

## Rate of Profit, Wages, and Crisis

### A Marxist Perspective of The Theory of Crisis

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**ABSTRACT**

The goal of this paper is two-fold. First, the paper aims to discuss Karl Marx's theory of the falling rate of profit and the alternate, probably inconsistent, Marxian theory of crisis based on the rise of wages. Second, the paper examines the relevance of these theories in our days by reviewing important literature on both classical and neoclassical analysis of crisis.

A thorough review of literature revealed that Marx's focus was to provide a real science that explains the phenomena of recurrent crisis in the capitalist society, as opposed to explaining specific incidents that triggers a certain crisis. Marx viewed the capitalist crisis as an endogenous function to the capitalist society itself.

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**Introduction**

Over the past two decades, an ever-increasing level of banks and corporate leveraging has occurred, which was one of the main causes behind the financial market collapse of 2008 according to recent researchers. However, there is much more into a crisis than the leverage, which the classical school of thought can explain. For instance, Marx's capitalist system is characterized by the profit as the justification and motivating purpose of production, and the economic crisis inherited in the falling rate of that profit.

The contribution of this paper is to provide an analysis of some of the important literature on the theories of crisis. The literature search included peer-reviewed articles and chapters from books found in academic databases, and were selected based on their significance, novelty and discussion of important topics related to crisis theory. The publication years range from 1967 to 2012, with most of the literature focusing on the economic crisis inherited in the falling rate of profit.

In simple terms, two schools of thought on the subject of crisis will be addressed in this paper: the Marxist and the modern theories of crisis. This paper discusses the falling rate of profit and the profit-squeeze theory of crises, and historical account of the 2008 financial crisis [1]. Papers on the rate of profit are discussed to provide some empirical basis for discussing Marx's ideas, as they start explicitly from Marxian premises and have an excellent command of the empirical evidence [2].

The extensive literature on the Marxist theories of crisis addresses deeply the difference between the profit rate falling due to an increased organic composition of capital when the value of labor-power is constant or even falling slightly, and the profit rate falling due to a wage-squeeze. The second theory, which is the core of much of post-Keynesian, structuralist, and mainstream Keynesian thinking on crisis, is much more straightforward, and, makes it easier to understand the sense in which a crisis, by reducing capital accumulation and the demand for labor, relieves the upward pressures on wages that brought it about.

Stein's account of the crisis in the financial markets in advanced capitalist economies is more consistent with an excess of surplus value in the world capitalist system than with a deficiency, while the work of Duménil and Lévy underlines the fact that the rate of profit tended to recover in the decade and longer before 2007-8.

The paper starts with this introduction followed by Section 2, which presents the full theory of the falling rate of profit in the classical Marxian school of thought. In addition, the same section provides some empirical analysis on the issue of the falling rate of profit by presenting the findings of a research paper by Duménil and Lévy. Section 3, briefly presents an alternate theory of crisis based on Marx's readings, namely the wage-squeeze theory. Section 4, discusses the sources and mechanisms of the 2008 global financial crisis from a modern point of view, more specifically as explained by the monetary and financial economist Jerome Stein. Section 5 we transition between the theoretical and the applied sections of the paper, revisiting Marx's writings by comparing his theory of crisis with the modern theories. Section 6 includes the concluding remarks.

### The Falling Rate of Profit Theory of Crisis

Marx's writings aimed to lay out the foundations of a new socialist producing economic society. His concept of socialism followed from his years of education on and writing about the main components of the capitalist production, where he dived into analyzing the interactions between the agents and the capital, being fully informed about the history of events, the structure of the society, and while envisioning the future of capitalism.

Marx viewed the capitalist society as an economic system driven by a major issue, which is the constant progress through developing new modes of production. In Marx's commodity-producing society, the product is a commodity that has two notable aspects. First, it may provide a use-value directly, or secondly, it may provide an exchange-value for its usefulness to others.

For Marx, the purpose of capitalism is production for the sake of production, the production not of things but of profit, not of use values but of values. Marx recognized profit as the driving force of the capitalist system, and criticized the way capitalists competed for profits via innovating in technology or modes of production. The initial point of Marx's analysis of profits is embedded into his theory of labor value and in his discussion of relative surplus value.

Surplus value is the amount of labor time, which the producing class works without pay, to the necessary labor time that they need to maintain their standard of living. As wage workers, one cannot get paid until he has completed a full working day, which is likely to surpass that needed for the necessary labor time. This labor time above and beyond is the surplus labor and the source of surplus value, or profits, to the capitalist. Thus, if workers can be made to work longer hours in a day, or if they are made more productive per hour of the day, the capitalist can expect increased profits. In other words, in the production process the value added is split between workers' wages and capitalists' surplus value, so the capitalists extract the profit through the exploitation of workers.

The conditions for the realization of this surplus value therefore have nothing to do with the consumption either of the workers or of the capitalists, but rather have to do with the conditions for the sustained accumulation of capital. Provided that capital continues to confront profitable opportunities for renewed investment, such investment will provide the growing demand for the products of capital, corresponding to the additional surplus value produced, as capitalists purchase additional labor power and means of production.

In Marx's discussions of production process, relative surplus value is reflected in the struggle between workers and capitalists over how much labor time to be extended in exchange for the wage, and put differently, how the capitalists can realize an increased surplus value. Relative surplus value is created through increased productivity by means of technological progress which decreases the value of labor-power aiming to lower the cost of production, and eventually increasing the profit.

Marx's writing was motivated by the transformation of the overall capitalist production into a socialist one. Therefore, he was highly interested in the proletarian class which would eventually constitute the collective mass of people who will take charge of social production. For that reason, he went beyond the analysis of surplus value and the exploitation of workers, to analyze the capital accumulation through technical change and their consequences in terms of the falling rate of profit.

Before we start presenting the theory of the falling rate of profit, we should define the rate of profit introduced by Marx in the third volume of Capital. As per Marx, the rate of profit is the ratio of profit to total capital invested in a given cycle of reproduction, or the proportion of value in any given commodity which constitutes profit for the capitalist. This implies that labor-intensive businesses would see a higher rate of profit than a capital-intensive one. Marx indicated that there may be a general rate of profit since in the real world there was an observable tendency toward an average rate of profit, regardless of the intensity of the labor or capital in the industry. Marx wrote about the factors determining the profit in order to analyze systematically the tendency of that profit to fall. He wrote in the second volume of Capital: "The rate of profit is thus determined by two major factors: the rate of surplus-value and the value composition of the capital" [3].

As we have seen in the previous quote, the rate of profit, does depend on the rate of surplus-value. A rise in the rate of surplus-value will tend to increase the rate of profit, while a fall in the rate of surplus-value will tend to lower the capital's rate of profit. While the rate of profit is directly related to the underlying rate of surplus-value it is, at the same time, inversely related to the value composition of capital. From this definition it is now possible to move to discussing the reasons for the tendency of the profit rate to fall as per Marx's thoughts.

The falling rate of profit in this sense can be seen as the key to a big capitalist crisis, which can lead to what Marx wished for, the birth of the socialist system. It is with that way of thinking that in the third volume of Capital, Marx wrote of the source of the falling rate of profit as follows: "The number of labourers employed by capital, hence the absolute mass of the labour set in motion by it, and therefore the absolute mass of surplus-labour absorbed by it, the mass of the surplus-value produced by it, and therefore the absolute mass of the profit produced by it, can, consequently, increase, and increase progressively, in spite of the progressive drop in the rate of profit. And this not only can be so. Aside from temporary fluctuations it must be so, on the basis of capitalist production. ...Hence, the same laws produce for the social capital a growing absolute mass of profit, and a falling rate of profit" [4].

As one can see from the previous quote, Marx refers to the increase in profits as a consequence to an increase in the mass of surplus value caused by the rise of the number of workers employed, since profits are based on variable capital, represented by the productive labor. In other words, an increase in the number of workers employed means additional working hours or more possibility for labor exploitation above the hours in which they produce the value-equivalent of their wages, and eventually more profits.

Furthermore, the previous quote is extremely important in setting the stage for what Marx believes is the root of the tendency of the falling rate of profit. Marx appears to be saying that despite the fact that profits increase, the rate of profit tends to decline. This can be further explained by the fact that the rate of profit is a result of the technical progress. When a capitalist introduces a new technology to produce a product, he will decrease the share of variable capital in productive capital because of increasing use of machines to replace living labor. On the short term, this capitalist will first benefit from a super-profit through cheaper production. However, soon enough this new technology spreads forcing the price to go down and eventually leading to a fall in the rate of profit which is extracted from the labor power that had already been decreased when introducing a new machine or technology.

Under capitalism, Marx explains that as capital accumulates and is increasingly employed in relation to living labor, the organic composition of capital, which is the ratio of constant capital embodied in production of a commodity to the value of the variable capital measured in value terms, rise. And as long as the average organic composition of capital continues to rise, the rate of profit should fall. For Marx, the constant capital represents the proportion of capital invested in the value of the materials and fixed costs, which gets renewed when used up by production. On the other hand, variable capital represents the proportion of capital invested in the value of the labor-power defined by wages.

It's important here to look at Marx's distinction between the technical, value, and organic composition of capital, as they are essential for understanding Marx's law of the tendency of the rate of profit to fall. The value composition of capital is the immediate measure of capital since it expresses the value relationship between constant and variable capital. So it is the ratio of the value of the constant capital used in the production process to the value of labor employed in relation to it, excluding the technical proportions of combined machines and labor. This brings us to the technical composition of capital which expresses the physical relationship between means of production and living labor power in terms of actual exerted workers' labor. The correlation between the technical and the value composition constitutes the organic composition of capital which expresses the social aspect of production with the presence of capitalist relations. Technical composition of capital differs from the organic composition of capital in that it refers to the proportions of concrete labor, rather than the value composition of capital [5].

Marx continues to elaborate on the effect of the fall in the number of workers on surplus value and capital accumulation. He assumes that the relative fall in the number of laborers employed will lead to a faster aggregate capital accumulation than the rise of the mass of surplus value. In the quote below he stated: "Since the aggregate mass of living labour operating the means of production decreases in relation to the value of these means of production, it follows that the unpaid labour and the portion of value in which it is expressed must decline as compared to the value of the advanced capital" [4].

Again, Marx argues that with the progress of capitalist mode of production the mass of means of production will tend to rise in relation to the physical amount of labor employed in production. As the labor process becomes mechanized and automated, labor will be replaced by machines and other means of production. As mentioned above, Marx refers to this as the tendency for the technical composition of capital to rise.

We can conclude this idea by reiterating the main point which is the critical role that the progressive mechanization of the process of production plays in increasing productivity, increasing the rate of surplus value, developing a higher composition of capital by relatively decreasing the ratio of variable to constant capital. The previously said leads to understand the process of the falling rate of profit in a capitalist mode of production in the classical Marxian school of thought.

Marx continues to explain the fundamental contradiction between the falling rate of profit and the increasing amount of profits. He said in this regard, that it is: "...double-edged law of a decrease in the rate of profit and a simultaneous increase in the absolute mass of profit arising from the same causes" [4].

Marx here refers to this simultaneous tendency to maximize the

amount of surplus value produced, while minimizing the amount of labor employed by a given capital as the main reason for the tendency for the rate of profit to fall. The word causes in the previous quote refers to the advancement of technology in the capitalist society as explained by the paragraph that precedes the one quoted above. Marx emphasizes the role of the advancement of technology in the capitalist society in increasing the productivity of labor, decreasing the surplus value, and ultimately leading to the fall in rate of profit.

What has been discussed so far is Marx's theory of the falling rate of profit through changes in the organic composition of capital. However, it is relevant here to explain how this theory can be interpreted as a theory of crisis for Marx. For Marx, raising the scale of production leads to the accumulation of capital, an acceleration of the fall in the rate of profit, and consequently an acceleration in the concentration and centralization of capital with the elimination of smaller capitalists by monopolists who are the large capitalists possessing strong market power. Marx wrote in this regard: "The causes which concentrate masses of labourers under the command of individual capitalists, are the very same that swell the mass of the invested fixed capital, and auxiliary and raw materials, in mounting proportion as compared to the mass of employed living labour" [4].

The previous quote expands on Marx's thought about the increase in productivity through a decrease in the number of laborers and its effect on the elimination of small capitalists. The logic here is simple: if we take the general rate of profit as a proxy, then a capitalist can only gain a rate of profit higher than the general rate of profit if another capitalist's rate of profit is less. Therefore, those capitalists whose rates of profit fall below the general rate of profit are faced with a loss and ultimately with a risk of disappearance.

Therefore, we see here that the fall in the rate of profit and the concentration of capital are indirectly linked together with the tendency to a crisis. In the capitalist system, growth rate depends on several factors, among which is the profit rate. Since profits provide the funds for productive investment, a fall in the general rate of profit directly implies a fall in the rate of capital accumulation and consequently a decline rate of economic growth [6]. So for Marx, a crisis is functional and not exogenous to the system and the tendency of the rate of profit to fall can produce a crisis through its effect on small capitals. There are many modern successors to Marx' falling rate of profit, including the mainstream production function-based approach to growth, the post-Keynesian and structuralist models mentioned before, and the classical growth models surveyed in Growth and Distribution, which are also connected to the theory of induced technical change [7].

The point is that reducing the price of use-values in general can lower the value of labor-power if wages are determined by an unchanging subsistence bundle of commodities. This doesn't seem to fit very well with the long-term history of capitalist accumulation, however. It's important to mention here the critique of the falling rate of profit which argues that the adoption of "viable" technical changes, that is, those that are profit-rate increasing at the current wage, can never lower the overall profit rate if the wage does not rise. Clearly, Marx understood this, and changed his argument to an assumption of a constant value of labor-power in the falling rate of profit argument [8]. There is a pretty good case to be made that pressure to reduce costs is a logical consequence of capitalist social relations, but not quite so good a case that the direction of cost reduction has to be labor-saving and capital using as "Marx-biased" technical change exemplifies.

Having discussed the theory of the falling rate of profit in the classical Marxian school of thoughts, it is now important to discuss some significant empirical studies available to see how relevant this theory is to our current world. The literature on this topic is large and while some of the papers try to apply recent data to prove the validity of Marx's theory of the falling rate of profit, some others aim at proving the opposite. We have chosen a paper, namely "The Profit Rate: Where and How Did It Fall? Did It Recover?" to provide some empirical basis for discussing Marx's theory of the falling rate of profit [2]. This paper was selected since Duménil and Lévy presented through it a pioneering study of the long-term movement of the rate of profit, the profit share, and capital productivity in the US private economy which really contribute to our understanding of Marx's theory of the falling rate of profit [9].

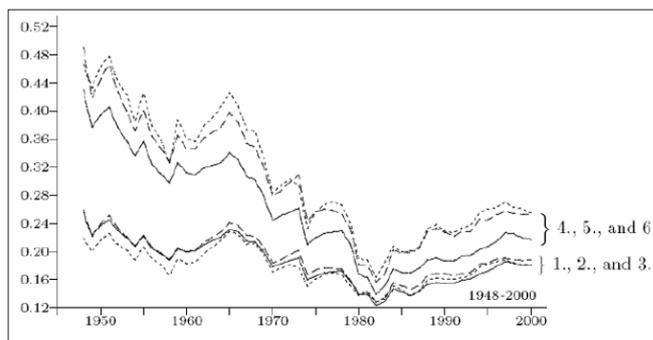
The purpose of the authors is to provide an empirical discussion about whether the rate of profit in the United States was falling, spanning the period 1948-2000, "a la Marx" as they call it. They divide the economy into several sectors where their initial focus is on the nonfinancial sector of the economy. They state that the reason for their initial exclusion of the financial sector, although it is an industry at the core of the capitalist economy, is that it does not enter the production process and the computation of its profit rate is critical.

They also identify the "highly capital intensive industries" which constitute the industries that have much larger fixed to variable capital ratio. The authors found out that the rhythm of the profit rate of these industries differ from the rest of the industries, and is in general much lower. As per the authors, mining, transportation, and public utilities constitute some examples of these industries that have a very high capital-labor ratio. For having such different behavior, the authors exclude these industries from their investigation of the falling rate of profit.

The authors state that they use in this paper a new computation definition for the profit rate explicitly from Marxian premises, and is equal to the ratio of profits to fixed capital. However, they distinguish between the "broad" and "narrow" measure of the profits. Profits in the "broad" measure are calculated as the total labor compensation subtracted from the net profit, and the profit rate is equal to the ratio of profits to fixed capital; whereas the "narrow" measure of profits is equal to the profit after indirect business tax and interest, and the profit rate is the ratio of the narrow profit to the sum of fixed capital plus inventories.

Much of the data for this study comes from the U.S. Bureau of Economic Analysis, The National Institute of Pension Administrators [10]. However, the authors' capital stock series is modified from the one available from the U.S. Bureau of Economic Analysis capital stock series. The logarithms of the U.S. Bureau of Economic Analysis' capital stock for 1925-1989 are regressed on the logarithms of the Duménil and Lévy's capital stock. These results are therefore used to estimate the net stock of private non-residential fixed capital for 1869-1924 [11].

The following graph demonstrates the initial findings of the authors. The profit rate is calculated using the definition of the broad profit mentioned above, which does not take into account the effect of taxation costs, and the six sectors examines are divided into two groups as follows: the first group contains three industries named as business, non-financial business, and non-financial capitalist business. The second group includes restricted sectors, which are the same sectors but excluding the capital-intensive industries.



Source: Duménil and Lévy, 2002, Page 9

As one can see from the previous graph, there is a remarkable decrease in the rate of profit since the 1940s. We see some upward trends peaking, as the authors assure, during 1960s but this does not contradict with the general downward sloping trend of the whole historical period.

Then the authors calculate the profit rate using the narrow definition of profit which gives a more suitable explanation from private capitalists' point of view, since taxes are considered part of the costs, along with the wages, and should undoubtedly be subtracted from the revenue before a profit can be made. The graph below depicts the narrow profit rate for six sectors, normalized to 1 for the period 1956-1965.

Figure 2: the Narrow profit rate: Six sectors, normalized to 1 for 1956-1965



Source: Duménil and Lévy, 2002, Page 11

The findings in the above graph seem to show us the same result emphasizing the long trend of the decline in the rate of profit. The authors repeat the same calculations for the corporate and noncorporate sectors. Moreover, the authors applied the decomposition of the profit rate as per Marx's ideas, and moved to calculating the profit rate as the product of the share of profits and the productivity of capital. They define the share of profits as the ratio of profits to the net product. Furthermore, they describe the productivity of capital as the ratio of output to capital stock. In addition they decompose the capital "a la Marx".

One conclusion can be drawn from all the results of the authors' computations is that Marx's theory of the falling rate of profit is clearly valid with the existence of substantial and durable decline of the profit rate since the World War II. The authors also investigated the recovery of the profit rate but it is beyond the scope of this paper and irrelevant to our discussion. Inspired by

Marx's law of the tendency for the rate of profit to fall, Duménil and Lévy argue that the technological progress in the capitalist system was an important reason behind the structural crisis of 1970s, due to the increase in the fixed capital which led to falling capital productivity and profit rate.

Finally, it should be mentioned that Marx was aware that the tendency to the falling rate of profit depends on other factors as well, which he calls countertendencies or counteracting influences that minimize the effect of the falling rate of profit. These countertendencies include the intensity of the exploitation of labor and the decrease of the wages below the value of labor power. These factors improve the profitability of capital and therefore counteract the tendency of the rate of profit to fall. Hence, many people consider the wage-squeeze theory as an alternative theory of crisis outlined by Marx, and therefore it would be interesting to explain it in the next section.

### **Wage-Squeeze Theory of Crisis**

Section 2 of this paper covered Marx's theory of the falling rate of profit and mentioned the wage-squeeze theory of a crisis as an alternative theory. In this section we move to briefly discussing the behavior of the wages in booms and their effect on triggering a crisis.

In order to begin our analysis of the rise of the wages, it is important to explain some underlying notions. First, Marx defines the working day as a certain number of hours of social labor expended in production. Since labor time corresponds to the value added in aggregate, the working day is also a corollary for the aggregate value added. However, the laborer is not paid an equivalent for the full working period, and here we come to the notions of paid and unpaid labor time. If the working day is divided in terms of the value added, it consists a division between wages and surplus value. In terms of the working day, the first part is labor expended by workers for which they receive an equivalent in the wage, while they do not receive an equivalent of the wage for the second part. Hence, the paid and unpaid labor time demonstrate how Marx viewed the unpaid portion of the working day as the result of surplus value due to exploitation by the capitalists.

Furthermore, wages for Marx are determined through the struggle between the workers and the capitalist. Marx stated that the social reproduction requires workers be paid a sufficient wage for survival and biological reproduction, and this paid labor time is called by Marx the necessary labor time for social reproduction. However, the unpaid labor time corresponding to the surplus value appropriated by capitalists is the surplus labor time of the society. Therefore, only the necessary labor time was required for social reproduction as well as the reproduction of the productive facilities.

For Marx, one of the basic characteristics of capitalism is the unemployed and underemployed workers, which he calls the reserve army of labor. In his writings, Marx discussed the idea that wages would move to a subsistence level in order to discuss the oversupply of labor and the mechanism of the movement of these workers in the capitalist society as a whole. He stated that the capitalist system itself produces endogenously the pool of labor supply, the reserve army of labor, which is determined by the capital accumulation process. Marx wrote in this regards: "a surplus laboring population is a necessary product of accumulation. . . on a capitalist basis. . . It forms a disposable industrial reserve army that belongs to capital quite as absolutely as if the latter had bred it at its own cost. Independently of the limits of the actual

increase in population, it creates for the changing needs of the self-expansion of capital a mass of human material always ready for exploitation" [12].

As we can see from the previous quote, in a capitalist system surplus labor is a condition for the existence of the system as a whole and a result of the capital accumulation. In Marx's writings, workers competing with each other keep wages at the subsistence level because the unemployed lived below the level and would gladly take a job that would even pay subsistence. We should remember here that Marx was writing at a time when there was very minimal social welfare. Having a manual labor job at this subsistence level was bad enough, but compared to being unemployed and in peril of starvation to death, as many did across Europe, is acceptable.

What is of our interest in this paper is the theory of rising wages in Marx's writings. The analysis is still applicable until our days which shows that Marx was thinking ahead of his time. Marx says that during a boom, the mechanism of capital accumulation and investment in highly productive technology reach a peak. As a result, more workers are needed in the capitalist production system which decreases the competition for jobs and increase the bargaining power of the workers. Consequently, more workers may be employed to make use of the new capital and the pool of reserve army of labor shrinks.

Based on what has been mentioned above, that during the period of a boom demand for labor increases and reserve army decreases, one can say that a capitalist has to pay a higher wage to get enough labor. When capitalists introduce labor-saving machinery, each laborer is working with more capital and thus output per worker increases. Capitalists, then, can expand output with the same or an even smaller workforce, driving wages down again. Finally, the reserve army of labor fills back up again with workers displaced by the new techniques of production [13].

Furthermore, this theory is interconnected with the theory of the falling rate of profit. As discussed, technology may increase the rate of surplus value, but the same process of mechanization lowers the profit rate in the long run. Therefore, more workers may be employed to make use of the new capital at first but later, they may be completely be displaced by them creating unemployment and adding to the reserve army of labor. It is important to say that capitals face a fall in their rate of profit relative to their size, with the smaller capitals having a more severe fall in their rate of profit as a result of the growing scale of production, regardless of the course of the general rate of profit. Actually, if the over accumulation of capital affected all capitals equally there would be some disturbances in the level of growth, but not necessarily a crisis. However, this is not truly the case and capitals develop and accumulate at different levels, depending on many factors. For example, startup companies would generate profits, but would also struggle in finding qualified workers until rising wages lead to the fall in the rate of profit of the stronger, bigger, or simply older capitals, which forces them to lay-off workers, risking a crisis. Thus it is not necessary that the reserve army of labor should be exhausted, but only that wages should rise sufficiently to lead to the shrinking of the pool of the reserve army of labor.

So, the most fundamental issue with discussing the theory of crisis based on the wage-squeeze theory is to study the behavior of wages during the booms and busts in a capitalist society and to understand the driving force behind those behaviors. Again here, similar to the theory of falling rate of profit, we see that

profits drives the system. During the phase of bust or economic crisis the workers, if not unemployed, have very low wages. We can conclude saying that the features of both the rise and decline of wages are entirely regulated by the expansion and contraction of the industrial reserve army, and this in turn corresponds to the inherent aspect of the cycles of the capitalist production system.

Finally, it's worth reiterating here that Marx does not consider a crisis an accident, but an automatic consequence of and a solution to the absolute overaccumulation of capital. The crisis can only be resolved through a restructuring of capital and the destruction of productive capacity, and the increase in the unemployment rate to equilibrate the supply of capital with the supply of labor power.

### **Jerome Stein Analysis of the Financial Crisis of 2008**

After explaining two theoretical reasons for a crisis as per the Marxian school of thought, namely the falling rate of profit and the wage-squeeze theory, it would be interesting to contrast them with some of the modern theories of crisis. For that purpose, the recent financial crisis will be taken as a case study in this section in order to understand the reasoning behind the modern economic point of view, followed by a revisit to Marx's analysis.

Since 2008, the international financial situation deteriorated sharply and quickly evolved into the most serious economic crisis since the Great Depression. Many papers and articles have been written to analyze the reasons behind the 2008 financial crisis which is considered a debt crisis. In this paper, we have picked Jerome Stein for the significance of his analysis of the financial crisis.

There are both similarities and differences between the origins of the debt crisis in the U.S. and Europe depending on which regions within Europe are under consideration [1]. Stein suggests that if one looks at the countries of Ireland and Spain, then one will find striking similarities to the origins and mechanisms at work as can be found within the U.S. economic downturn. However, Stein differentiates the origins and mechanisms at work when discussing the economic collapse within the countries of Greece and Portugal. Therefore, in order to discuss the crisis in an organized fashion, it is helpful to begin with the case of the U.S. before moving on to the crisis in Europe.

In discussing the origins of the crash in the United States and later in Ireland and Spain, Stein focuses his discussion on optimal debt ratios and early warning signs of economic distress. The reasons for this form of analysis are brought up in his description of the chronological order of events leading up to the crisis and the mechanisms at work in the disaster. For example, Stein emphasizes the importance of the housing sector in terms of increasing observations of above average capital gains on the purchasing and subsequent sales of properties in the U.S. in the decade preceding the financial crisis.

Stein says that above average returns due to housing prices increased owner equity, which induced greater demand by banks for mortgages and funds. During this period in the U.S. Stein states that "the share of loans with full documentation substantially decreased from 69% in 2001 to 45% in 2006" [1]. Since approximately half of these subprime mortgages in 2006 were derived for the purpose of refinancing and existing mortgage loan into a larger mortgage loan, in which payments were anticipated to be made from capital gains, one must understand the driving force behind the institutional drive to increase the supply of such

instruments and in turn the ratio of household debt service to disposable income [1].

Furthermore, Stein elaborates saying that in the same years preceding the economic crisis of 2008, the securitization of mortgages became an increasingly popular and profitable way for financial intermediaries to supposedly hedge risk and increase leverage. Hence, a slew of complex financial derivatives called Mortgage Backed Securities, Credit Default Obligations, and Credit Default Swaps began to emerge with increased usage and demand that fueled increasing home values while decreasing the quality of such instruments as the economic downturn approached. As Stein says, these instruments relied on short-term financing from the shadow banking industry, in which investment banks were subject to less financial regulation and relied on internal and overly optimistic risk models to determine capital requirements.

Moreover, Stein continues explaining the chronological process by saying that ratings agencies in the U.S. frequently gave triple-A ratings to these securities and overseas capital flooded the market in search of safe investments that delivered higher returns than government debt. According to the author, this flow of funds fueled the financial system to design debt instruments of varying risk quality and selling multiple tranches of such security issues. Essentially, Stein describes the U.S. housing bubble as being financed by an increasing flow of capital. Once firms began to use these instruments to increase leverage for profitable endeavors, problems could be found in the fact that these institutions had the latitude to decide that their capital requirements for certain tranches of Credit Default Obligations being held for trading purposes was essentially zero. Therefore, as Stein elaborates, this increase in house prices continued to have the unreal positive effect on the systems balance sheets and eventually helped drive the boom in the housing market for years. However, the interconnectedness of the financial system presented potential problems when the above average increases in housing prices could no longer be maintained [1].

At that point, Stein says that by the year 2007, many households were unable to service their debt requirements and as defaults began to emerge in greater quantities housing prices began to deteriorate across the U.S. Before elaborating on the mechanism through which changes in the balance sheets of institutions caused a deterioration in market prices resulting in a financial crisis, it is important to note that Stein does not attribute the crisis to high debt, but what he defines as excess debt in relation to his model for deriving optimal debt levels.

Essentially, Stein is utilizing methods of analysis used in other papers focused on deriving optimal debt ratios, in describing the probability of a decline in net worth as being positively related to excess debt. His analysis is based on the assumption that the mean interest rate exceed the long run capital gains, an assumption that was violated in the decade preceding the financial crisis. It is this mechanism that played a part in the decreasing net worth of individuals, households and institutions in the U.S. that was amplified by the increased leverage and pricing volatility of complex securities.

Therefore, according to Stein, as delinquencies and defaults in the U.S. resulted in ratings agencies downgrading various complex securities in 2007, prices deteriorated and resulted in fire sales of assets as institutions scrambled to unload the now risky assets. Mark-to-Market pricing resulted in greater uncertainty about the future and herd mentality drove the cycle to continue. Stein states

that in the process some of the largest U.S. financial institutions such as Bear Stearns and Lehman Brothers faced collapse since increasing liabilities relative to assets put the firms in danger of chapter 11 bankruptcy. The damage to the short-term repo market created substantial systematic risk to the financial system, which in 2007/2008 had a contagion effect on European nations that were for various reasons in delicate financial positions in their own right.

As previously mentioned, Stein believes that the European countries of Ireland and Spain faced a debt crisis of a similar nature to that of the U.S. In fact, Stein describes the same mechanisms at work and differentiates these nations from those of Greece and Portugal in that their structural budget deficits were noticeably lower. He says that, similar to the U.S. these countries faced a housing boom for several decades in which employment surged and the founding of the Euro resulted in a sustained fall in the nominal interest rate in Ireland. Once again, funds fueled demand for real estate and prices increased while borrowing grew to excessive levels.

Similarly in Spain, Stein says, access to cheap credit fueled borrowing domestically and internationally. When the housing market collapsed both nations then faced institutional liquidity problems and the government then stepped in to avert further collapse and illiquidity, each country increased public sector borrowing so that the governments could fund fiscal stimulus and take equity stakes in troubled banks by issuing bonds. The mechanisms at work are in fact quite similar to that found in the United States. However, according to Stein, the origins of the crisis in the countries of Greece and Portugal are of a different nature altogether [14].

According to Stein, the debt crisis in Greece and Portugal were not due to the role of the private sector (as described above in the United States, Ireland and Spain), but due to the actions of the public sector. Stein demonstrates that in the ten years prior to 2008, the average Government Structural Balance as a percentage of potential GDP was approximately twice as high in Greece and Portugal as the rest of the Euro area. Although once governments bail out banks and become indebted to foreign investors it becomes difficult to separate public from private debt, Stein makes a point of differentiating the conditions in Greece and Portugal before the crisis hit [14].

Stein describes the fiscal deficit in Greece as having been above 3% of GDP for almost every year for the ten years prior to the crisis. However, he points out that the deficit rose to 5.1% in 2007, 7.7% in 2008 and finally 13.6% in 2009, while additionally the public debt in 2009 was 115.1% of GDP and the highest in the Euro area [14]. For the author, it is these adverse budgetary trends that led to the downgrading of Greece's credit ratings and widening of the yield spread in government bonds relative to other Euro nations. In this case, since interest payments on debt exceeded the marginal productivity of government expenditures, the debt burden rose to unmanageable levels.

In conclusion, Stein points to two separate sources of the debt crisis in the United States and certain European nations; however, regardless of the sources, the mechanisms at work resulted in defaults or potential defaults. Essentially, Stein argues that although the debt problems may have originated in either the public or private sectors in different nations, the result was still declining asset values and the mechanisms at work resulted in a contagion effect either from the U.S. to Europe and/or from one European nation to another depending on the debtor-to-debtee

relationship under examination. Of course, in each scenario Stein makes it clear that the primary source of the problem was not the presence of debt, but the excess debt within the country/countries under analysis.

### **Theoretical versus Applied Sections of the Paper**

Since the purpose of this paper is to understand the classical Marxian theory of crisis, it would be essential now to say what differentiates it among the modern theories, in particular Stein's analysis, and what makes it as important and valid as it is to our days.

The first point I would like to mention is that the previous pages demonstrated that Stein, a modern mainstream financial economist, believe that crisis is not caused by any inherent flaws in the capitalist mode of production but are indeed exogenous to the system, as opposed to Marx. Marx looked for presenting a science explaining the phenomena of a recurrent capitalist crisis and did not look at specific mistakes of governments, central banks, or the financial sector in a way current economics do. For him, crisis is a function that helped the capitalist system produce itself in a sense that it prepares the way for further capital accumulation.

Second, as per Stein, shadow banking and financial intermediaries were behind the crisis. Marx was clearly aware of the important role played by the banking sector and the financial intermediaries in the capitalist society. In the third volume of *Capital*, Marx said: "By means of the banking system the distribution of capital as a special business, a social function, is taken out of the hands of the private capitalists and usurers. But at the same time, banking and credit thus become the most effective means of driving capitalist production beyond its own limits and one of the most effective vehicles of crises and swindle" [4].

As one can see from the previous quote, Marx describes the effective role that the banking sector plays in the capitalist society through credit offerings. Before starting, one should mention that today's society is far more dependent on credit and credit money than it was back during Marx's days, especially when it comes to the proletariat. People relied mostly on cash and banks dealt mainly with capitalists, whether as depositors or borrowers.

Marx states that capitalists do depend on the banking sector to get credit in order to finance the production activities, and the whole system of payments becomes more and more unstable as the quantity of credit money grows relative to metallic money. Hence, if not managed carefully the system itself will trigger a crisis.

Third, Stein mainly attributes the financial crisis to the subprime mortgages and to the complex financial derivatives namely the Mortgage Backed Securities, Credit Default Obligations and Credit Default Swaps, which were highly used, relying on short-term financing from the shadow banking industry. Marx, surely, did not speak about the issue of United States mortgages and the complex derivatives back then; however, he understood the function of money and the role that debt and credit play in triggering a crisis. The next quote by Marx explains the function of money in that regards, where he wrote in the first volume of *Capital*: "the function of money as the means of payment implies a contradiction without a terminus medius . . . This contradiction comes to a head in those phases of industrial and commercial crises which are known as monetary crises. Such a crisis occurs only where the ever-lengthening chain of payments, and an artificial system of settling them, has been fully developed. . . . In a crisis, the antithesis between commodities and their value-form, money,

becomes heightened into an absolute contradiction” [12].

The above quote from Marx illustrates that the mechanism of credit comes directly out of the function of money as a means of payment. People take credit in order to pay for certain commodities that they wish to purchase. By doing so, credited money is paid to another person, who eventually also takes credit; therefore, debt is extended to others and credit is expanded. This illustrates the long chain of payments that Marx mentioned in his above quote. In that sense, credit constitutes a long chain which we clearly see these days. We should make a few observations about the above quote. In Marx’s time, only gold or banknotes convertible into gold, were widely accepted as a means of payment on the world market [15].

Moreover, Marx’s depiction of the monetary means of payment pointed out that in this specific chain of means of payment, lies the possibility of a hidden crisis. In other words, financial crisis would result from credit and financing activities. This can be further understood once we look deeper into the previous quote. As mentioned before, subprime mortgages were the direct reason for the initiation of the crisis, since banks or financial intermediaries have given mortgages, based on the overvalued asset prices, to households who could not afford them. In that sense, subprime mortgages can be considered as the most unstable link in the “ever-lengthening chain of payments”, and consequently, the financial market was hit strongly being affected by the result of the collapse of this weak chain at its weakest node: the subprime mortgages.

Moreover, Marx continues saying that during a crisis, money functions become different since credit contracts, so the capitalists and the proletariat are forced to use money as the means of payment for the circulation of commodities. In this case, banks will be short in cash and this is also applicable for the recent crisis which led to the collapse and bailout of many banks.

Finally it is worth concluding by saying that it’s very hard to explain the specific details of the current financial crisis from a Marxist perspective for the main reason that in his theories it’s the capitalist credit and never the consumer credit that lead to a crisis. The root of the crisis are never discussed in relation to indebted workers. This is logical since, as mentioned before, during Marx’s days the credit system was a purely capitalist credit system and the workers relied on wages to buy their life necessities. However, the corporate debt bubble that currently exists exposes to the system to vulnerabilities and can be the root for the next crisis.

Marx’s crisis theory of the falling rate of profit can provide a framework which has been widely analyzed in relation to the current crisis as previously seen in this paper.

### Conclusion

Marx’s falling rate of profit and the profit-squeeze theories of crisis have spawned an enormous literature. Although the theoretical strand of the literature has focused on understanding the causes of this tendency, this paper has focused on explaining these theories, presenting some literature that empirically tested Marx’s hypothesis, and transitioning between the theoretical and the applied sections of the paper by contrasting between Marx’s theories and recent financial economists’ analysis.

Accordingly, the literature was reviewed in order to provide an analysis of the consistency between Marx’s concepts, Duménil and Lévy’s application, and Jerome Stein’s analysis.

The central point in Marx’s general analysis of capitalist crisis is that crisis arises inherently from the contradictions of the capitalist mode of production itself as opposed to being an exogenous factor. On the other hand, in some ways Stein’s account of the crisis in the financial markets in advanced capitalist economies is more consistent with an excess of surplus value in the world capitalist system than with a deficiency, which somewhat totally disagree with Marx’s theories of crisis. The work of Duménil and Lévy’s reported in the paper underlines the fact that the rate of profit tended to recover in the decade and longer before 2007-8.

It’s important to argue that Marx’ criticism of the constant development of the productiveness of social labor has major implications for the modern world, as now the rate of technological progress and innovation at both a higher level and a higher rate than has ever been seen in history. The capitalist now has such tools as computers, internet, telecommunications, and robotics at his disposal creating more uncertainty for future rate of profit as well as employment.

The corporations’ access to technical innovation and huge credit which is increasing their capital and productivity, and for now their profit as well, could have important implications on the instability of the overall economy. The risk of collapse considering real-financial linkages and how firms allocate financial surpluses exists. Corporations have to make a step towards their financial stability, whether to reduce financial liabilities or to accumulate financial assets, in order not to be exposed to vulnerabilities of the capitalist system and risk of losses, which will lead to more exploitation of the workers in order to minimize costs and further wealth disparity, and eventually a new burst. It is now that we need to take Marx’s writings more seriously to prevent even a more serious crisis in the future [16-18].

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