

User Manual of **OLGGrob** Maple Package

This text provides the way of applying **OLGGrob**, as a Maple package to analyse overlapping generations model (OLG).

Step 1. Download **OLGSolve.mpl** file.

Step 2. Open Maple software and run (just for the first use)

```
[> read "My path/OLGSolve.mpl";
```

where (My path) is the path where you have saved **OLGSolve.mpl**.

Step 3. Run the **OLGGrob** package by the command

```
[> with(OLGGrob);
```

Then, you see the functions contained in the package as

```
[PosOLGGrob, PosOLGSolve, ZeroOLGGrob, ZeroOLGSolve]
```

Now, the package is loaded and one can easily execute the functions. In the following, we give a brief description for each function (Note that in all arguments $\alpha = m/n$ and $L = [l_1, \dots, l_A]$).

PosOLGGrob(A, gamma, beta, delta, m, n, L)

This function works for the case of $\gamma > 0$. It returns the reduced Gröbner basis of the polynomial system associated to the OLG model, with respect to a lex monomial ordering with p as the smallest variable.

PosOLGSolve(A, gamma, beta, delta, m, n, L)

This function returns the equilibria of the OLG model in the case of $\gamma > 0$. These points are in fact the solutions of the output of **PosOLGGrob**.

ZeroOLGGrob(A, gamma, beta, delta, m, n, L)

This function works for the case of $\gamma = 0$. It returns the reduced Gröbner basis of the polynomial system associated to the OLG model, with respect to a lex monomial ordering with S as the smallest variable.

ZeroOLGSolve(A, gamma, beta, delta, m, n, L)

This function returns the equilibria of the OLG model in the case of $\gamma = 0$. These points are in fact the solutions of the output of **ZeroOLGGrob**.

Note that for better approximation of the solutions, set the **Digits** variable to a number greater than 10. Greater value of **Digits** causes better approximation in **PosOLGSolve** and **ZeroOLGSolve**. For instance,

```
[> Digits:=20:
```