# A Theory of Falling Growth and Rising Rents

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Replication Package
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## Description of the folder

The replication package contains 5 folders.

- `'./Code'` contains the code to run

- `./Calibration'` contains the codes specific to the calibration

- `./Main` and `./Online Appendix` contain the Figures and Tables of the main article and its Online Appendix.

- `./Data Sources'` contains the raw data files

The folder also contains a file called `requirements.txt`

## Data Availability and Provenance Statements

### Description of the raw data

- `klemscombinedbymeasure_replication.xlsx` contains multifactor productivity and related measures for 61 NAICS industries and 20 aggregate sectors. Taken from the BLS's KLEMS

- `mfptablehis_1987_2020.xlsx` contains detailed data to calculate multifactor productivity for the whole non-farm private business sector. Taken from the BLS's MFP

- `bds_f_szsic_release.csv` contains information on the entry of plants by sector, size and year. Taken from the Census' BDS

- `calibration_replication.xlsx` contains various data used for the calibration. The sources are detailed in the file (see also next section).

## How to access the data

The data used in the paper and provided in the replication package comes from the BLS and Census. They cannot be directly downloaded as they correspond to previous vintage, however, they can be quickly shared by the BLS and Census upon request:

- `klemscombinedbymeasure_replication.xlsx` BEA-BLS (2021). Contact at this link. The corresponding database is the release from May $20^{th}$ 2021.

- `mfptablehis_1987_2020.xlsx` BLS (2021). Contact at this link. The corresponding database is the release from March $23^{th}$ 2021.

- `bds_f_szsic_release.csv` Census (2015). Contact at this linkThe corresponding database is the release from 2015.

- `calibration_replication.xlsx` gathers information from Autor et al. (2020), Farhi and Gourio (2018) and Hall (2018)[1]

## Statement about Rights

- ✓ We certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.

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[1]For the later, the replication package can be directly downloaded at this link

✓ We certify that the author(s) of the manuscript have documented permission to redistribute/publish the data contained within this replication package.

✓ All data **are** publicly available.

# Guidelines for replication

## Requirements

Python 3.6 or higher (https://www.python.org/downloads/) and virtualenv.
  Too install the virtual environment package, open the terminal and type

```
pip install virtualenv
```

## Setup

We assume that the replication package is stored under. "[ROOT]/replication/" where [ROOT] should be replaced by the user path. We also assume that the working directory is [ROOT]. First step is to create a virtual environment

1. Open the terminal (e.g. Windows PowerShell)

2. type:

   cd  [ROOT]

3. Type:

   python –m venv ./replication/venv

  This will create a folder ./replication/venv, to activate the virtual environment simply open python terminal and type:

- On MAC OS or Linux

```
source ./ replication /venv/bin/ activate
```

- On Windows

```
./ replication /venv/ Scripts / activate
```

Then load the required packages by running `requirements.txt`. To do so, type in a terminal:

```
pip install −r ./ Replication / requirements . txt
```

Change path variable in "./Replication/Code/config.json" to yours

## Replication of Figures 1, A1 to A4

To replicates Figures 1, A1 and A2, simply run "./Replication/Code/fig1.py", "./Replication/Code/figA1.py", "./Replication/Code/figA2.py" and "./Replication/Code/figA3A4.py"

## Replication of Tables

To generate all Tables, run the file "./Replication/Code/calibration.py". Note that the program "calibration_RF.py" can take a long time to run without the use of a server or a multicore processor. We thus added the resulting steady state parameters in a folder called "./Calibration/results_initialSS". To skip the creation of this file, simply comment out the line

```
os . system ( ' python " . / Calibration / calibration_RF . py " ' )
```

from "Code/Calibration.py".

### Additional details on the Table

**Table 2:** Baseline calibration targets

1. percentile of top 20 firms: calibration_replication.xlsx, sheet "Tab 2 row 1,2. concentration", cell "A21"

2. sales share of top 20 firms: calibration_replication.xlsx, sheet "Tab 2 row 1,2. concentration", cell "B21"

3. elasticity of labor share wrt sales: calibration_replication.xlsx, sheet "Tab 2 row 3. labor share and size", cell "B9"

4. price/cost markup: calibration_replication.xlsx, sheet "Tab 2 row 4. Hall markup", cell "B27"

5. productivity growth: see first bar in Fig1.pdf

6. real interest rate: calibration_replication.xlsx, sheet "Tab 2 row 6. real interet rate", cell "C4"

**Table 4:** Calibrated change in $\psi_o$ and $\psi_r$ to fit the ending BGP.
Target change in concentration: calibration_replication.xlsx, sheet "Tab 2 row 1,2. concentration", cell "D21".
Targeted change in productivity growth: difference between the 3rd bar and the 1st bar in Fig1.pdf.

**Table 6:** Calibrated change in $\Delta$ and $\psi_r$ to fit the ending BGP.
Target change in concentration: calibration_replication.xlsx, sheet "Tab 2 row 1,2. concentration", cell "D21".
Targeted change in productivity growth: difference between the 3rd bar and the 1st bar in Fig1.pdf.

**Table 9:** Change in labor share in the long run Data change over 1987–2012: calibration_replication.xlsx, sheet "Tab 9 row 1. Ls within between", cells "C9:E9"

**Table 10:** Contribution of decline in overhead costs to growth burst and decline.
Acceleration data: difference between the 2nd bar and the 1st bar in Fig1.pdf.

Deceleration data: difference between the 2nd bar and the 3rd bar in Fig1.pdf.

**Table 12:** Contribution of increase in efficiency gap to growth burst and decline.

Acceleration data: difference between the 2nd bar and the 1st bar in Fig1.pdf.

Deceleration data: difference between the 2nd bar and the 3rd bar in Fig1.pdf.

# References

**Autor, David, David Dorn, Lawrence F Katz, Christina Patterson, and John Van Reenen**, "The fall of the labor share and the rise of superstar firms," *Quarterly Journal of Economics*, 2020, *135* (2), 645–709.

**BEA-BLS**, "BEA-BLS Integrated Industry-level Production Accounts (KLEMS)," 2021. May 20 2021 Release.

**BLS**, "BLS Multifactor Productivity," 2021. March 23 2021 Release.

**Census**, "Business Dynamics Statistics by size and sector," 2015. 2015 Release.

**Farhi, Emmanuel and François Gourio**, "Accounting for macro-finance trends: Market power, intangibles, and risk premia," *Brookings Papers on Economic Activity*, 2018, *2*, 147–250.

**Hall, Robert E**, "New evidence on the markup of prices over marginal costs and the role of mega-firms in the US economy," NBER Working Paper 24574, 2018.