Article

Marxian Economics: Notes from a Neo-classical Viewpoint

Arthaniti: Journal of Economic Theory and Practice
18(1) 1–16, 2019

sagepub.in/home.nav
DOI: 10.1177/0976747918814968
http://journals.sagepub.com/home/ath
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Abstract

Marxian economics has the twin features of attracting some of the best minds and at the same time being rejected by policymakers world over, even by those who had adopted them to begin with. These features are discussed in this article. It is argued that the first feature is because of the existence of inequality and its worsening and associated poverty, and the difficulty in the continued extraction of surplus is a possible explanation for the second. It is further argued that the labour theory of value is not really essential to the theory of exploitation of workers by capitalists, and we try to establish that Marx was way ahead of his time in setting up the worker–employer relation in modern terms.

Keywords

Inequality, labour theory of value, Marxian economics, neo-classical economics, poverty, principal agent problems

JEL: A20, B13, B14, B24, B51, D02, D86

I. Introduction

It was a great privilege to be invited to deliver a lecture at the conference to celebrate 200 years of Karl Marx. To all those who must be wondering why someone, whose introduction to Marxian economics has been third hand through the writing of scholars such as Michio Morishima and discussions with friends who are reputed to be Marxists themselves, has been singled out for this honour, I could have responded with the usual answer: ask the organisers. But instead of that, I shall provide an alternative answer based on my first interaction with Joan Robinson.

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The year was 1974 or perhaps 1973; the month was November or December. The place was the Centre for Economic Studies and Planning (CESP) of the Jawaharlal Nehru University (JNU) in New Delhi. Joan Robinson had started visiting India during the winter months in the Northern Hemisphere. My senior colleague, Professor Krishna Bharadwaj, introduced me to the venerable scholar with the words, 'He is our resident Walrasian and has just completed a paper on the effects of changes in the numeraire.' I realised that I was in for trouble, as the lady immediately took me to task by saying, 'Why should it matter whether one paid in apples or oranges?' She was not prepared to listen to my explanation that I had shown that it did matter; and she immediately demanded a demonstration. Now what I was doing was using an example of instability which involved one Giffen good; my idea was to choose that good as numeraire. After all, it was positively priced, so it should have been alright. Upon mentioning this, there was a sharp question 'how can you do that? Choose a Giffen good as numeraire, what...?' Probably she would have said something such as nonsense or rubbish, but at that moment there was a knock at the door and in walked Amartya Sen, who was also visiting JNU. He was not visiting the CESP but the Zakir Husain Centre for Educational Studies. There was of course an effusive welcome from Joan Robinson (Amartya Sen had been her student) and she complained, 'Look at this young man, he thinks you can choose a Giffen Good as a numeraire.' Sen did not bat an eyelid and immediately retorted, 'Why not?' And Joan Robinson stopped her marauding line of enquiry, and we moved along more sedate lines of conversation.

So to those who wonder why I accepted the invitation to lecture, my answer would be, 'Why not?' After all, one needs to consider the fact that Marx, even 200 years after his birth, continues to attract some of the best young minds, and at the same time, currently, there hardly remains any economy whose policies could be called Marxian: the collapse of the Soviet Union, the disappearance of the Berlin Wall, major changes that happened in China and the happenings in North Korea signify that markets have risen to a premium position. And certainly one may expect someone with a background such as mine to be able to provide some understanding why this situation has persisted. These two questions, namely, the appeal on the one hand of bright minds to Marxian ideas and the rejection of these same ideas, on the other hand, by states and policymakers, are what I shall try to address.

How we approach these two questions needs to be spelt out now. First in the current section, we try to indicate, below, what may appear to be the main attraction to Marx's contribution to economics; that is, we hypothesise an answer to our first question of interest. We next provide, in Section II, our view of developments in the area of neo-classical economics which arose in response to problems that were thought of as shortcomings if not failures of the classical paradigm. We try to investigate whether some of these responses had their origins in Marx. Next in Section III, we indicate what many consider to be a fault in the construction of Marx's schema, the labour theory of value. We go on to the final Section IV to suggest what we consider to be the crucial elements in Marx, and which can be set out without referring to this problematic feature, by using some of the more recent developments of neo-classical economics, some of which Marx appears to have prior knowledge of. And we shall end this section with a hypothesis relating to why the economies following Marx's teachings crashed: in other words, we provide an answer, or at least the basis for one, to the second question of interest, framed above.

There are some reasons why I spent some time discussing the interaction with Joan Robinson, and it has to do with preparing the ground for the hypothesis we shall put forward in connection with our second question. The reader would have noticed how Joan Robinson was, to begin with, completely against the idea that the numeraire could play a role in deciding what transpires, and a Giffen good as a numeraire could not even be considered, especially, if the suggestion came from a rank outsider. The reader may have noticed that there was another fact that I had put up for consideration: Amartya Sen was visiting the Zakir Husain Centre for Educational Studies and NOT the CESP. Additionally, during the entire period of his stay, he was not invited to deliver a single lecture in the CESP. And to remind readers, even in 1974, Sen was really well known, and it would have been great for the then economics students to have interacted with such a great scholar. For those who do not know, the CESP was led by well-known scholars, who did not belong to the mainstream in economics and made clear of that fact. Both of the above-related traits exhibit a common quality of most of the Marxist or non-mainstream scholars: the unwillingness to engage with ideas emanating from sources which were not in one's own camp. Although this characteristic is common to others as well, this has not been the case everywhere. Maurice Dobb when elected to a fellowship of Trinity College in Cambridge wrote to the Master of Trinity College notifying that he was a card carrying member of the Communist Party of Great Britain (CPGB); the Master's reply will remain a classic. The Master after welcoming Maurice Dobb said that should Dobb be inclined to bomb the college, could he please, provide some advance notice? There were many very senior fellows of the College who spend a lot of time in the library, and these persons were not nimble any longer, given their age; an advance warning would help the Master have them moved out of harm, and the Master assumed that Mr Dobb would never want to cause any distress to these senior persons. Naturally, there scholarship flourished. We shall have a reason to return to this theme later.

One aspect of this dichotomy, the attraction of bright young minds to Marxist explanations, may be easy to see. I would suppose that the inequities of the time, inequalities and injustices that we encounter would strongly motivate many bright minds to enquire why this was happening. Such minds would try to understand why there were such inequities in our world. One fact seems to determine our entire course of existence, our birth. This surely is something beyond our control, and to have that determine our entire life appears to be wholly unjust. Of course, there are many instances of people overcoming the instance of their birth, just as there are many instances of those who were unable to take its advantage as well. But all through the ages, we have seen and continue to see great inequalities, poverty and destitution. Why is this so?

The study of inequality has recently received world-wide attention from the work of the French economist Piketty (2014) who has named his book *Capital in the twenty-first century.*[1] In fact *The Economist* described Professor Piketty as the modern Marx (*The Economist Magazine*, 2014) and then added within parenthesis (Karl that is). The phrase within parenthesis being a pointer to the fact that Karl Marx was not really remembered![2]

Karl Marx was not only concerned with inequalities but also with exploitation. We shall return to this topic later. But Piketty, the modern Marx considered the differential between the rates of return on wealth and the rate of growth of the economy. And since the return on wealth is greater, believes Piketty, the slower growth of the current periods would in fact strengthen the hold that the wealthy have, with a consequent return to the world that Karl Marx was familiar with. Which is why, Piketty calls for government intervention. Writing more recently, Piketty (2018), in a working paper, describes why democratically elected governments are unable to check the rising inequalities. My only reason to mention this article is to note that inequalities are here to stay and will keep growing, so the causes for the attraction to Marx remain and will continue to do so, if the Marxian view is seen as a source for understanding why there is inequality and what continues to nurture it.

II. Developments in Neo-classical Economics in the Twentieth Century

Since there remains considerable inequality currently and apparently from the accounts provided by Piketty (2018) and Subramanian (2018a, in press) inequalities are growing, the grounds for the attraction of Marxian ideas persist. However, their rejection by policymakers needs some explanation.

It could be that there may have been developments in neo-classical economics which do a better job of explaining this situation? So let me try to summarise what I consider to be the main developments in neo-classical economics in recent times. I shall interpret neo-classical developments somewhat loosely by implying any departures from classical traditions. But then, I should clarify what I mean by classical traditions, first.

By classical traditions, I shall mean perfect competition, constant returns to scale in production, the product exhaustion result with factors being paid their marginal revenue product and consequent zero profits. By implication, it would also mean that the competitive equilibrium would be attained and be efficient in the absence of externalities. Thus any departure from these things will give rise to results which are removed from what I have described as classical traditions. This is perhaps not standard, but this is what I shall use as the definition.

Beginning with the Great Depression of the 1930s, it was realised that capitalism had run into serious problems, and new ideas were needed to bolster up classical theories; the following three realisations, in my opinion, have been crucial:

1. Markets may not always clear: the massive unemployment in labour markets at various times seems to indicate this.
2. Markets may suddenly crash, or cease to exist: we have seen these too at regular intervals.

3. Participants in markets may refuse to be passive price-takers: they often behave strategically; we see this regularly with scams of various kinds surfacing all across the world from time to time when strategies, either illegal or not permitted, are used in the absence of proper regulation. Thus markets and Institutions often do not carry out the tasks that we expect them to.

Please note that I have singled out situations where capitalism appeared to have stumbled, and I shall only discuss the 'fixes' that were adopted to meet these. Consequently, the vast areas of work which were undertaken to put the classical theory on firmer grounds, or extensions thereof or even development of new areas (e.g., social choice theory) will not be discussed at all, unless they have a direct bearing on what we consider to be relevant. This should not detract the importance of any of these works. Consequently, the names of the great scholars who laboured in these fields may not find a mention in what follows.[3] In fact without much of these having taken place, what we discuss below may not have even occurred.

The realisation of the aspects where capitalism faltered has led to several developments in the neo-classical area which I might mention next. Responses from economists have come in spurts, and it is very difficult to get the historical sequence right. The presence of unemployment was critical to Marx's critique of capitalism; the Great Depression made the problem of unemployment central to the set of problems confronting capitalist markets, and it is therefore not surprising that this has been the concern of many economists.

First, then, was the Keynesian (1936) reaction that there was a problem with demand, and one would have to think of something outside the classical paradigm. The theory of what happens when markets do not clear appeared some years later when European unemployment surfaced and persisted; economists such as Dreze-Younes-Benassy-Malinvaud and Hahn came up with their notion of equilibrium with unemployment. But Keynes had got to it first: when markets did not clear, the short side of the market determined the level of transactions; thus, there was massive unemployment because firms were not interested in producing more. They were only producing what they could sell, and if one could increase demand, by getting people to dig ditches, run government investment programmes, it would put money in their pockets and get the firms, the markets they wanted, and hence the output would increase pulling up employment at the same time. Thus it was perhaps the most celebrated general equilibrium approach that one could think of: approach the labour market problem through the goods market. The short side rule was never mentioned as such by Keynes or his followers, and just to digress the national income identity written as Y (Income) = C (Consumption) + I (Investment) would reduce to S (Savings) = I, since $Y - C = S$. Now the $S = I$, an equilibrium relationship was always referred to as something which had to read from 'right to left' and that 'investment governed savings' needed to be kept in mind.[4] Clearly, demand, being the short side of the market, determined what the output should be, and hence demand (investment) determined or governed the output (savings). What was left unsaid was that this happened because demand was on the short side of the market. This bit of straightforward reasoning that when markets do not clear, and transactions take place, the short side rule comes into play was seldom mentioned in these contexts.

In a classical world, any imbalance would be cleared by price movements; if there is unemployment, the wage should fall and more people would be employed. In a Keynesian world where demand curtails output, a fall in wages is unlikely to move firms to produce more, although they would like to, but since they cannot sell more and hence labour will get more squeezed. However, with the onset of the Great Depression, the Keynesian prescription worked because it pushed the constraint of low sales by increasing demand and therefore sales and hence employment. These policies once in disrepute are back in limelight currently. In India too, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for example, roundly criticised by the then opposition when introduced, is something that the current government seeks to continue. We must also mention that a completely different reason for unemployment was analysed by Christopher Pissarides and Jan Mortenson (Nobel Memorial Prize 2010) which involved wage bargaining and job search.

Moving on to the next departure from classical traditions, we begin by noting that in classical environments, information played no role. It was assumed that, in today's language, everything was common knowledge. I think it was Hayek who saw markets as information processing systems and talked about incomplete information and asymmetric information in *Individualism and economic order* in 1948; a more thorough investigation into what may happen in such circumstances was provided by others in the 1970s. The work of Akerlof, Stiglitz and Spence, recognised through a Noble Prize in 2001, indicated that markets were commonly not able to transmit information as well as they were thought to be doing, and hence problems arose with the functioning of markets themselves. The classic lemons problem, by Akerlof (1970), appears to describe the situation completely.

In the used car market, if there are not enough buyers and sellers, then imbalances will of course arise. If that is not the case, assume that a buyer wants to pay ₹100,000 for a used car and sellers are willing to let go of their car for ₹85,000; if that be all, then the price would settle somewhere between ₹100,000 and ₹85,000. But the condition of the used car is known only to the seller, and the buyer cannot have access to this information. The buyer can get a mechanic to look at the car to verify and so on, but we are getting ahead of the story. If buyers believe that 25 per cent of the used cars are bad and for which the buyer is not willing to pay anything, then the buyer will evaluate each prospective purchase to be something worth paying for 75 per cent of the time and will be willing to pay ₹75,000 only, and that price being below the threshold of ₹85,000 no transaction can take place. The market is unable to transmit any information and folds up, unless there are things such as guarantees backed up by believable bodies and so on. This is a short version of Akerlof's Lemons problem.

The problem of asymmetric information was really quite an important point of departure. It may be of some interest to note that of the first three to be recognised with their work in the area, Akerlof and Stiglitz, realised the problems of asymmetric information when they were studying the problems of less developed economies; Akerlof in India and Stiglitz in Kenya.

The third strand of development arose with a variety of contributions; maybe one can identify the work of von Neumann and Morgenstern (1944) and that of Nash (1951) to have led this line of development. The idea that decision makers may be in adversarial roles came to the forefront, particularly in the treatment of markets under imperfect competition.[5] Also decision-making under uncertainty was being analysed, beginning with the von Neumann–Morgenstern book and other contributions, predominantly from Arrow (1953; 1963). Consequently, the notion of strategic behaviour was introduced under various kinds of informational constraints and the nature of uncertainty. In other words, decision-making was to be done only by considering what competitors might do, and it was important to keep track of what information was available to each; this was a considerable movement away from the notion of perfect competition. Not only imperfect competition and asymmetric information, the motivation for decision makers to carry out assigned tasks expected of them was needed to be examined. The role of incentives and whether tasks were incentive compatible were being crucially focussed on. Consequently, how Institutions themselves should function was being studied. Mechanism design theory initiated by Leonid Hurwicz and developed by Eric Maskin and Roger Myerson became the new frontiers of theoretical research. This line of development culminated with three of them being awarded the Nobel Memorial Prize for having laid the foundation of mechanism design theory in 2007. The difficulty with increasing the complexity of the problem studied has been that many results have been obtained under some special conditions thereby reducing applicability. This aspect, viz., some pre-conditions need to be satisfied, is often lost sight of. Be that as it may, some of the above developments were put together into the development of contract theory. At the heart of such 'contracts' lie the following problem: an agent may undertake some action, which produces an outcome which not only benefits the agent but another person called the principal, who has to settle a payment scheme for the agent for undertaking the action. And of course, the information available to the principal and the agent mattered as did the relation between the effort of the agent and the outcome, and further, this relationship could be uncertain.

The principal–agent framework envisaged the relationship among the employer, the principal and the employee, the agent. The principal offers a contract to the agent in such a way that by employing the agent at the offered rates, the employer is able to maximise profits. Further, the agent's efforts were generally unobservable to the principal and need not be inferred from the outcome. Ideally the principal would like the agent to work sincerely and hard. How does the principal ensure this? To enable the agent to accept the contract, the wage offered should be no less than what the agent can get outside (the participation constraint), and further the accepted contract should be more attractive for an agent who puts in more effort, in the sense of having a greater level of satisfaction for the agent (the incentive compatibility constraint). Notice that the principal will never offer a contract such that both constraints are non-binding; since then, by slightly lowering wages, the principal would be better off without violating the constraints. Thus, at least one of the constraints will be binding. There could be other dimensions to the problem and complications galore.

Notice that all of these are departures from the standard classical constructs. Let us try to track down whether we could have arrived at some of these features directly from Marx's concerns.

III. Marx's Economics and the Economics of Marxists

Two of the most renowned scholars, Keynes (1925) and Samuelson (1962) made various disparaging comments about Marx's Economics. Keynes in fact referred to *Capital* as an 'obsolete textbook that is not only scientifically erroneous but also has no applicability to the real world'. Samuelson however was less dismissive calling Marx a minor post-Ricardian[6] and later went on to remark that this was said in jest.[7] However, what made it worse is that Samuelson considered Ricardo to be overrated. Against these very damaging opinions, Morishima in his Walras Lecture before the Econometric Society (1974), described Marx as an 'outstanding economist' and goes on as follows:

> But it is also true that, among the economists mentioned above, Marx is unique; in fact, some might agree with Lange's contention that Marx's economics was weak in analysing the effects on some economic variables of a change in one of them and its merits lay in providing a socio-economic explanation of the economic evolution of capitalist society. There may still be many economists who do not regard Marx as a mathematical economist but believe that he was against mathematical economics.

Morishima goes on to argue that this was never the case, and Marx was always aware of his mathematical inadequacies and tried to make up for them. For instance, in a letter to Engels in January 1858, Morishima (1974) reproduces the following:

> I am, when working out economic principles, so annoyingly obstructed by miscalculations that, in despair, I have again set myself the task of getting through algebra quickly. Arithmetic ever remains foreign to me. By this detour through algebra, however, I quickly train myself up again.

Five years later, we learn from Morishima that Marx was enthusiastically studying differential and integral calculus and recommending to Engels that he should study these tools too, for he will find them very useful. So Marx was learning mathematics too, but unfortunately results pertaining to non-negative matrices and their properties were unknown to him. Morishima, comparing Marx to Walras in their approach to tackle mathematical complexities that were beyond them, had this to say about Marx:

> On the other hand, because of his lack of mathematical training, Marx could not neatly apply the then existing mathematics to economic problems. Even if he had been able to do so, as I have said above, he would not have liked to devote himself to such a job; he

> was too ambitious and too original. Instead, by formulating economic problems precisely, he discovered new mathematical problems within economics. These problems were subsequently rediscovered independently by mathematicians and developed into important subjects in mathematics. (Morishima, 1974)

These were the theorems of Perron and Frobenius on non-negative matrices and, more basically, what may be shown to follow from the Theorem of the Separating Hyperplane (Mukherji, 1985). To have been able to foresee the implications of such results without being aware of them is quite stupendous.

The central focus of Marx was the capability of the capitalist economy to reproduce and expand. On enquiring how this was possible, one might have expected an answer in terms of efficiency and productivity. Again, according to Morishima (1974), 'Marx gave a peculiar answer.' Presumably, Morishima found the answer peculiar, because Marx provided the reason for the ability of the capitalist to reproduce and expand to be the fact that capitalists exploit workers. To arrive at this conclusion, the labour theory of value played a central role. Morishima identifies this ability of capitalists of exploiting workers with what we call the Hawkins–Simon Condition. In fact, Morishima further qualifies the word peculiar by stating that the answer was 'advanced' and said further that he was not referring to its 'political progressiveness' but to its 'mathematical modernness'. Our comments in the previous paragraph would indicate why Morishima said so.

Problems arose in demonstrating the argument in its full-blown generality, since claims which were essentially mathematical were being made without checking for what was admissible and what was not. Everything however falls into place when one considers the structure of the Leontief model: single factor, no joint products. As one considers the more general production structure, the argument may break down in several places. In fact, Marx used the classical labour theory of value to calculate the labour time directly or indirectly necessary to produce a unit of each commodity. He then calculated the quantity of labour necessary to reproduce itself, or equivalently, the value of the subsistence–consumption bundle of commodities (which Marx assumed could be taken to be known at any moment of time), that is, the total amount of labour contained in the mass of necessaries required to 'produce, develop, maintain and perpetuate the labouring power'. Let this amount of labour be denoted by T^*. Under the assumption that each worker is paid wages only at the subsistence level (this is Marx's basic assumption), the worker receives the mass of necessaries containing T^* hours of labour by working for T hours a day. If $T > T^*$, capitalists make workers work more than that is required for reproduction of the labouring force; workers are overworked, underpaid and, hence, exploited by capitalists. Marx thus divided the total supply of labour by a worker, T, into a paid part T^* and an unpaid part $T - T^*$, both measured in terms of labour time, and he defined the rate of exploitation e as $(T - T^*)/T^*$.[8] Using this definition, he established a theorem to the effect that the equilibrium rate of profit and the equilibrium rate of growth are positive if and only if the rate of exploitation e is positive. It is important to note that this entire argument depends crucially on the following steps: first, the calculation of value (which depends on the labour theory of value), second, that wages are subsistence and finally that everyone is agreed upon what these are.

Morishima (1974) has pointed out that a number of strict assumptions must be fulfilled in order to avoid the ambiguous cases of the values of commodities not being determined uniquely, as well as the meaningless cases of some commodities taking on negative values.[9] As soon as the joint production and choice of techniques are admitted and, more importantly, we have more than one primary factor, we must discard the labour theory of value, at least in the form Marx had formulated it. So if the concept of value is indispensable for the definition of exploitation, the fundamental Marxian theorem is not applicable in the general case of durable capital goods being treated in the von Neumann way. If this finding is correct, it is obviously a great disaster from the point of view of Marxian economics.

The limitations of the theory have been talked about, discussed and debated in many fora, and I do not wish to dwell further on these discussions. Several ways of getting out of the problems of defining values were suggested. Let us take the theory as stated by Marx and let the limitations recede in the background for the present. The argument that capitalists extract their profit from workers is something that will appeal to many; clearly, the rising inequality could find a straightforward explanation in this version of the story.

Further to the exploitation of workers, it was also implied that the capitalist economy cannot last. And to add to the attraction of such a prediction, the capitalist society has faltered many a time. Some instances have been quite destructive also. The formal argument in support of such a hypothesis, what has been referred to as 'the contradiction to capitalism', may run along the following lines: along growth paths, while profitability increases, there is an inevitable pressure on employment pushing it up as much as possible, and hence with larger levels of employment profit rate starts falling, which in turn lowers the growth rate and hence employment. It is as if the two, the employment rate and the share of workers, keep chasing one another. Such a story was admirably constructed by Goodwin (1967) in support of the Marxian contradiction to capitalism hypothesis; it is possible to show that the model suffers from an extreme assumption; results depend crucially on a certain feedback term being zero (this technically implies a Hopf bifurcation [Mukherji, 2005] for the general model, making the Goodwin discussion a very special case) and moreover the Goodwin cycles may breakdown; in fact, the cycles themselves may lose their meaning, since there is no way to keep the variables within their domain of definition.[10]

It would thus appear that the economics of Marx could hold together only in very special conditions. How restrictive these conditions are may not be appreciated by many. This is perhaps the main reason why Keynes had a severe comment and Samuelson had apparently jested! However, Samuelson (1974, p. 292), went on to state:

> Karl Marx deserves an honoured place among economic pioneers of steady state and balanced growth equilibrium. What is valid in this seminal contribution is in no sense contrary to mainstream economics of Marx's predecessors, contemporaries or successors. Even we end with the view that Marx was not so much a mathematical

> economist as 'merely' a great economist, this recognition of his analytical abilities in no sense diminishes our appreciation of him as an original and creative shaper of the science of political economy….

There seems to be little more that one can say.

IV. Conclusion with a Hypothesis

Given the above, one way to dismiss the importance of Marxian economics is to say that it is not robust enough and clearly of little use in the framing of policies to understand the real world. However, we should be careful about being dismissive. For there are some points which need to be noted where Marx too was discussing departures from the classical set-up. In that we may consider Marx to be a neo-classical economist himself. As we shall soon argue, in addition to the nice things that Samuelson finally stated about Marx's attainments in the areas of growth, a case can be made for Marx's contribution to microeconomics, as well. It is of course worth noting that Marx said he was not a Marxist;[11] we should hasten to point out that this was in a particular context. But in terms of the modern economic theory as well, Marx was certainly distinct from his followers.

The idea that under capitalism wages are just enough to reproduce itself, or assuming that labour be paid subsistence wages, was way before its time. Instead of paying the value of marginal product which was the classical paradigm, paying just barely enough to keep the labour participating was really modern and advanced. Probably, this aspect was more modern and advanced than the exploitation of labour by capitalists, as Morishima had noted. The principal–agent framework developed roughly in the 1970s ensures that this be so. The idea, as we explained earlier, is that the principal maximises profits by offering a contract which satisfies two main constraints: the participation constraint and the incentive constraint. Clearly, therefore, it was not that Marx was being merely politically correct, he was as correct as he could be, by the standards of the late twentieth century: treating capitalists as principals and workers as agents being ensured that they just participate, the so-called 'participation constraint' .

There is another aspect that we need to applaud Marx for and that is to introduce the notion of power into his employer–employee relationships. Again given that the classical traditions were all about the market, it was clear that Marx was describing a situation where participants or decision makers were not passively reacting to market prices. Given that Marx considered the prices as being dictated by values, the ability to extract work by paying less than what they had contributed was, no matter how crude, an exercise in power (Bowles, 2018). The power wielded by the employer lay in the following. Marx maintained that even liberal capitalist economies while growing and undergoing technological changes would carry permanently a 'reserve army of labour' or maybe the unemployed and that this would be the real threat that employers hold over the working class to behave themselves. This was, in our today's terminology, the incentive constraint in any contract. Not accepting the contract would mean joining the ranks of the so-called pauperised reserve army of labour and that would certainly be a worse-off situation. I suppose it was assumed that those who worked did put in sincere efforts; otherwise, they would be found out and sent to the pauperised ranks of the reserve army. Thus what Marx had in mind was a contract, what we have come to describe as the principal–agent framework, in its complete form. In fact, notice that Marx was not really interested in solving the problem of unemployment in capitalist settings; he needed that there should be unemployment or the reserve army of labour, to set up his theory of exploitation. That was crucial.

These two aspects, the payment of subsistence wage and the fact that there was unemployment (the reserve army) which made it possible to coerce workers in accepting subsistence wages, making it possible for capitalists to extract surplus, were fundamentally important in Marx's schema and contributed immensely to the appeal of Marx's economics to many who thought that these were probably the source of the strength of capitalists. The crucial problem was that a coherent story which held together all other aspects of his theory could not be constructed either by Marx, by his followers or even by his admirers schooled in technical stuff. Notice too that these matters were independent of the values conundrum that Marx had worked himself into.

While most academics rejected Marx's constructs, perhaps because of the facts noted above, why did Marxist economies falter and collapse? This was, it may be recalled, our second question of interest. After all, the Party which ran these economies prospered. However, they did so at the cost of the common people who were kept at subsistence wages, and while there was reported to be no reserve army of the unemployed, being out of favour of the Party was to be avoided, since that led to a fate much worse than being pauperised. So, there were elements of both types of constraints at work. So what happened to these economies?

The answer, I think, lay in the rise of the importance of informational flows within economies and across them and in the neglect of the incentives of the agents involved. The removal of capitalists and replacing them by the state as the owner of the means of production created, first of all, an inaccurate set of incentives. The state was not really interested in profitability and efficiency, as it ought to have been, and was interested in maintaining itself in control. Further and more importantly, information flows, through radio and TV, first, and then later through social media, created huge changes in what were considered subsistence wages (something that Marx had more or less accepted as constant), and increasingly the extraction of surplus became more difficult or, more accurately, could be achieved at much greater cost. Notice that this is essentially the same line of argument that Marxists use, viz., that capitalism was bound to collapse due to internal contradictions. Strangely, it is the same argument which can be used to say why Marxists regimes had to collapse. This is our hypothesis.

The study of incentives, again a 1970s phenomenon, did not figure in any of the planning literature of the 1950s and even the 1960s. As a result, the implementation of policies failed and to hide this, or to keep the people from finding out about the true state of affairs, repressive steps were taken.[12] Such steps continue even today. Again, it is the information flow which is being curtailed: witness the curbs being placed on the World Wide Web or the prevalence of accusations of 'fake news'; the disillusionment of the people was bound to set in. This behaviour to dismiss ideas emanating from outside their own camp, something that we had commented on earlier, is a sure method of destroying whatever has been constructed. Inevitably, the idea behind not willing to engage with such ideas[13] meant that the leaders were not sure about their own positions, and if the truth was revealed others would be 'disillusioned'. To curb such disillusionment, more repressive measures would have become necessary.[14] Consequently, this system becomes untenable. Moreover, the system could never be restored mainly because of the repressive measures that were followed.

We are living in interesting times. Although Marxist economies are disappearing, maybe for reasons mentioned above, it does not mean that capitalist economies are thriving. They are struggling too. That these so-called capitalist economies will struggle, given the conditions we are faced with, is entirely predictable in terms of what may be called neo-classical economics. What is noticeable is the fact that Marxists economies have never recovered; capitalist economies collapse but revive after some time. Perhaps, because, the scale of repression under capitalist regimes could never match the scale of those adopted under Marxists ones, or perhaps, because, the repression under capitalist regimes came disguised as world wars and battles between the good and the bad with the good always winning!

Hopefully, the mechanism design theory and the more recent behavioural economics will enable us to design better Institutions so that the collapse which occurs from time to time is stopped, or at least, mitigated. And repression need not be resorted to. It is this which is distinctive about the economics that we have talked about, pointing out where things are likely to go wrong and what could perhaps be done with such possibilities. In Marx's schema, communism was to have been the last stage, after vanquishing capitalism. But things never worked out like that; communist regimes were being replaced by market capitalism over time, perhaps with many more safety nets in place. There are upheavals when these so-called nets do not perform the job they are supposed to do, and the entire system is destroyed but what resurfaces is only a modification of the earlier regime. Our neo-classical experiments indicate that these new regulations or modifications will surely continue to be tested over time.[15]

Acknowledgements

A shorter version was the text of the Joan Robinson Lecture at the Karl Marx Bi-centenary International Conference organized by the Asian Development Research Institute (ADRI), Patna, June 2018. I am grateful to Lord Meghnad Desai and Shaibal Gupta for the invitation to deliver the lecture. For comments, suggestions and encouragement in the preparation of this version, I am indebted to Krishnendu Ghosh Dastidar, Meghnad Desai, Soumya Datta, Subrata Guha, Satish Jain, Amal Sanyal, Amartya Sen, S. Subramanian and Gogol M. Thakur. Particularly, discussions with Gogol Thakur have been extremely helpful.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

Notes

1. In India, too, the studies reported by Jayaraj and Subramanian (2015) point out the findings of Credit Suisse that the richest 10 per cent of Indians own 75 per cent of its wealth. More recently in an excellent 10-part study on inequality, by S. Subramanian (2018a), concluded: 'One thing which is reasonably clear though, despite protocols of measurement which tell us otherwise, is that inequality in the world is increasing.'
2. Could they seriously think that someone might take Professor Piketty to be a reincarnation of Groucho?
3. I was taken to task by a participant after the lecture for not mentioning some names. Hence, I thought of making this objective clear.
4. I can hear Joan Robinson telling us this as a kind of dictum while introducing the textbook she wrote with John Eatwell (1973), at a seminar organized at the CESP. People brought up on this still continue to spread the word without any further word of explanation. They are thus not aware of when the expression should be read from left to right, for example.
5. In 1977, when I lectured on imperfect competition, there were only two books available: Joan Robinson (1933) and Chamberlin (1933). Neither of them dealt with strategic behaviour as we understand it today. Both had been around for decades. At the same time, the journals' pages were filled up with papers built on such behaviour.
6. This is possibly because whatever Marx described was correctly possible in a world with only one non-producible commodity. This is the world of Ricardo. However, later, Samuelson was to deny that this was said seriously. Refer to Note 7.
7. Samuelson (1974). On page 270, Samuelson discounts his own description of Marx's contribution as being that of a minor post-Ricardian, which we have just referred to as being 'Tongue somewhat in cheek…'.
8. With the standard notation in the Leontief model, $y = x - Ax$; $x = (I - A)^{-1}y$; $L.x$ is the labour required to produce y. If y_s is the subsistence bundle then $x_s = (I - A)^{-1}y_s$ has to be produced, and Lx_s is required for this purpose. To produce y therefore $T = L.x$ is required, but paid $T^* = Lx_s$; then $(T - T^*)/T^*$ is the rate of exploitation.
9. Refer, for instance, Fujimori (1982), Chapter III.
10. Dutta and Mukherji (2010). Also for another resolution, refer Desai, Henry, Mosley, and Pemberton (2006).
11. Refer, for instance, to https://www.marxists.org/archive/marx/works/1880/05/parti-ouvrier.htm (Marx & Guesde, 1880). I am constrained to add that according to this reference, Marx objected to the version put out by Guesde when he made this remark. The point of difference arose in allowing the workers to agitate for higher wages within the existing framework of capitalism which were achievable. Marx felt that there was no difficulty in accepting this, while Guesde felt that this would be wrong because if achieved it would destroy the radicalism within the workers; such reforms should always be rejected. At least so says this reference.
12. Mass murders on a huge scale, under Marxist leaders, have been noted. Mao's Great Leap Forward is reported (refer to, e.g., https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/08/03/giving-historys-greatest-mass-murderer-his-due) to have caused the torture and death of 45 million; in contrast, the Holocaust is reported

to have caused the death of 6 million Jewish people while the Indian partition killed about 2 million or so. The scale is devastating.

13. Apparently, commentators have noted that Marx himself exhibited this intolerance to a great degree. Refer to, for instance, Heilbroner (1999, p. 152) which notes that Marx 'was the most quarrelsome and intolerant of men, and from the beginning he was unable to believe that anyone who did not follow his line of reasoning could possibly be right'.
14. We are commemorating the massacre at Tiananmen Square in 1989; the official news in China refers to this as the June 4 incident. The reports of the number of people got killed there vary between 180 and more than 10,000. Such incidents cause inevitable changes.
15. Why such situations develop has been studied in many places; for example, for an analytical set of essays, refer to Mukherji (2014; 2015; 2018).

References

Akerlof, G. A. (1970). The market for 'lemons': Qualitative uncertainty and the market mechanism. *Quarterly Journal of Economics*, *84*(3), 488–500.

Arrow, K. J. (1953). Le role des valeurs boursieres pour la repartition la meillure des risques. *Econometrie*. pp. 47–48 CNRS, Paris (English translation, The role of securities in the optimal allocation of risk bearing. *Review of Economic Studies*, 1964, *31*, 91–96).

———. (1963). *Aspects of the theory of risk-bearing*. Helsinki: The Yrjo Jahnsson Lectures.

Bowles, S. (2018, April 21). *Marx and modern microeconomics*. VOX CEPR's Policy Portal. Retrieved from https://voxeu.org/article/marx-mand-modern-microeconomics

Chamberlin, E. H. (1933). *The theory of monopolistic competition: A re-orientation of the theory of value* (6th ed. in 1965). Cambridge, MA: Harvard University Press.

Desai, M., Henry, B., Mosley, A., & Pemberton, M. (2006). On an Inconsistency in the Goodwin model of the growth cycle. *Journal of Economic Dynamics and Control, 30*(12), 2661–2670.

Dutta, S., & Mukherji, A. (2010). Goodwin's growth cycles: A reconsideration. In B. Basu, B. K. Chakrabarti, S. K. Chakravarty, & K. Gangopadhyay (Eds.) *Econophysics, economics of games, social choice and quantitative techniques* (New Economics Window Series, pp. 263–276). Delhi: Springer.

Fujimori, Y. (1982). *Modern analysis of value theory* (Lecture Notes in Economics and Mathematical Systems). Berlin: Springer.

Goodwin, R. M. (1967). A growth cycle. In C. H. Feinstein (Ed.), *Socialism, capitalism and economic growth* (pp. 54–58). Cambridge: Cambridge University Press.

Heilbroner, R. (1999). *The worldly philosophers* (7th ed., p. 152). New York, NY: Simon Schuster.

Jayaraj, D., & Subramanian, S. (2015, October 21). The coexistence of poverty and prosperity in India. *Ideas for India*. Retrieved from www.ideasforindia.in/topics/poverty-inequality/the-coexistence-of-prosperity-and-poverty-in-india.html

Keynes, J. M. (1925). Soviet Russia. *Nation and Athenaeum*, 17, 19 and 24 October.

———. (1936). *The general theory of employment interest and money.* London: Macmillan.

Morishima, M. (1974). Marx in the light of modern economic theory. *Econometrica*, *42*(4), 611–632.

Mukherji, A. (1985). On some implications of the Separating Hyperplane Theorem. *Keio Economic Studies*, *XXII*(2), 57–71.

———. (2005). Robustness of closed orbits in a class of dynamic economic models. In S. Lahiri & P. Maiti (Eds.), *Economic theory for a changing world, policy modelling for growth* (pp. 137–152). Delhi: Oxford University Press.

———. (2014). Is competitive behaviour a best response? In S. Marjit & M. Rajeev (Eds.), *Emerging issues in economic development: A contemporary theoretical perspective* (pp. 3–20). Delhi: Oxford University Press.

———. (2015). Market failures: Almost always? In S. Guha, R. P. Kundu, & S. Subramanian (Eds.), *Contributions to economic theory, essays in honour of Satish Jain* (pp. 3–28). Delhi: Routledge.

———. (2018). Money and market failures: A theoretical perspective. In A. G. Dastidar R. Malhotra, & V. Suneja (Eds.), *Economic theory and policy amidst global discontent* (pp. 184–197). London: Routledge.

Nash, J. (1951). Non-cooperative games. *Annals of Mathematics*, *54*(2), 286–295.

Piketty, T. (2014). *Capital in the twenty first century*. Cambridge, MA: Belknap.

———. (2018). *Brahmin left versus merchant right: Rising inequality and the changing structure of political conflict (Evidence from France Britain and the U.S. 1948–2017)*. Retrieved from http://piketty.pse.ens.fr/files/Piketty2018.pdf

Robinson, J. (1933). *The economics of imperfect competition*. London: Macmillan.

Robinson, J., & Eatwell, J. (1973). *An introduction to modern economics*. London: McGraw-Hill.

Samuelson, P. A. (1962). Economists and the history of ideas. *American Economic Review*, *52*(1), 1–18.

———. (1974). Marx as a mathematical economist. In G. Horwich & P. A. Samuelson (Eds.), *Trade stability and macroeconomics, essays in honor of Lloyd A. Metzler* (pp. 269–307). New York, NY: Academic Press.

Subramanian, S. (2018a, June 28). 10-part study on inequality. *LiveMint*. Retrieved from www.livemint.com/opinion/HcU1Y9v0uRdFsk9nnhMZrm/Economic-inequality-in-india-and-the-world.html

———. (in press). *Inequality and poverty: A short critical introduction for beginners*. Springer.

The Economist Magazine. (2014, May 5). Thomas Piketty's 'Capital' summarised in four paragraphs in the Section. *The Economist Explains*. Retrieved from www.economist.com/the-economist-explains/2014/05/04/thomas-pikettys-capital-summarised-in-four-paragaphs

von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. Princeton, NJ: Princeton University Press.