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How Income Inequality Caused Subprime Crisis in 2007?

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Abstract: The idea that income inequality might play some role in precipitating the financial crisis has been bouncing around in the literature. This paper attempts to show how the income inequality engenders financial crisis from the perspective of effective demand. Based on the previous work, we propose that the interaction of insufficient demand and speculative bubbles caused the subprime crisis in 2007, both of which are brought by income inequality. This paper also attempts to theoretically solve the puzzle that subprime crisis in 2007 was caused directly by "excess demand" rather than "insufficient demand" which is contradictory to the previous conclusion that income inequality brings insufficient demand and henceforth brings financial crisis.

Keywords: Income inequality; Financial crisis; Subprime crisis; Great Depression

JEL Classifications: E32, D19, D31

1. Introduction

The popular explanations for the origins of the 2008 crisis focus on domestic and global asset market imbalances. For example, Keys, et al. (2000) stresses the adverse effects of increased securitization on systemic risk, Taylor and John (2009) claims that the interaction of unusually easy monetary policy with excessive financial liberalization caused the crisis, and Obstfeld and Rogoff (2009) claim that the interaction of these factors with global current account imbalances helped to create a "toxic mix" that helped to set off a worldwide crisis. Typically these factors are found to have been important in the final years preceding the crisis, when debt-to-income ratios increased more steeply than before. But it can also be argued, as done by Rajan (2010) and Reich (2010) that much of this was simply a manifestation of an underlying and longer-term dynamics driven by income inequality.

As we all know, the United States experienced two major economic crises over the past century—the Great Depression starting in 1929 (see Eccles, M. S.(1951) and Galbraith, J. K(1997)) and the Great Recession starting in 2008. A striking yet overlooked similarity between these two crises is that both were preceded by a sharp increase in income inequality and by a similarly sharp increase in debt-to-income ratios among lower- and middle-income households over decades which will be shown in section 2. When debt levels accumulated as unaffordable any more, they are doomed to contribute to trigger financial crises.

Research on the impact of changes in distribution on economic processes and social matters has a long standing history in economics and was prominent in the works of Smith, Ricardo, Marx,

and Keynes. Some economists, even seems to be out of fashion, especially Marxists and post-Keynesian still have been trying to investigate the possible negative impacts of income inequality. John K. Galbraith (1997) mentions “the bad distribution of income” as the first of “five weaknesses which seem to have had an especially intimate bearing on the ensuing disaster”.

While these lessons from the Great Depression were largely forgotten, perhaps due to the relatively low inequality during the first three post-war decades. But many economists either ignored the macroeconomic implications of inequality or explicitly welcomed the increasing availability of personal credit as an efficient market response to a higher demand by households for insurance against a higher dispersion of the transitory component of income (see Greenspan, A. (1996), Krueger, et al. (2003, 2006)). Theoretically, this lack of attention to inequality seemed justified by the permanent income hypothesis, first formulated by Friedman (1957), which posits that household consumption is unrelated to the inequality of permanent income. However, recent empirical work strongly suggests that the rise in inequality over the past decades has been largely due to the permanent rather than transitory components of income (Kopczuk, et al. (2010)).

Michael et al. (2010) firstly provide an internally consistent mechanism linking the empirically observed rise in income inequality, the increase in debt-to-income ratios, and the risk of a financial crisis. In doing so they provides a useful framework for investigating the role of income inequality as an independent source of macroeconomic fluctuations. They conclude that by accumulating financial wealth, top earners allow bottom earners to limit the drop in their consumption following their loss of income, but the resulting large and highly persistent increase of bottom earners’ debt-to-income ratio generates financial fragility that eventually makes a financial crisis much more likely. In their opinion, the crisis is the result of an endogenous and rational default decision on the part of bottom earners, who trade off the benefits of relief from their growing debt load against income and utility costs associated with default. Lenders fully expect this behavior and price loans accordingly. The crisis is characterized by large-scale household debt defaults and an abrupt output contraction, as in the recent U.S. financial crisis.

Based on their job, we attempt to theoretically solve for the puzzle that it seems that subprime crisis in 2007 was caused directly by “excess demand”, which is contradictory to the “insufficient consumption” argument inferred by great income inequality.

The layout of this paper is as follows. Section 2 documents the evidence for the increasing income inequality prior to the Great Depression and the Great Recession. Section 3 shows discusses the mechanism that income inequality engenders financial crisis from the perspective of effective demand. Section 4 explains the false appearance that subprime crisis in 2007 was caused directly by “excess demand” rather than “insufficient demand”. Section 5 concludes.

2. Evidence of Increasing Income Inequality prior to the Great Depression and the Great Recession

This section presents some evidences for the United States economy, which characterize the periods prior to the Great Recession and, where available, the Great Depression. Such evidence is cited from (Kopczuk & Saez, 2004). Figures 1 to 6 are all cited from Kumhof, et al. (2010).

Figure 1 plots the evolution of Pre-Great-Recession U.S. income inequality and household debt-to-GDP ratios between 1983 and 2008. We can see between 1983 and 2007 income inequality experienced a sharp increase, as the share of total income commanded by the top 5% of the income distribution increased from 21.8% in 1983 to 33.8% in 2007.

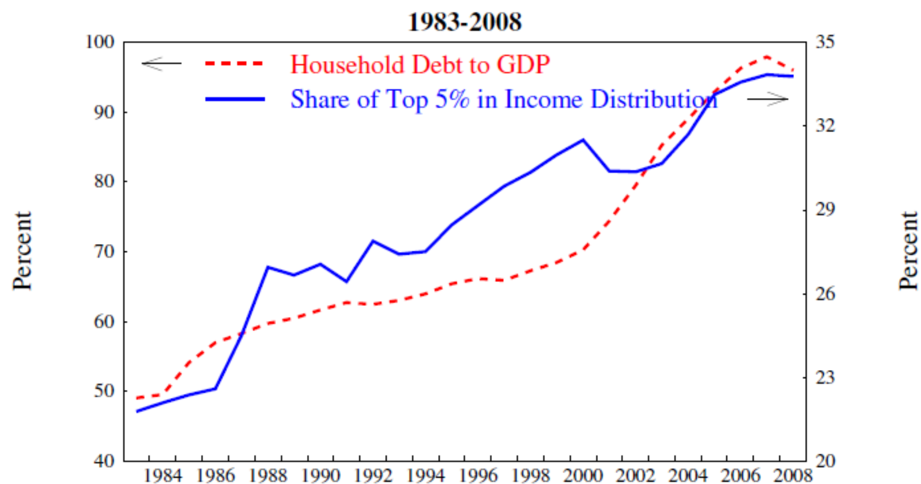

Figure 1. *Pre-Great-Repression* Income Inequality and Household Leverage (1983-2008)

Figure 2 plots the evolution of Pre-Great-Depression U.S. income Inequality and household debt-to-GDP ratios between 1920 and 1929. Between 1920 and 1928, the top 5% income share increased from 27.4% to 34.8%. During the same period, the ratio of household debt to GDP more than doubled, from 16.9% to 37.1%. In 2007, the situation was dramatically reversed. The debt-to-income ratio of the bottom group, at 147.3% compared to an initial value of 62.3%, was now more than twice as high as that of the top group. Between 1983 and 2007, the debt-to-income ratio of the bottom group therefore more than doubled while the ratio of the top group remained fluctuating around 60%.

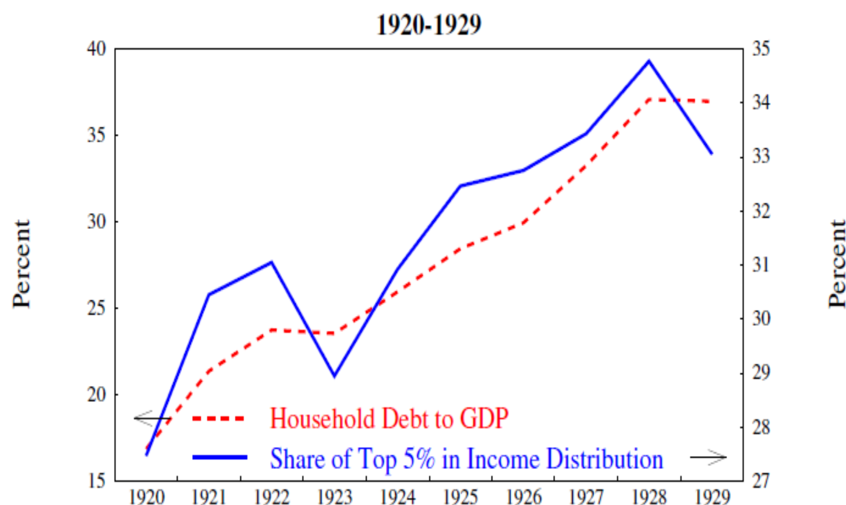

Figure 2. *Pre-Great-Depression* Income Inequality and Household Leverage (1920-1929)

Figure 3 plots the evolution of *Pre-Great-Recession* debt-to-income ratios for the top 5% and bottom 95% of households, ranked by income, between 1983 and 2007.

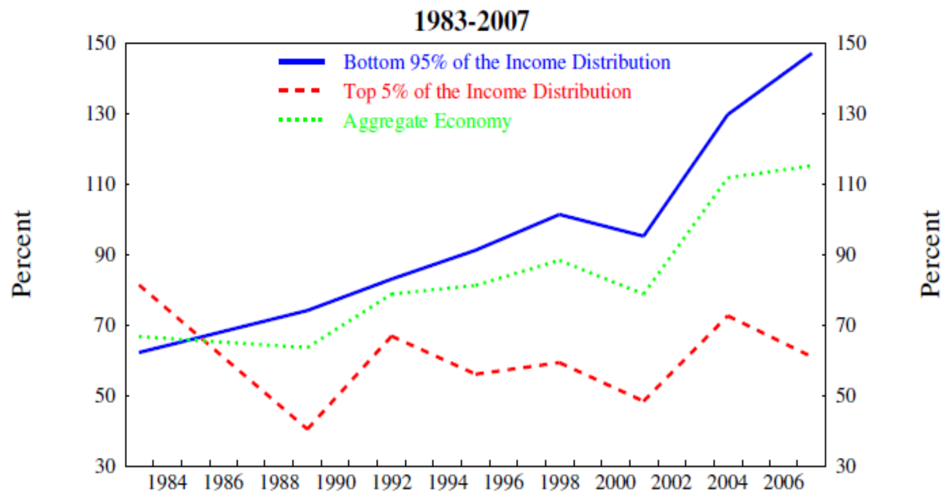

Figure 3. *Pre-Great-Recession* Debt-to-Income Ratios by Income Group

Figure 4 shows the ratio of non-mortgage consumer debt to income increased from 4.6% in 1919 to 9.3% in 1929. Around two-thirds of this was installment debt for the purchase of durable goods, especially cars. Between 1919 and 1929, the percentage of households buying new cars increased from 8.6% to 24.0%.

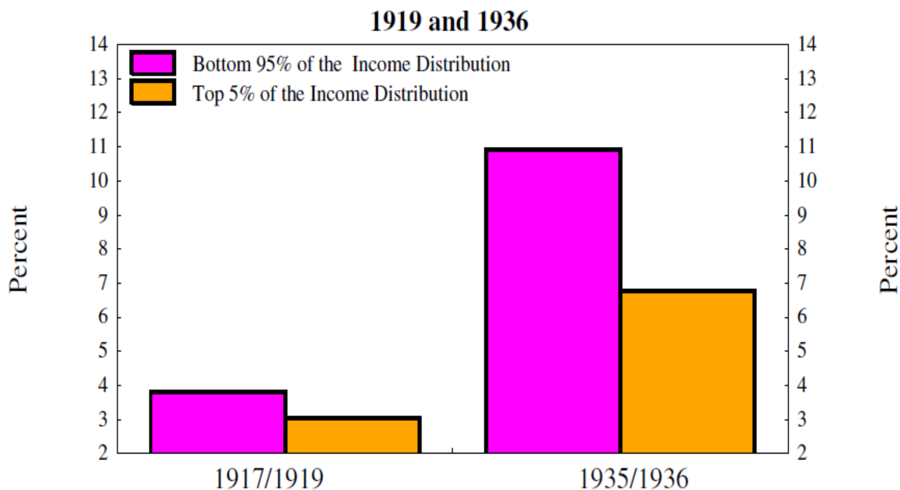

Figure 4. Ratios of New Installment Debt to Income (in percent)

Figure 5 plots the *pre-Great-Recession* the share of wealth held by the top 5% and the bottom 95% of the income distribution between 1983 and 2007. Except for a brief period between 1989 and 1992, the wealth share of the top 5% income group increased continuously, from 42.6% in 1983 to 48.6% in 2007.

In figure 5, Wolff, E. N. (1995) reports that the share of net worth of the top 1% increased from 36.7% in 1922 to 44.2% in 1929. Kopczuk & Saez (2004) show the share of the top 1% of the wealth distribution increasing from 35.2% in 1921 to 39.1% in 1927. It declined to 36.8% in 1929, but reached 40.3% in 1930.

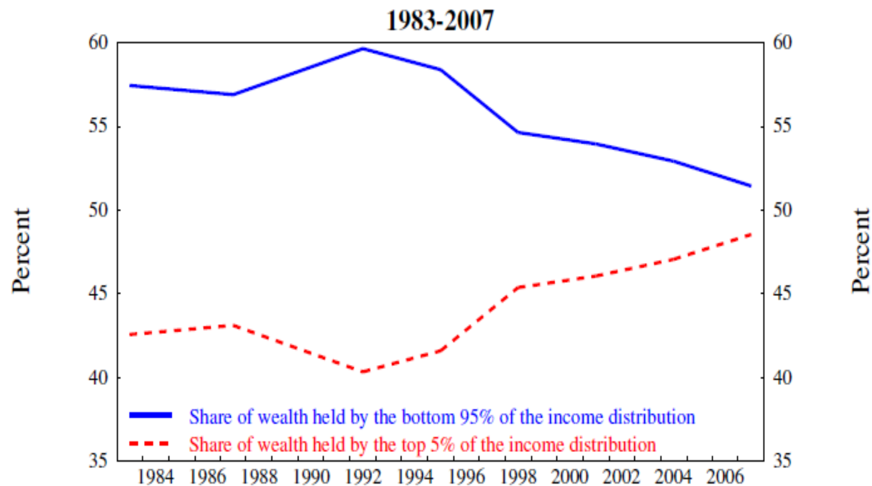

Figure 5. *Pre-Great-Recession* wealth Inequality (1983-2007)

Figure 6 reports the most recent estimates by Kopczuk & Saez (2004), along with previous estimates by Wolff (1995). The series Wolff (1995). reports that the share of net worth of the top 1% increased from 36.7% in 1922 to 44.2% in 1929. The serious from Kopczuk & Saez (2004) shows the share of the top 1% of the wealth distribution increasing from 35.2% in 1921 to 39.1% in 1927. It declined to 36.8% in 1929, but reached 40.3% in 1930.

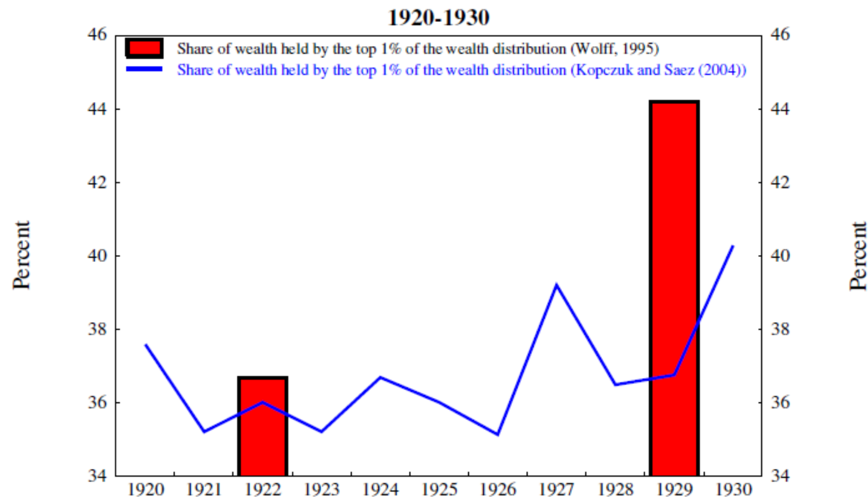

Figure 6. *Pre-Great-Depression* wealth Inequality (1920-1930)

3. The Mechanism that Income Inequality Causes Financial Crisis: Two Aspects

Aspect 1: Insufficient demand

Keynesian economists hold the opinion that if income inequality is serious, then the bottom earners would have higher consumption propensity than the top earners. So income inequality would definitely make the aggregate demand stagnant.

Aspect 2: Speculative bubble

Financial crisis is always with asset bubbles. The United States had already experienced 2 bubbles since the distribution of income became unequal before the Great Depression and the Great Recession(see Fig. 5 and Fig. 6), then we would like to ask: Do large bubbles cause income to become more concentrated, or in turn, does the concentration of income cause the bubbles?

Actually, one can easily perceive that polarization of wealth may lead to 'speculative bubble'. The intuition behind it is that, with increasing income, the richest people's consumption propensity is almost to zero and henceforth they have to invest somewhere, then it's highly likely that they invest in risky assets. Then increasing inequality has an inflationary effect on the prices of financial assets.

Kennickell (2009) shows us some evidence from SCF data, which confirms that rich families hold riskier assets. In 2007 the top 10% of the income held 60.5% of the holdings of checking, savings, money market and call accounts and 50.3% of the holdings of certificates of deposits, but 90.4% of direct holdings of stocks and 87.9% of bonds, 51.9% of mutual funds and hedge funds. This obviously support our viewpoint that wealthier households hold riskier assets.

Lysandrou (2011) argues 'the chief driving force behind the creation of the structured credit products that triggered the crisis was a global excess demand for investable securities and that key to the build-up of this excess demand was the huge accumulation of private wealth'.

Then we can see the interaction of those 2 aspects causes financial crisis. Some of the Austrian economists may argue that the big global financial crisis originated from the Fed Reserve's misuse of monetary policy and they claim that if Fed Reserve implements the monetary policy correctly, the market can run as good. We would like to say these economists are only correct to some extent because they only capture the superficial phenomenon. The failure of monetary policy is just like a fuse, and the fundamental cause still lies in the inequality of income distribution. In 2001, the America already experienced the time with a serious income inequality, and after 2001, Bush government cut tax in order to stimulate economy, which further widened the gap between the rich and the poor.

The richest man with abundant financial assets, and there is no doubt that they must invest in somewhere not simply because they are overconfident or the investments are underestimated. They actually invested in the real estate before subprime crisis. Incorrect monetary policy indeed caused the subprime crisis superficially, however, even if monetary policy was adopted correctly, the rich hold huge amount of money would definitely speculate in financial markets wherever they are interested in, as a result, the crisis would happen inevitably. Then it is not hard to see financial crisis would happen endogenously, rather than the exogenously as caused by incorrect monetary policies.

Because the gap between rich and poor is too large, and henceforth the poor are not able to afford to consume that much, so the rich have no incentive in productive investment. Production is relative to consumption, so overproduction means underconsumption or insufficient demand. The

worldwide overproduction due to the income inequality of the global economy, restricts the development of the economy seriously. If we do not strengthen the redistribution policy, it would be really hard for the economy to recover.

And the same situation is not so optimistic in developing country like China. If such countries want to boost consumption, they must not only rely on government expenditure on heavy industry and infrastructure investment, which will only form a larger production capacity relative to smaller efficient demand, and henceforth bring more severe crisis.

On the root of the crisis, mainstream economists hold the most classical interpretation: "lack of control", "policy mistakes" and "underpricing risk". That is to say, the root of the U.S subprime crisis is not systemic or endogenous but exogenous. We can further ask: why would investors underestimate the risk? Mainstream economists' would attribute the causes to human being's nature of greed. The problem is that, this ultimate root is from the basic "rationality" hypothesis in economic theory, and then we can further ask: economic agent is always profit-maximizing in any period and any social institution. Why did the great depression and the great recession only occur in capitalism? This question leads me to the consideration of different institutions comparison, we all know that capitalism is characterized by distributing income by factors, i.e. capital receives rental and labor receives wage among the total output.

Some Marxists(Engels & Friedrich (1975), Kautsky & Karl (1901-1902) and Luxemburg &Rosa (1951)) focuses directly on rising income inequality as a possible root cause for capitalist crises is the overproduction/underconsumption theory. This theory has different strands, however, the main logic behind it is that the produced surplus value needs to be realized (i.e. the output needs to be sold) to make profits and capitalists have the tendency to produce more than can be sold. Capitalists are producing to become richer (and not to fulfil people's needs and wants) and they are forced to increase their output due to competition (self-preservation).

4. The Truth behind "Excess Demand"

If we compare the situation in 1929 with that in 2008, it is easily to find an interesting phenomenon: the Great Depression in 1929 was with "insufficient demand" but the Great Recession in 2008 was with "excess demand". That is to say the reasons of the two crises are different and henceforth the reason seems not to be income equality. Because if income equality really works, the case of "excess demand" in subprime crisis wouldn't have occurred.

It is "excess demand" caused the rising defaults in 2008, eventually led to the credit crunch. The problem is: what causes the "excess demand"? Let's try to explore this question in the following paragraphs.

When we expand production capacity, the only way to avoid overproduction crisis is to increase consumption. So we'll see that the old industrial countries in history that have adopted the following measures to stimulate consumption:

(1) Cut production directly, for example, pour the milk into the sea. This method is too primitive and was adopted decades ago and is not popular any more nowadays.

(2) Easy monetary policy, such as reduce interest. So the firms need loans could get money easier, but this in turn would get them more possible to default and would lead to inflation.

(3) Expand public expenditure. The government expands public purchase when people are

less willing to consume, it is often the case that the poor cannot afford to consume as before and the rich are less willing to consume as before. Then the government has to act as "consumer" and "investor".

(4) Adjust income distribution, such as increase tax rate to transfer payment to the poor and hence improve their purchasing power which is the proposed by Keynesian economists.

(5) Overdraft consumption, such as installment, loan consumption and shopping by credit card, subprime mortgages. And although this will make firms earn profits slowly over time, it actually increases the long-run profits of the firms and it benefits the cash-constrained consumers from “deficit spending”.

(6) Improving social welfare expenditure, it involves education, medical, unemployment and poor people's livelihood, it is also one of the direct causes of heavy public debt. After World War II, welfare policy in Europe and the developed capitalism countries is popular.

Due to the above policies, particularly, the “overdraft consumption” and “improving social welfare” did have substantial effect on increasing the demand over the past decades. These two policies did fill the gap between income and consumption in the short term, and covered up the contradiction between the expansion of economy and the insufficient demand, and it covers up the polarization in income distribution. However, these policies are not able to solve the problem of "overproduction" fundamentally, all it could do is to delay the coming of the financial crisis. Such “overdraft consumption” depend heavily on future’s cash flow, and when the investors and consumers hold pessimistic expectation and henceforth there is no future consumption could be overdraft, the financial crisis will inevitably happen!

Then we can see the so-called “excess demand” does not mean that the bottom earners have “excess purchasing power”. What is true is that due to the tight budget constraint the bottom earners’ demand is far from being satisfied yet, then they have no alternative but to credit consuming. It is exactly credit consumption mislead people to take “excess demand” as one of the causes of subprime crisis. There is nothing wrong to say their demand is excessive relative to their income, which is too low due to big income disparity. And when such credit consumption cannot be sustained, bottom earners with heavy debt would possibly choose to default no matter whether they previously had borrowed money rationally or irrationally.

Kumhof, et al. (2010) shows that Bottom earners’ debt-to-income ratio therefore increases from 62.3% in 1983 to 143.2% in 2008, accompanied by an increase in crisis probability from initially around 1.5% in any given year, to 4.9% in 2008.

Thus, you can expect a similar financial crisis will certainly happen in the future, this crisis will happen more frequently in future when the virtual economy gets more and more boom.

Then we can conclude, that the blasting fuse of subprime crisis is the increase in the default rate, and the increase in the default rate is due to that the expectation about future was seriously pessimistic and the pessimistic expectation is due to the unsustainability of the “overdraft consumption”, and unsustainability of the “overdraft consumption” was due to “overproduction”; and the “overproduction” was due to insufficiency of effective demand (under-consumption);

Someone may argue that if the European Union unifies finance of its members, the financial crisis would have be avoided, we really doubt about this argument in that even if EU did so, the financial crisis would happen in the whole Europe instead of in the individual countries.

One important feature we want to point out is that the developing countries with not enough

large scale financial sector like China are typically of capital-outflow, while the developed countries with boom financial sector are of capital-inflow. Then the developing countries has too much foreign exchanges which would be injected into the developed countries and henceforth makes the financial system more fragile in the developed countries. And this is true in subprime crisis.

Kumhof, et al. (2010) provides evidence which suggests that this nexus was prominent prior to both the Great Depression and the Great Recession. This increase in credit supply allows poor and middle-income households to sustain higher consumption levels. But the result is that loans keep growing, and therefore so does the probability of a crisis that, when it happens, is accompanied by a contraction in the real economy. And this contraction in turn implies that the effect of a crisis on debt leverage and therefore on the probability of further crises is quite limited.

Then we can conclude the root of the financial could not be fundamentally eliminated by the method other than eliminating income equality.

5. Conclusion

This paper explores the nexus between income equality caused by income distribution by factors and financial crisis. Particularly, based on previous works, we show even though the subprime crisis in 2007 seems to be caused by “excess demand”, actually this is only the superficial phenomenon. The problem lies behind this phenomenon is still “insufficient demand” which is caused by income inequality. The fundamental way to prevent financial crisis, in our opinion, is to reduce the income inequality by whatever method could be used.

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