

## Polarization generate stagnation

People debating on politics groups for a more fair society often claim that the polarization between poor and rich is harmful for the economy too. The polarization not only generate unhappy social situations but actually it harm the economic growth.

One of the points often used into argumentation is the map of the world showing the the Gini coefficient.

Gini coefficient,( see: [http://en.wikipedia.org/wiki/Gini\\_coefficient](http://en.wikipedia.org/wiki/Gini_coefficient)) is a way to measure the inequity in the society. It can take values in the interval 0..1 where 0 imply a perfectly equally society (everybody have the same income) and 1 will measure a society where the king own everything and everybody else is a slave. Looking at the values Gini coefficient country by country we see that ,on the average, countries with a greater polarization are countries with dysfunctional economies or with slow growth. The Gini map is not a perfect match, many other factors being involved into the status of an economy at a moment in time. But it let you see some noticeable correlations between big disparity and a sluggish economy.

As an economic theory of why polarization slow economic growth, it is often used the explanation of “fast money” vs. “slow money”. The core idea for this argumentation is that poor need to spend their money fast to survive going often with no saving for more than a pay period, while rich accumulate them for future investments. The fast circulation of money create more wealth since the newly created wealth into a society it is direct proportional with the speed of money flow. Even if the economy grow and the former poor become rich, the society will be better if the disparity is reduced, since a large disparity imply a slower circulation of money from the rich and this hurt the poor.

The idea that need to be investigated.: Is there a cause-effect relation between a strong polarized society and an economy with a slowest growth ?

This is what I decided to study in this paper. I build a model of a simple economy and I run a numeric simulation for a couple of different polarization factors. Then I plot the total wealth accumulated in society over time. If the strong polarization cause a sluggish economy in the end the simulation we should see that the less polarized society accumulated more wealth.

Since this model is exclusively intended to study the phenomena of “fast money” vs. “slow money” I **completely ignore** the issues like increased production during due to motivation and personal skills. This more complex simulation will be studied into a future paper.

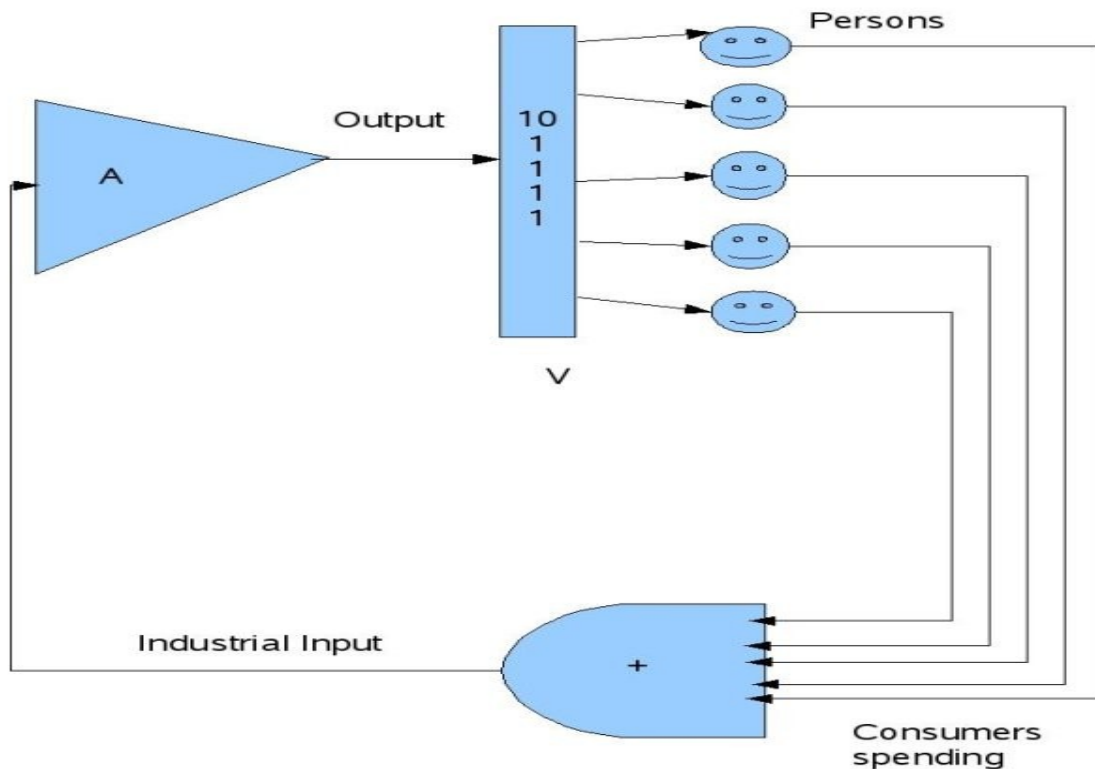
### 1. The Model Basics

I decided to go for the basics and keep the model as simple as possible. The schematics of the model is shown in the picture below. I represent the industry as a “wealth amplifier” with the factor of amplification  $A$ . That means that for every quantity of wealth  $w$  that enter into industry the result industrial output is is going to be  $A*w$ . The industrial output it is distributed to each person based on a wealth distribution vector. This is a vector of natural numbers that show how much of the wealth one person gets compared to another. If  $w$  is the total wealth generated as industrial output, then the person no.  $i$  will get  $w*v[i]/\sum v[j]$  wealth.

Every person is going to spend his money as described in the **2. Person spending model** bellow. All the money spent are collected to become the input of the industry and the cycle repeats itself.

Another assumption made is that we account as accumulated wealth only the money spent in long times investments. The model works with 3 types of spending: short term, (aka living expenses, food and stuff), medium term (like clothes, shoes and cheap apparels) and long term investments (a car, house etc). I account as accumulated wealth only long term investments since I consider that medium and short term expenses are money spend in immediate consumption and the products bought with it are going to be consumed/used into a relative shorter amount of time. Another reason for not accounting the short and mid term spending into wealth is that the need for this goods and services is not to much different in quantity among middle class and rich people. Only the quality differ, so yes. Bill Gates will spend more money onto shirts than his programmers, but the number of shirts BG buy compared with his employees is not that different. Only the money spent on them makes a difference and not the number of products.

The core time measure in the model is a pay period, aka one (or two) week. Everything time related is calculated as a multiple of the pay period ( let say one week for persons needing a human measure).



## 2. Person Spending Model

As I stated early I divided personal spending on 3 classes:

- Living Expenses (short term spending) This is always for everybody at least **livingExpense/2** (**livingExpense** being a constant set before the program run, in my simulation **livingExpense=500**). The rich however, spend much more on living expenses but this won't ever pass 50 times the average value set as constant. Nobody can actually eat really limitless.

- Medium term spending, happen in this model somewhere around each 5 to 6 pay periods and amount for 2 to 3 time the living expenses if this amount is lower than half of the accumulated savings. The rich obviously are allowed to spend more but it won't ever go over 1000 **livingExpense**. Not even Bill Gates do not spend half a million per month for clothing and heating oil.
- Long term expenses, aka investments that get accounted as wealth happen somewhere around every 65 pay periods. This long expenses deplete all the accumulated savings, but this spending account for accumulated wealth.

### 3. Analyzing the results

I run the simulation software for a period of 500 pay periods for a society composed of 100 persons and with 4 wealth distribution vectors:

**equal:** Everybody starts the same. The Gini factor for this society is obviously 0. In graph this society is represented in black.

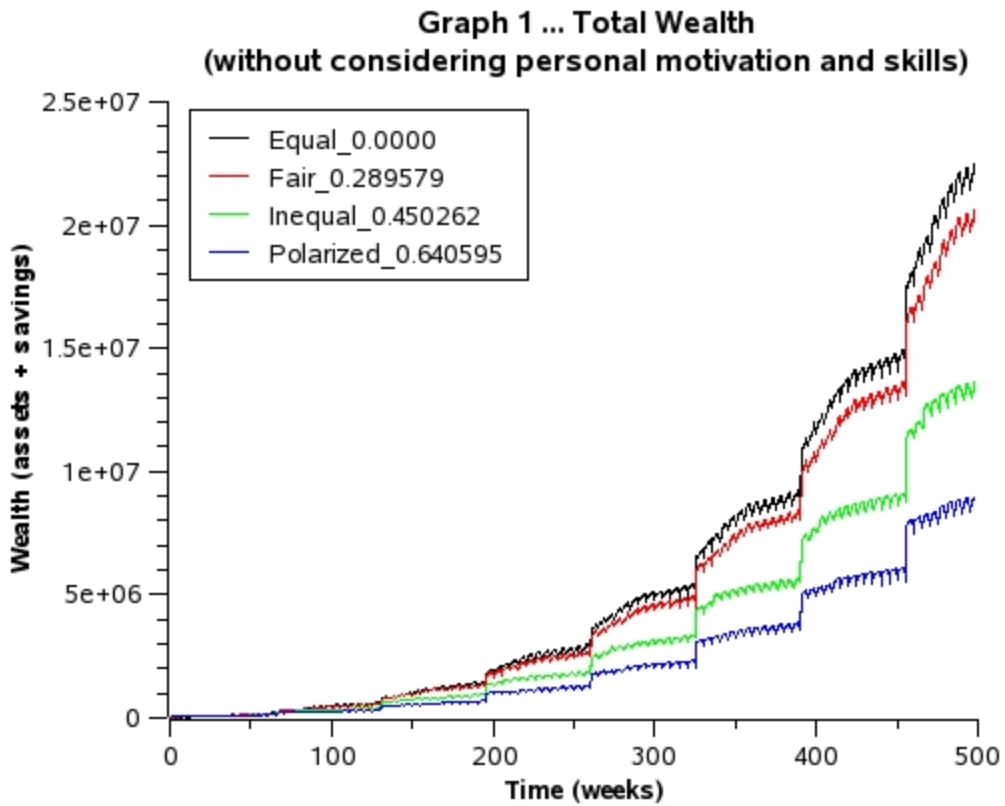
**fair:** A society with a Gini factor of 2.89 (a Gini factor modeling Norway/Sweden). In the graph this is represented with red. From the 100 consumers in the simulation the distribution is as following: 5 Lower Rich, 8 Upper Middle Class, 8 Working Class, 3 Working Poor, 1 Very Poor and the rest being middle class.

**normal:** A society with a Gini of 0.45 modeling US (pre Bush US ???? :-). For this Gini factor I gave to this society: 1 Upper Rich, 1 Lower Rich, 3 Upper Middle Class, 5 Working Class, 4 Working Poor, 2 Very Poor and the rest Middle Class. In the graph this society is represented with green.

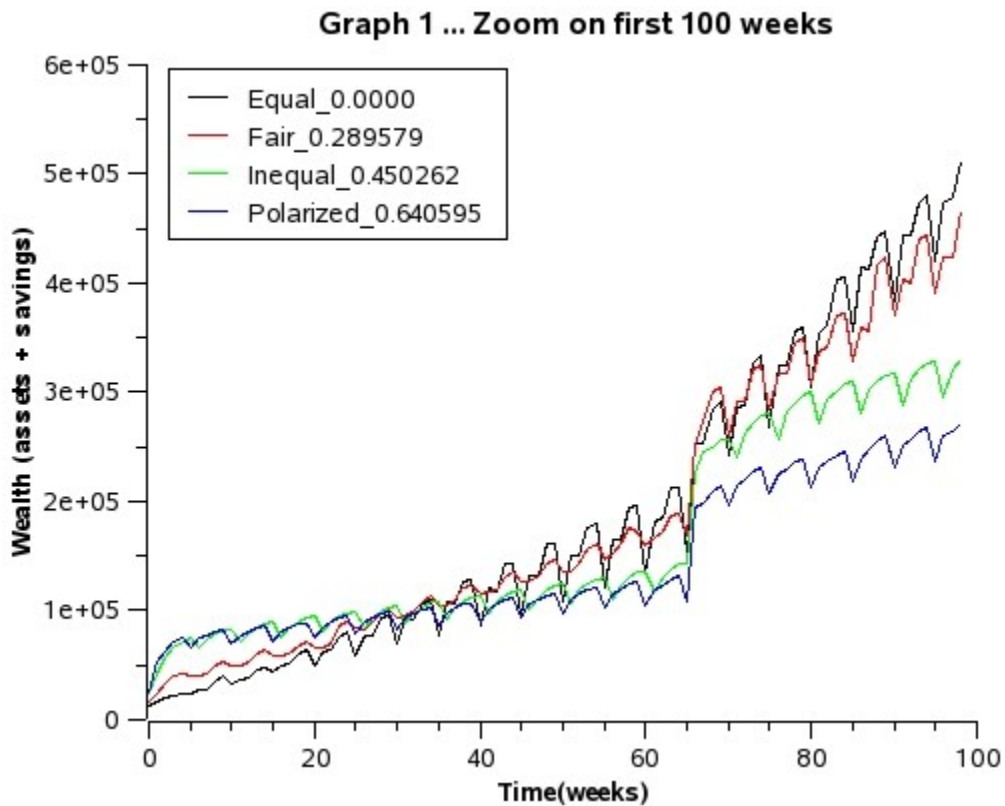
**polarized:** A society with an Gini index of 0.64 (Representing Namibia in Africa). In this society the distribution was achieved by: 1 Upper Rich, 2 Lower Rich, 3 Upper Middle Class, 30 Working Poor and 10 Very Poor beside the remaining few middle class. In the graph this is represented with blue.

I have to remind you one again that in this simulation was done exclusively looking for the speed of money flow and there is no influence of the individual motivation and skills involved into production of wealth. The production stays the same in this model regardless of how money are distributed. People not being regarded in this model as employee/workers/creators of wealth but exclusively as consumers.

Here is the graphic resulted from this simulation:

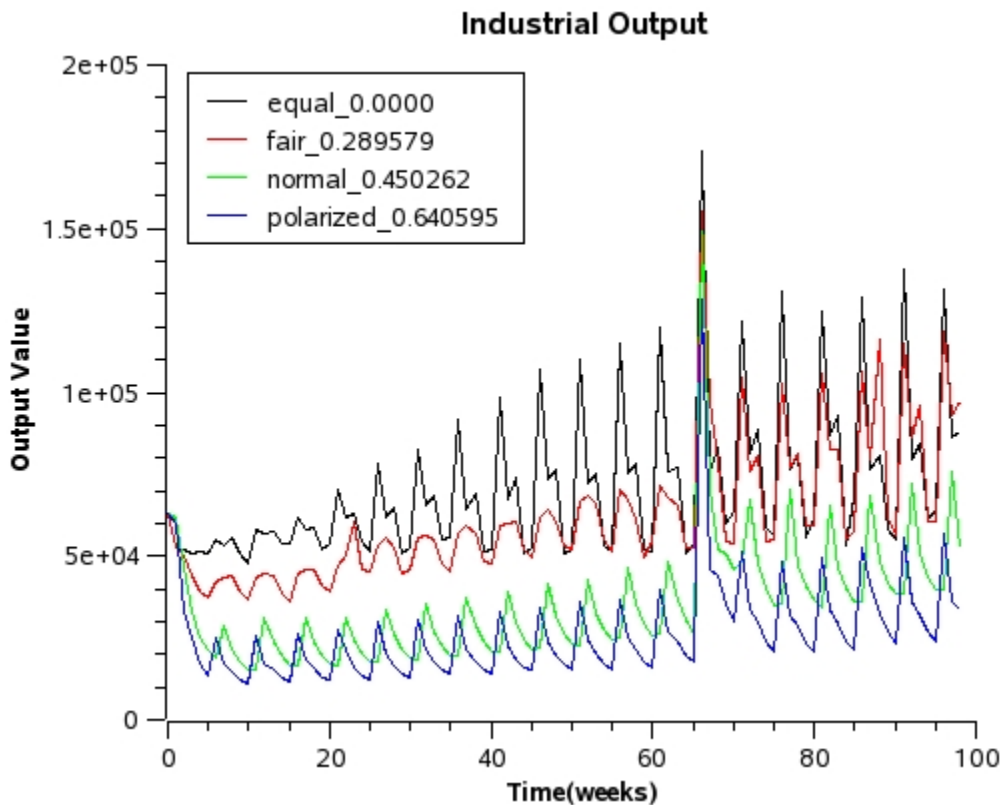


Also it is very interesting to zoom in, right on the beginning to see the original evolution:



Right on the beginning, the strong polarized society generated quickly wealth, since the rich guy getting a bigger slice of the generated output become fast able to invest into goods accounted as accumulated wealth. In the same amount of time the societies with more fair distribution of wealth still had the people spending a lot of money on consumption. However, as it is very clearly seen from the graphics, the more evenly distribution of the wealth generated a faster circuit. This had as the effect a better economic growth over time. In the end, given enough time, more wealth was created in the economies with less disparity in income.

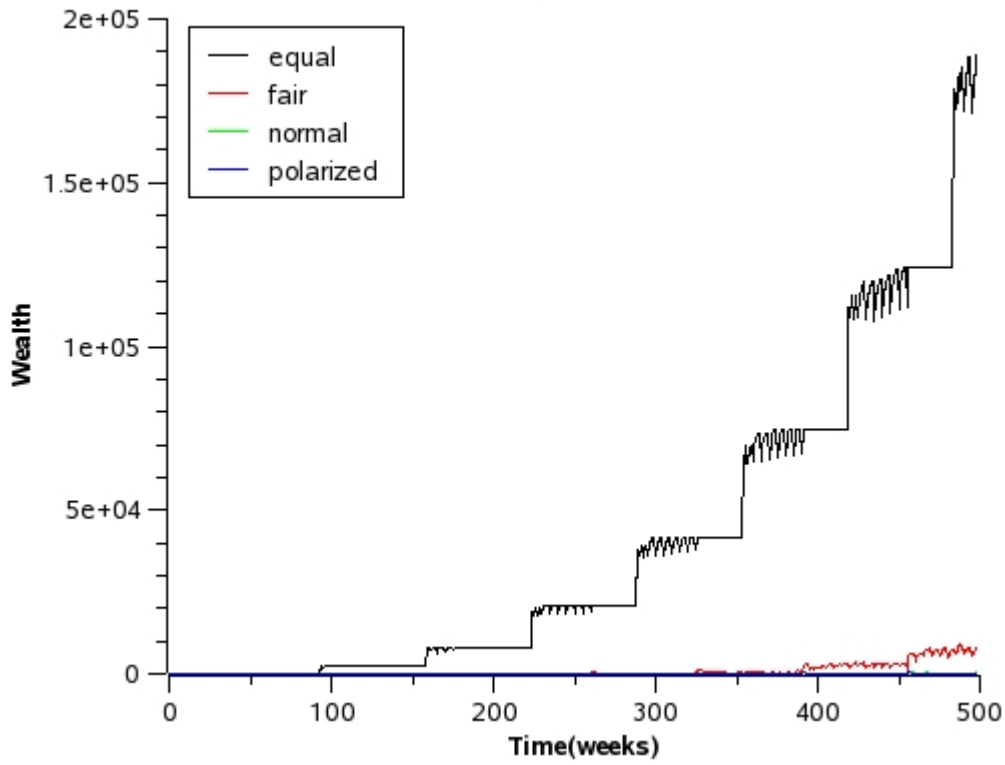
Here are the first 100 weeks of the industrial output. It is easy seen that the more equal societies take very fast the leadership and they will maintain and increase it in order to create more wealth.



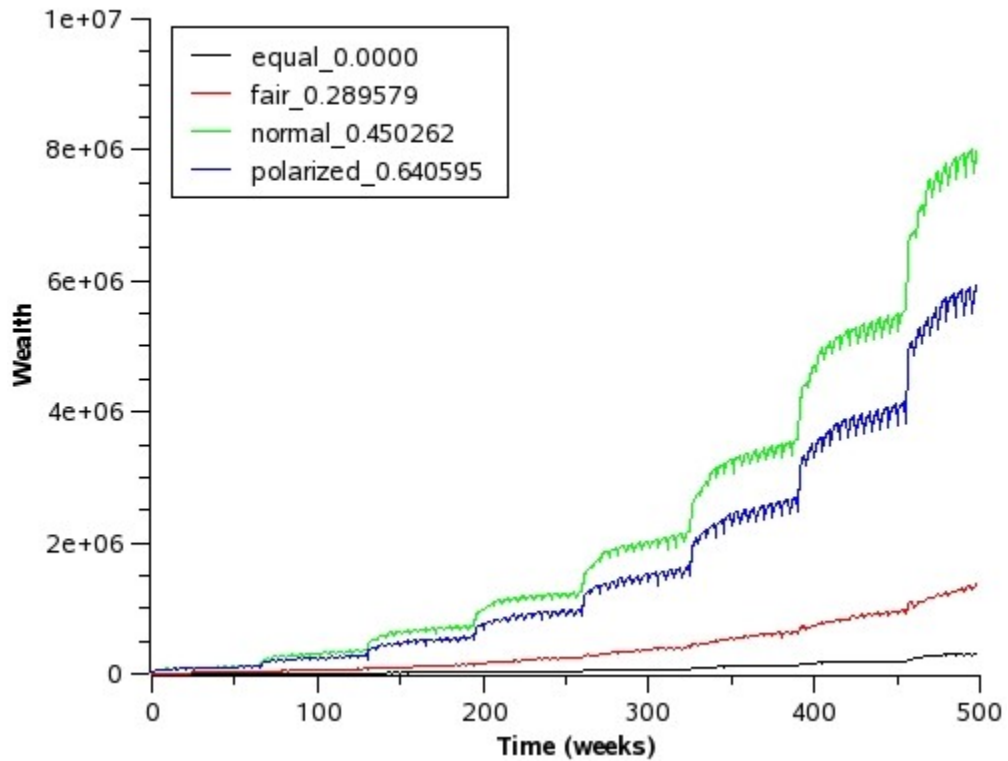
It is also worth to take a look to the wealth of the poorest and richest individual in these societies.

Not unexpected, the normal and polarized societies left the poor on the dust. The very poor on these societies will never get a change to make it out of poverty. Their wealth curve stays on zero you won't be able to make it up from the X axis. The fair society will eventually rise the poor but still very slowly. Just compare how big difference is between the fair society and the theoretic 100% equal society. This it is actually a very very strong case that in any society, welfare to help the poor it is mandatory. If you think that more polarized a society the less welfare they provide is no wonder why all the deaths happen in dysfunctional countries in Africa and Latin America. It is criminal what happen there.

### Wealt of the poorest individual



### Wealth of the Richest Individual



The results for the richest individual is a bit unexpected if you looked only at the math but not unexpected at all if you look at real life.

The winning jackpot for the rich is not the more polarized country, neither the one with the best evolving economy. It is somewhere in the middle, a country polarized enough to transfer the lion share into the rich pockets while squishing the working class BUT not polarized enough to have its economy in trouble as it happens in strongly polarized countries.

The best country to be in if you are rich it is .... United States of America, with its (pre Bush ) 0.45 value for Gini index.

As we see from the graphics, despite the fact that most egalitarian societies generate a bigger industrial output, due to the fact that a larger share is directed toward the super rich, they will be better off than here than in countries with a better industrial output per capita.

Also, it is interesting to notice that pushing the polarization much more up won't help the rich either. If they push it to much, the industrial output it is going to decline so badly that they will get LESS wealth than before. This is a very interesting point for the fanatic radical right promoters that push for less and less social assistance just to allow them to pickpocket all those money by increasing the disparity between poor and rich. Not only they harm the poor, but they are actually so stupid that they will harm themselves by slowing down the economic growth by reducing the social programs.

**Nota Bene:** There is a limit on the income disparity which if passed, the rich will actually start to harm themselves out of their own greed. So the fundamentalist radical right movements like US Chamber Of Commerce, Libertarian Party or Cato Institute just show their complete ignorance in economics when they want to push for more polarization in society by cutting wages, dismantling unions and cutting social programs. By doing that they not just do harm to poor, not just they do harm to US economy **but they actually do harm to their own clients.**

Suggestions, critics, corrections or recommendation can be sent to [mtm\\_spm@yahoo.com](mailto:mtm_spm@yahoo.com).  
The source code from the simulation can be downloaded from the Dragonomics website:  
<http://www.angelfire.com/planet/dragonomics>