higher for $\eta = 2$ than for $\eta = 1$ in each type of season. But, interesting, the welfare gains from removing both the seasonal component and the shock together are smaller with $\eta = 2$ than with $\eta = 1$. This could mean that with $\eta = 2$, the individuals do not benefits anymore, from removing shocks after a certain threshold. Another striking feature is that, while for $\eta = 1$ the welfare gains increase, as more shocks are taken away, for $\eta = 2$ the welfare gains from removing individual shocks are bigger than the welfare gains from removing both the seasonal component, and the individual shocks.

- **Welfare Gains for $\eta = 4$**

For $\eta = 4$, we have the following Welfare Gains:

Table 7: Middle Season

	Mean	Median
No Seasons	0.0445	0.0445
No Shocks	0.4563	0.4237
No Seasons and No Shocks	0.1122	0.1008

Table 8: High Season

	Mean	Median
No Seasons	0.3576	0.3576
No Shocks	0.4563	0.4237
No Seasons and No Shocks	0.1122	0.1008

Table 9: Low Season

	Mean	Median
No Seasons	0.0093	0.0093
No Shocks	0.4563	0.4237
No Seasons and No Shocks	0.1122	0.1008

The results of these tables confirm the previous results: the welfare gain from removing individual shocks are higher than the welfare gains from removing the other types of shocks (even from removing both the individual shocks and the seasonal component). In addition, with an higher value of η the welfare gains from removing the seasonal component of the high season are higher, than the previous values for η.

Question 1.2 - points a), b), c) and d)

• Welfare Gains for $\eta = 1$, with Stochastic Seasonal Component

Now, a stoachastic seasonal part has been added to the consumption in each period. We want to see how the welfare gains in each possible situation differ, from each other

Table 10: Middle Season

	Mean	Median
No seasons (determ. part)	0.0085	0.0085
No seasons (Stoch. part)	0.1059	0.1057
No seasons (determ. + stochast. part)	0.1154	0.1152
No shocks (i.e. no epsilon)	0.1114	0.1106

Table 11: High Season

	Mean	Median
No seasons (determ. part)	0.0437	0.0437
No seasons (Stoch. part)	0.2227	0.2212
No seasons (determ. + stochast. part)	0.2761	0.2745
No shocks (i.e. no epsilon)	0.1107	0.1101

Table 12: Low Season

	Mean	Median
No seasons (determ. part)	0.0020	0.0020
No seasons (Stoch. part)	0.0514	0.0515
No seasons (determ. + stochast. part)	0.0535	0.0536
No shocks (i.e. no epsilon)	0.1109	0.1046

From these tables, we can observe, first of all, that the welfare gains from removing the stochastic seasonal component are higher than the welfare gains from removing the deterministic seasonal component. We can attribute this difference in the magnitude due to risk adversion preferences (given by the utility function). In addition, in this specification (of $\eta = 1$) the welfare gain from removing both the deterministic and the stochastic part is higher than the welfare gain from removing the individual shock. As usual, the welfare gains from removing seasonsal components are higher, in higher seasons. The welfare gains from removing the individual parts are more or less the same in all the different seasons.

- **Welfare Gains for $\eta = 2$, with Stochastic Seasonal Component**

Table 13: Middle Season

	Mean	Median
No seasons (determ. part)	0.0089	0.0088
No seasons (Stoch. part)	0.2133	0.2133
No seasons (determ. + stochast. part)	0.2356	0.2356
No shocks (i.e. no epsilon)	0.2227	0.2189

Table 14: High Season

	Mean	Median
No seasons (determ. part)	0.0602	0.0602
No seasons (Stoch. part)	0.4370	0.4371
No seasons (determ. + stochast. part)	0.5972	0.5972
No shocks (i.e. no epsilon)	0.2215	0.2212

Table 15: Low Season

	Mean	Median
No seasons (determ. part)	0.0019	0.0019
No seasons (Stoch. part)	0.1035	0.1030
No seasons (determ. + stochast. part)	0.1080	0.1075
No shocks (i.e. no epsilon)	0.2206	0.2182

We can notice that, more or less, the trend and relationship we saw in the case of $\eta = 1$ are preserved. Welfare gains from removing the stochastic seasonal component are higher than welfare gains, from removing deterministic seasonsal components. The welfare gains from removing both seasonal components (i.e., the deterministic and the stochastic ones) are higher than the welfare gain from removing the individual shock. The higher value for η has as a consequence that the welfare gains are all higher in magnitude, with respect to the case in which $\eta = 1$.

- **Welfare Gains for $\eta = 4$, with Stochastic Seasonal Component**

Table 16: Middle Season

	Mean	Median
No seasons (determ. part)	-0.0132	-0.0125
No seasons (Stoch. part)	0.4429	0.4298
No seasons (determ. + stochast. part)	0.5042	0.4905
No shocks (i.e. no epsilon)	0.4744	0.4447

Table 17: High Season

	Mean	Median
No seasons (determ. part)	0.0013	-0.0010
No seasons (Stoch. part)	0.7656	0.7284
No seasons (determ. + stochast. part)	1.3773	1.3272
No shocks (i.e. no epsilon)	0.4568	0.4316

Table 18: Low Season

	Mean	Median
No seasons (determ. part)	-0.0042	-0.0041
No seasons (Stoch. part)	0.2122	0.2078
No seasons (determ. + stochast. part)	0.2228	0.2184
No shocks (i.e. no epsilon)	0.4734	0.4592

For some reasons, in this specification of η (that is, $\eta = 4$), the welfare "gains" from removing the deterministic part of seasons is negative (that is, it is actually a welfare loss). Either if the magnitude is not so big, this fact means that individuals prefer to have some variation in their consumption (even if this contrast with the fact that they are risk-adverse). For the rest, the relationships between the different types of welfare gains are the same of the cases above: removing the stochastic part of the seasons give a greater welfare gain than removing the deterministic part (since we saw that, in this case, the welfare gain from removing the deterministic parts are actually welfare losses). Removing both parts of the seasons (the deterministic and the stochastic ones) gives more welfare gain that removing only one part of the seasonality, and also more welfare gain than removing the individual shocks (that are almost the same in all the type of seasons).