

GenerationalWealthPolicySim: Parameter Guide

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1 Introduction

This document explains each parameter in the *GenerationalWealthPolicySim* project in very simple terms. We simulate an economy where households live for 85 years (one “generation”) and then pass on their wealth (minus inheritance taxes) to the next generation. Our goal is to see how different policy or economic settings (like inflation, universal basic capital, forced saving, etc.) affect long-term family wealth.

2 Parameter Overview

The table below describes all major parameters, focusing on *what they mean* and *why they matter*. Think of it as a “for dummies” guide, so no advanced math is required!

Parameter	Meaning (Plain English)
inflation	The percentage by which prices rise each year. If inflation is 5%, it means that something costing \$100 this year will cost about \$105 next year. Higher inflation <i>reduces</i> the real value of money and investment returns.
shock_prob	“Shock probability”: the chance that, in any given year, a bad event happens (e.g. recession, job loss, disaster) which lowers income and/or investment returns. A shock_prob of 0.15 means there’s a 15% chance each year of something bad happening.
shock_impact	How big that bad event is. If shock_impact = 0.30, it means your income (or returns) are cut by 30% if a shock occurs. The bigger the impact, the more painful the shock.
forced_saving	A fraction of your wage that must be saved. If forced_saving = 0.10 (10%), you automatically put 10% of your income into savings instead of spending it. This helps ensure you build up wealth over time, but it also means you have less money to spend right now.
guarantee	“Minimum inheritance guarantee”: if you die with too little money, the government tops it up so your children get at least this amount. For example, if guarantee = \$10,000 and you only have \$5,000 at death, your children still get \$10,000. This prevents total poverty for the next generation.
ubc	“Universal Basic Capital” given to each person at a certain age (e.g. 21). For instance, ubc = \$20,000 means everyone automatically receives \$20,000 at age 21 to start adult life. It’s like a one-time wealth injection.
n_children	How many children each family has. If n_children = 2, then wealth is divided by 2 at death. (If you have more kids, each one gets a smaller slice of the inheritance.)
wage_growth	How much a person’s wage grows each year, on average. If wage_growth = 0.01, that means about 1% annual wage increase. Over decades, this can add up significantly.
unemployment_prob	Chance of losing your job in a given year. If unemployment_prob = 0.05, there’s a 5% yearly risk of earning only an “unemployment benefit” instead of your normal wage.
unemployment_benefit	How much money you get if you’re unemployed. If it’s \$5,000 per year, that’s all you have if you lose your job. Usually less than a normal wage.
base_interest	A baseline nominal interest rate for safe investments. For instance, base_interest = 0.02 means 2% nominal interest (before subtracting inflation).
interest_trend	If interest rates rise or fall each year as you age. For example, interest_trend = 0.001 might mean the base interest increases by 0.1 percentage points each year. This is quite advanced and can be left at 0 for simplicity.
productivity_growth	How quickly the overall economy improves productivity each year. If it’s 0.00, there’s no improvement; if it’s 0.02, wages might increase more quickly as the economy becomes more productive.
old_age_medical	Extra medical or care costs for retirees. If old_age_medical = \$2,000, that means each year after age 65, you spend an additional \$2,000 on healthcare or living assistance.
housing_choice	A simple boolean (true/false) indicating whether you pay a mortgage. If it’s true, you have an additional <i>mortgage_payment</i> subtracted from your money each year.
mortgage_payment	If housing_choice is true, this is how much you pay annually for your home. For example, \$5,000 means each year you spend \$5,000 on your mortgage.

3 Why These Parameters Matter

- **Inflation** and **base_interest** decide the *real* returns on your investments.
- **ShockProbability** and **ShockImpact** introduce randomness that can wreck your best saving plans.
- **ForcedSaving**, **Guarantee**, and **UBC** are *policy tools* that help families stay afloat even if the economy is tough.
- **WageGrowth**, **productivity_growth**, and **unemployment_prob** describe how the labor market evolves each year.
- **WealthTax** and **InheritanceTax** ensure the wealthy contribute more, preventing runaway inequality.
- **HousingChoice** and **MortgagePayment** show how homeownership (with a mortgage) changes your consumption and wealth building.
- **overspending_prob** and **overspending_factor** add a *behavioral twist*, showing how impulsive spending can derail your finances.

4 How to Adjust Them

- **Keep It Simple:** If you are new to the model, leave many advanced parameters (like `wage_growth`, `interest_trend`, `overspending_factor`) at zero or default. - **Experiment:** Increase **inflation** to see how it erodes real returns, or raise **shock_prob** to watch more families go broke. - **Policy Levers:** Increase **UBC** or **Guarantee** to see how it prevents generational collapse, but watch how it raises *government_cost*. - **Check Distributions:** Not everyone ends up with the same final wealth. Some will get lucky with few shocks; others might get hammered. The *average* can be misleading.

5 Conclusion

GenerationalWealthPolicySim provides a sandbox for seeing how different real-world forces and policies interact over time. By tweaking parameters like inflation, forced saving, or shock probability, you can observe how families accumulate or lose wealth across multiple generations. The model is flexible and can become as simple or as detailed as you like. Enjoy exploring the long-run consequences of economic policies!