A Minor Post-Ricardian? Marx as an Economist

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There is something odd about the way Karl Marx is viewed by historians of economics. He is treated as a major figure—he gets a chapter in most textbook histories of the subject, the literature about his economic writings is immense, and so on—but his work has never had any detectable influence on the main lines of development of the subject. By any normal standard, he should not be accorded a significant position in the history of economics at all. It is not just that his ideas are not to be found in modern textbooks, but that they were never seriously discussed by mainstream economists, either during or after his lifetime. So, for example, the index to Alfred Marshall's *Principles of Economics* (1890), which effectively defined the subject for the English-speaking world for many decades, contains only three references to Marx. Two deal with "his misunderstanding of Ricardo," and the other is to a passing comment in an appendix.[1] Eugen Böhm-Bawerk's stinging rebuttal, *Karl Marx and the Close of His System* (1896), and Vilfredo Pareto's equally critical analysis (see Meek 1973, 204–11 for a discussion in English) are almost the only serious responses to Marx by major economists,[2] and both dis-

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1. For comparison, Hobson and McCulloch have entries on a similar scale. Hegel's entry is noticeably larger; Marshall described Hegel as a major influence on his work (1920, 8), but the influence was direct, not via Marx.

2. In recent times, writers like Samuelson have written about Marx but only as part of the *history* of the subject.

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missed him out of hand. The only significant exception to this story of neglect and mutual incomprehension is Joseph Schumpeter, who drew on Marx in his account of innovation,[3] but he too remained somewhat outside the mainstream. Marx spent more of his life on economics than on any other subject, with less effect (cf. Blaug 1980, 2; 1990, 17).

The neglect of Marx's work by the mainstream has been so complete and so visible that it would be a waste of space to document it at any length, although some minor qualifications should be noted. It is true that Marx was read and discussed more in some parts of continental Europe than in English-speaking countries, and that the dominance of the English language and of English speakers (mostly Americans) in the second half of the twentieth century tends to bias discussions of earlier periods. Even so, I am confident that my claim that Marx had relatively little influence holds for any reasonable definition of the population of "economists." It is also true that there is a distinct tradition of Marxist economics, which might be thought to compensate for the neglect of Marx's work by the mainstream, but it did not attract more than a handful of adherents in the West until the 1960s, a full century after the publication of the first volume of *Capital*.[4] By then, it was too late—economics had moved on, and Marxist economics remained marginal and introverted, with no realistic chance of establishing itself as a credible alternative to mainstream economics. The number of economists influenced by Marx increased very sharply in the 1960s, but the profession as a whole was expanding rapidly, and the number of those not influenced by Marx also grew, starting from a far higher base. In Japan, Marxist economics established itself in university departments on a substantial scale in the special circumstances following the end of World War II, but it nonetheless remained quite separate from what is called "modern" economics. In the communist countries, of course, Marx's economics was studied on a large scale, but the results are best forgotten, except as a case study in the distortion of educational systems by totalitarian regimes. None of these cases justifies treating Marx in the same way as other major figures in the history of economics.

Marxists have a ready explanation for the neglect of Marx's work by "bourgeois" economics. Consciously or unconsciously, it is said,

3. Schumpeter may have been more influenced by the little-known John Rae (see James 1965; Mair 1990; Brewer 1990; 1991).

4. *Capital* (Marx 1867, 1885, 1894) will be cited by name and volume number. The *Manifesto of the Communist Party* (Marx and Engels 1848) will be cited as *Manifesto*.

economists identify themselves with the existing system. They are afraid of the revolutionary implications of Marx's ideas and therefore choose to ignore them. (There are many variations on this theme, but the underlying idea is the same.) This kind of explanation may have some force, but it cannot account for the glaring contrast between economics and other disciplines. In history, political science, sociology, and so on, while Marxist theories have not generally won the day, they have been taken very seriously and have had a major influence on the development of ideas. If a fear of revolution is the main reason Marx has been ignored by economists, he would have been ignored by practitioners of other disciplines as well.

There is, however, another possibility. In any subject, new ideas have to be evaluated. Some are taken up and incorporated into the mainstream. Some are discussed seriously for a while, but finally abandoned, at least in their original form (though they may influence the development of the subject indirectly, as Marx's ideas did in several social sciences). Some do not look promising enough to justify serious attention at all. I argue that Marx failed at the first hurdle: his work simply did not seem worth discussing. One way to test this hypothesis would be to look at the reception of his ideas by economists. This is not likely to be helpful, both because economists had little or nothing to say about him—it is not what they said that has to be explained but what they did not say—and because politically motivated neglect might not be easily admitted openly. Instead, I attempt a rational reconstruction, looking not at what mainstream economists said about Marx, but at what Marx had to offer them.

I maintain that Marx had little to offer, so mainstream neglect can be seen as a natural result of the normal winnowing process. This claim could take weaker or stronger forms. At a minimum, one might simply say that Marx's work did not fit in with the concerns and interests of other economists, but it would be difficult to distinguish such a weak form of the argument from the more sophisticated version of the Marxist explanation mentioned above: that the conceptual framework of the late-nineteenth-century mainstream was such that Marx's views necessarily seemed alien and incomprehensible. I want to claim more than this. I believe that the problems with Marx's theory are sufficiently severe and obvious, and the overlap with earlier writers (who were already well known) is large enough, that it is rational for a person who is mainly concerned with understanding economic problems to refuse to spend valuable time addressing it seriously. Conceptual incompatibility and ideological bias may have both existed, but mainstream attitudes toward Marx can be explained without appealing to either.

The criteria by which Marx's work should be judged are the same as those that would be used to assess any other economist. First, his contribution to economics must be judged by the novelty and usefulness of what he had to say *about economics*, defined as it normally is, so anything that would normally be treated as an economic issue, or covered in economics courses, or discussed in mainstream economic journals is considered an economic issue. The boundaries of the subject have not changed enough since the nineteenth century to raise any serious problems.[5] Other aspects of Marx's work may be of great interest and importance, but they are not relevant here. Second, his theories must be judged by their capacity to explain *observable* phenomena. Theoretical entities (like Marx's values, the classical economists' natural prices, or modern economists' supply and demand functions) play an essential role in any theory, but they can only be justified by their contribution to our understanding of observable events. Marx would not have disagreed; in his terms, abstract analysis is important, but only if it leads to an understanding of concrete phenomena. Third, he must be judged by his *causal* explanations of observable phenomena. This rules out cases in which he reinterpreted the work of his predecessors (or simply replaced their terminology with his own) without changing their analysis of the causal factors involved. For example, to attribute the existence of non-wage incomes ("surplus-value") to exploitation of workers does not count as a causal explanation, since "exploitation" turns out to be no more than another name for the existence of positive non-wage incomes. A causal explanation, in this case, involves specifying the mechanisms that keep wages down to a level below output per head.[6]

5. The subject has not remained the same, of course. The distinction between economics and, for example, economic history is drawn more sharply now than it was, but this is a clarification, not a wholesale redrawing of boundaries (economic history is *excluded* from economics here). The subject has been progressively professionalized, with a corresponding growth of specialization within the subject (so, modern papers in the *Journal of Economic Theory* are more narrowly theoretical than anything from an earlier era, but plenty of applied work and discussion of broader issues goes on alongside it). Issues that would have been recognized as economic in, say, 1870 are, for the most part, still seen as economic now.

6. The notion of causality raises difficult issues in the philosophy of science, which will not be pursued here. More generally, it would be possible to base a critique of Marx on any one of a number of approaches to the philosophy of science, such as Popper's criterion of falsification (Popper 1957; 1962; Blaug 1980). I shall not do so, because (a) the arguments I shall present

If Marx's work ever had any chance of influencing the mainstream, it was in the late nineteenth century, between the publication of the first volume of *Capital* and the end of the century. By the 1860s, classical economics had run out of steam,[7] while neoclassical economics had not yet established itself as a new orthodoxy, and other approaches (historical and institutional) were waiting in the wings. The field was thus more open at that time than either before or since. One rather prosaic reason for the unenthusiastic response to Marx's work in this period was that it could not be evaluated properly until the third volume of *Capital* was published in 1894, and by then the opportunity was almost certainly past. My focus is on what Marx had to offer to the subject as it was in the later nineteenth century, both before and after the publication of *Capital* 3, though the double thrust of my argument demands a certain schizophrenia in its presentation; to *explain* attitudes to Marx, his theory must be seen through late-nineteenth-century eyes, but to *justify* those attitudes I must address modern readers and report some modern analytical results.

The literature on Marx's economics is immense.[8] On practical grounds alone, it would be quite impossible to give anything approaching a full survey, and I shall not attempt to do so. Instead, I shall concentrate on Marx's main published works, in particular those that were available before about 1900. It is, in any case, a good general principle that one should judge an author by what he or she chose to publish, not by scrappy notes or unfinished manuscripts. The first volume of *Capital* meets this test. The second and third volumes do not, but they were published nonetheless by Engels. It may be unfair to judge Marx's overall accomplishment by them, but it presents a greater problem to attempt an understanding of his economics without them. They were certainly available to interested economists at the relevant time, while the *Grundrisse* (Marx 1973) and *Theories of Surplus-Value* (Marx 1969) were not available until far too late to have any real effect.[9] Space also precludes any detailed discussion

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are compatible with a variety of methodological positions, and (b) most brands of economics, Marxian or otherwise, are vulnerable to Popperian criticism.

7. Though there was no real sense of intellectual crisis (Blaug 1985, 294).

8. For an introduction to Marx's economics, see, for example, Brewer 1984; Howard and King 1985; Foley 1986; Mandel 1987. For an account of the development of Marx's ideas, see Oakley 1984; 1985. For an account of the subsequent development of Marxist economics, see Howard and King 1989; 1992. On mathematical issues in modern Marxist economics, see Roemer 1981.

9. They are naturally important in understanding how Marx's thinking developed, but that is not under discussion here.

of the more general state of economic thought during the later nineteenth century, the background against which Marx's work was read. I assume that this background is familiar. A final preliminary note may help to avoid misunderstanding. This paper deals with attitudes to Marx, not classical economics. Some late-nineteenth-century writers (like Stanley Jevons) explicitly rejected the classical heritage, while others (like Marshall) did not, but neither group ignored it. The question is not why the direction of economics changed in the late nineteenth century (if it did), but why Marx was treated differently from Adam Smith or John Stuart Mill.

Value

Anyone who opens Marx's *Capital* today does so knowing that it is regarded as a great book and that it was written by one of the most influential figures in the history of Western thought. For every reader who even makes a start on *Capital*, there must be a hundred who know it only in one of the many potted versions, and those few who read the book itself will almost always have read explanatory works about it. It is, therefore, very difficult to read it as a nineteenth-century reader would have done, that is, as an unknown work by an almost completely unknown author.

The first chapter of *Capital* is called "Commodities," but is mainly about value. Marx distinguished between use value and exchange value and dismissed current market prices as the result of contingent events. So far, a contemporary reader would have had no problems, since these distinctions were a commonplace of the economic literature of the time.[10] Marx's *treatment* of value is another matter. Thanks to the widely available secondary literature, many modern readers come to Marx forewarned that value, in Marx's framework, is not the same as price, and that relative prices do not even tend toward relative values. For a reader who comes to the first volume of *Capital* without any warning, this point is not at all obvious, and it takes an exceptionally careful reader to realize that Marx intended to clear it up in volume 3. There is no doubt that most nineteenth-century readers took Marx's value theory to be no more than a crude version of David Ricardo's—which had been devastatingly crit-

10. Later readers would have found them less familiar, as fashions changed, but they would not have been a serious barrier to understanding at any date. Smith made similar distinctions, and they have never troubled anyone.

icized and generally rejected long before (see Blaug 1958; Backhouse 1985, chap. 4). This misunderstanding was Marx's own fault. In the literature of the mid–nineteenth century, "price" meant price in terms of money, while "value" meant relative price, or price in some sort of (usually rather ill-defined) real terms. In the absence of a clear and explicit explanation, Marx's unusual usage was certain to cause confusion.[11] Even when *Capital* 3 appeared, most Marxist economists continued to treat value as though it were much the same kind of thing as price, with "transformation" as a minor technical adjustment. That is, after all, how Marx presented it in the first volume. Ladislaus von Bortkiewicz (1907) saw the point, but few read him until he was rediscovered by Paul Sweezy (1942).

The argument for the use of labor values presented in the first chapter of *Capital* is almost unbelievably weak, as Böhm-Bawerk ([1896] 1975, 68–77) saw very clearly. Rudolf Hilferding (1904) replied on behalf of the Marxists, without addressing Böhm-Bawerk's point. Marx argued that (a) if goods can be exchanged for each other, the "proportions in which they are exchangeable . . . can always be represented by an equation . . . e.g. 1 quarter corn = x cwt. iron" (1:37); (b) the two sides of the equation must each contain equal quantities of something common to them both. This is a non sequitur, though Marx's trick of representing exchange by an equation may have helped to give it some superficial plausibility. All that can reasonably be said is that one good is exchanged for another; (c) the common element in goods that are exchanged for each other can only be labor time, because different goods "have only one common property left, that of being products of labour" (1:38). This is simply false. First, goods that are exchanged may well have other common elements. They certainly have the property of being exchanged against each other. If they are material goods, they have the property of containing materials taken from the natural environment, that is, of being products of the land, and so on. Second, things that are exchanged for each other are not, in fact, all products of labor. Land and other natural resources, or financial assets of all kinds, for example, are exchangeable but are not products of labor. Marx claimed that such things have a price but no "value," precisely because they are not products of labor. This stratagem reduces his argument to the most trivial tautology: those things

11. Marx was really quite obtuse about this point. For example, he criticized Ricardo for saying that a tax change could change the (relative) values of different goods (Marx 1969, 386), as if there were a difference of substance between them rather than a trivial matter of definition.

which are products of labor have in common the fact that they are products of labor. Finally, even if Marx's argument is accepted, it is a long step from accepting that (some) goods are products of labor to agreeing that their values are determined by the quantity of labor required to produce them, given that Marx admitted what everybody knew, namely, that actual exchange ratios, as represented in his equations, are not proportional to embodied labor.

Amazingly, the feeble argument examined above is the only positive argument Marx presented anywhere in *Capital* for the claim that labor, and only labor, is the source of value. It may be possible to produce other arguments—perhaps labor has a special significance in an analysis of human society, precisely because it is the activity of human beings (cf. Sen 1978)—but Marx did not do so. In fact, the plausibility of such arguments is no more than superficial, which may be why Marx did not advance them. There is no doubt that human activity is especially significant to humans, but that is no reason to link exchange values quantitatively to hours of standard human labor. Equally, it could be said that value is a technical device and that Marx was perfectly entitled to define it in any way he chose. If it turns out to help in building an illuminating analysis of capitalism, then it can be justified. Pierangelo Garegnani (1991, 104) defends Marx (and Ricardo) along these lines: economists were not able to set up or solve the simultaneous equations needed to determine prices, so the labour theory of value was the best they had. Marx did not, however, present his value theory as a simple technical device and certainly did not think of it that way. He used the definition of value as the basis of arguments (for example, that labor is the only source of surplus-value) that would have been hard to justify if the connection between labor time and value were no more than an arbitrary matter of definition. Since Marx's discussion of value appears in the first few pages of *Capital*, it is easy to see how anyone opening the book might be tempted to put it straight down again.

The next step in Marx's argument was his explanation of surplus-value. He started from the (arbitrary) assumption that goods exchange at their values and argued that capitalists can only gain surplus-value if they can find a commodity that is itself a source of value. Given the (arbitrary) definition of value as labor embodied, labor-power (the capacity to labor) is the only commodity that fits the bill. Like other commodities, labor-power is (arbitrarily) assumed to sell at its value, which is defined in terms of a socially given level of subsistence.[12] If the value created by each worker exceeds the value of labor-power, there is a surplus, which accrues to the capitalist as surplus-value.

How would an impartial reader have reacted to this? In the form in which Marx presented it in the second part of *Capital* 1, it is a pure tautology, with no causal content at all. In particular, he provided no explanation of the determination of the wage in his initial presentation of his theory of surplus-value (though he did elsewhere in *Capital*—see below). That in itself might not have worried readers very much, at least in the 1860s and 1870s, since they were accustomed to assuming a subsistence wage. A nineteenth-century reader would have recognized Marx's analysis immediately—it is a rather crude form of Ricardo's theory of distribution, with one of the essential elements of Ricardo's analysis (rent) left out.[13] Such a reader might have been prepared to accept Marx's account, at least provisionally, but would not have been very impressed. Ricardo's version, after all, had been around for half a century.

The argument of the first two volumes of *Capital* is based on the assumption that prices are proportional to values (i.e., to embodied labor). Both Marx and his readers knew that they are not—Ricardo had established that much, half a century earlier. The analysis of "the transformation of values into prices of production," that is, of the relation between Marx's "values" and equilibrium prices, is therefore absolutely crucial. Marxists are often reluctant to accept this point (which is obvious enough to everyone else), so it needs to be stressed. Workers' living conditions do not depend on the value of labor-power, but on the (money) wage and on the prices of the goods they buy (plus, of course, environmental conditions and other things that are left out of the analysis here). Capitalists succeed or fail according to the profits they receive, that is, according to the prices they pay for inputs and the prices they receive for the things they produce, regardless of the entirely abstract values that Marx used to describe capitalism. Marx's value analysis is useful if, and only if, it can explain the observable facts of prices and profits. There is some justification for focusing on long-run equilibrium prices, since it can be claimed that actual prices fluctuate around their equilibrium levels. There is no possible justification for neglecting market prices altogether.

12. The value of labor-power, and its relation to the wage, will be discussed in more detail in the next section.

13. Marx dealt with rent in *Capital* 3.

The issues involved in the transformation problem are now well known[14] and can be summarized briefly. Marx used a two-stage procedure to get from values to "prices of production" (equilibrium prices). First, he assumed that the ratio of total surplus-value to total capital advanced, calculated in (labor) values, could be used to determine the general rate of profit. Second, this profit rate could then be added to costs (still calculated in value terms), to derive the price of production of each good. It is immediately obvious, therefore, that costs have to be calculated in terms of prices, not values. Marx was aware of this and hinted at some form of iteration. However, wages, profits, and capital advanced also have to be recalculated using prices. The equilibrium profit rate and (relative) prices can be derived directly, without using values at all, by solving a set of equations specifying that the price of each good must cover costs, including a uniform profit rate. In general, the profit rate in the price system is not equal to the profit rate calculated, as Marx suggested, using values. Since Marx's theory of surplus value was intended, above all, to explain profits, his "values" are entirely redundant (see Samuelson 1971).

Matters are even worse when joint products are taken into consideration (see Steedman 1975; Morishima 1976; Wolfstetter 1976). If the number of distinct production processes in use happens to be equal to the number of products, then it is still possible to define values, but they can be negative, and negative "surplus-value" can be associated with positive profits (Steedman 1975). An alternative definition of value has been proposed that prevents such absurd results (Morishima 1976), but the value of output from a production process is then no longer equal to the value of the means of production used plus the new value added by labor, and Marx's analysis is thus invalidated. It is now established beyond doubt that labor values cannot be adapted to deal with joint production. Since joint products are not a freakish special case, but the norm in modern economies (for example, crude oil is split up into a huge variety of products giving rise to pervasive jointness), Marx's system is left in ruins.

The results summarized in the last two paragraphs were not known in the later nineteenth century, but this would not have prevented readers from forming a provisional judgment. What Marx had to offer was a

14. General treatments of Marx's economics usually cover the debate, for example, Howard and King 1985, chap. 8; Desai 1979, part 2. For varying views, see Morishima 1973; 1974; 1976; Roemer 1981; Steedman 1975; 1977; 1981.

version of the standard theory of the day, derived from Ricardo; profits were calculated as a surplus over subsistence wages, while relative prices were known to be affected by differences in capital intensity between industries. If Marx had any claim to have improved on Ricardo, it was that his procedure allowed him to do properly what Ricardo had tried, and failed, to do. If Marx's transformation had been a success, this would have been a valid claim, but it was obvious from the start that Marx's analysis was inadequate. Since he had not made any visible advance on Ricardo, contemporary readers would have seen no reason to adopt his peculiar definition of value. In fact, most of those few who wrote about Marx do not seem to have reached that far. Marxist writers generally treated value and price as much the same thing (as Marx had done in *Capital* 1, and as many Marxists still do) and saw transformation as a minor technical adjustment.[15] What really matters here is the view of the majority of mainstream economists, who chose to say little or nothing about Marx. How they saw the issue cannot be known with any certainty, but Marx cannot have come out well. By making it so easy to read his value theory as a simple labor theory of price, Marx invited economists to dismiss his work as obviously false. Those few who recognized the central importance of transformation would, presumably, have been able to see the inadequacy of Marx's proposed solution.

Perhaps the only plausible claim that can be made today is that Marx's approach could have served as a starting point for others to build on, as Bortkiewicz (1907) and, much later, others like Piero Sraffa (1960) did.[16] However, Marx's version digresses from the line of argument that leads from Ricardo to Sraffa, and, if anyone had wanted to develop that line of argument, they would have based their ideas on Ricardo and Mill,

15. Böhm-Bawerk (1896) and Bortkiewicz (1907) saw the issue clearly enough, in their different ways, but had little impact.

16. Duncan Foley has reminded me of a related claim, that the labor theory of value embodies a conservation principle that allows one to examine the trade-off between wages and profits at the aggregate level without worrying about the relative prices of specific goods. This is, of course, exactly what Ricardo used the theory to do: he claimed that profits fall if and only if wages rise (in labor values). I have three comments. First, a trade-off can only be defined if appropriate *ceteris paribus* conditions hold, and it is not at all clear what should be held constant. Using labor values obscures rather than clarifies the issue. Second, the theory only yields a trade-off between wages and profits *measured in labor values*, but there is no good reason to be interested in wages and profits measured in that way. Third, it is not clear that anyone has ever doubted that there is some sort of trade-off between distributive shares (*ceteris paribus*!). If they did, Marx's version adds little or nothing to Ricardo's.

not Marx.[17] In any case, by the time the third volume of *Capital* was published in 1894, price theory had taken a completely different turn, and no one was interested in a new version of Ricardo's approach.[18] Marshall's *Principles*, with its analysis of the short run and the long run, seemed to offer a much more promising way of analyzing the process by which equilibrium prices are reached, while retaining the classical notion of profit rate equalization as a long-run equilibrium condition. Late-nineteenth-century readers would also have noted that Marx's system, unlike the developing neoclassical models, had little or nothing to say about heterogeneous labor[19] or about heterogeneous natural resources.

The weakness of Marx's value theory is probably the most important single reason for the adverse judgment generations of economists have passed on his work. It is sometimes claimed, or implied, that Marx was not interested in prices, while neoclassical economists were, and are. In fact, no serious economist has ever been particularly interested in prices *for their own sake*. The point is that the price mechanism plays an essential role in the workings of a market system. An adverse judgment on Marx's value theory does not depend on any claim that neoclassical price theory (or some third alternative) is "true." Still less does it depend on any acceptance of Walrasian general equilibrium theory, which has never been the central focus of mainstream economics. Whatever the merits of any other price theory, Marx's theory simply could not do what he claimed for it and offered nothing of significance that was not already available from Ricardo and Mill. If Marx's treatment of value is rejected, the whole of the main line of argument in *Capital* has to be seen as no more than an extended metaphor. Every element in it has to be examined anew to see whether it can stand on its own without the labor theory of value.

17. If some later writers like Bortkiewicz and (perhaps) Sraffa were, in fact, stimulated by Marx's writings, it was because of the growing political significance of Marxism, not because of the merit of Marx's economic arguments. Nineteenth-century readers could see Marx much more clearly than we can, since their vision was not obscured by the looming shadow of twentieth-century Marxism.

18. Garegnani (1991) argues (in effect) that we *ought* to be worried about Ricardo's problem, that Sraffa and others have now solved it, and that we should respect Marx's use of the labor theory of value as an attempt to solve it. The professional consensus (of the 1890s or 1990s) is against him on the first point. Even if his argument were accepted, Marx's value theory would come out as a failed attempt to solve a problem that was probably insoluble with the techniques available at the time.

19. Steedman (1985) argues cogently that Marx's theory only makes sense if different kinds of labor are aggregated using their (market) wages. Marx had little to say about the aggregation of labor or about the determinants of wage differentials.

Wages and the Value of Labor-Power

Marx's theory is what is now called a surplus theory, that is, profit (or surplus-value) is determined as a residual after subtracting wages (or the value of labor-power) from output. The level of wages is therefore the primary determinant of the distribution of income.

Marx defined the value of labor-power as the "value of the means of subsistence necessary for the maintenance of the labourer" (1:171). Formally, this is a matter of definition and need not say anything about the actual wage, though the definition would be of little use if the actual wage had no connection with the value of labor-power. The impression that Marx gave, and must have meant to give, is that the value of labor-power is to be identified with the actual wage, or at least with the average wage over a period of time; and thus that he held a subsistence wage theory. This impression is reinforced by the discussion of the way in which the worker's subsistence needs are affected by the physical burdens of the job; if physical subsistence needs are not an important determinant of wages, what purpose could this discussion serve? He went on, however, to add that there is a "historical and moral element" in the value of labor-power (1:171). Some readings of Marx's theory take this phrase to mean that the real wage is given historically, without any further causal explanation: the wage is whatever it happens to be. This stratagem makes the theory compatible with the huge increase in real wages that has in fact occurred, but removes all causal content from the theory. In 1867 (though not, perhaps, later in the century) Marx's definition must have seemed little more than a statement of fact. Subsistence wage theories were commonplace.

Although wages were at or near subsistence level in Marx's time, some causal explanation of the determinants of wages is still needed. The classical economists had invoked the Malthusian theory of population to provide an explanation. If wages rose far above subsistence, population would immediately start to grow, the supply of labor would (eventually) grow along with population, and wages would be forced back down again. Marx rejected this account, because it led to the conclusion that the mass of the population would be reduced to subsistence under any social system.[20] He was therefore compelled to find an alternative.

He did, in fact, provide an interesting analysis of the determination of wages and profits (*Capital*), but one which is, at least on the face of

20. On Marx and Malthus, see Hollander 1984 and Perelman 1985.

it, incompatible with his discussion of the value of labor-power. The argument is simple. As accumulation proceeds (without technical change) the demand for labor-power rises. If this leads to scarcity of labor-power the (real) wage will rise. However, as wages rise, profits fall, and accumulation slackens. This checks the increase in the demand for labor, moderating the wage increase. Either an equilibrium is reached, with the demand and supply of labor-power rising at the same rate, or the profit rate is forced down so far that there is a crisis, followed by a period of low or negative growth and of underutilization of the capital stock. The crisis forces wages down to a level compatible with renewed accumulation (1:617–21). Here, Marx provided a sketch (no more) of a theory of dynamic equilibrium in a growing economy. Wages may rise, but they cannot increase to the point where they threaten the continued functioning of the system, except for short periods brutally terminated by a crisis. Marx seems not to have noticed that the equilibrium wage established in this way has nothing at all to do with the value of labor-power as he defines it. He presents the analysis in a section dealing with accumulation in the absence of technical change and qualifies (and undermines) it in the following section dealing with the effects of technical change. In addition, Marx's analysis involves an implicit assumption of fixed coefficients—when the wage rises or falls, it affects the demand for labor through its effect on the rate of accumulation, not through an effect on the choice of techniques.[21] In the late nineteenth century, economists were learning to incorporate substitution into their models (the "marginal revolution"), so a fixed coefficient model did not fit in.[22]

Marx argued that technical change leads to an increase in the organic composition of capital (essentially, the capital-labor ratio), so that a given amount of capital employs fewer people, and concluded that there would be a tendency for the reserve army of labor (the unemployed part of the labor force) to rise. "The labouring population therefore produces . . . the means by which itself is made relatively superfluous, is turned into a relative surplus population; and it does this to an always increasing

21. Elsewhere in *Capital*, Marx did mention an effect of the wage rate on the choice of methods of production, but he did not link it with the analysis under discussion here.

22. It is possible to include both the effect of distribution on saving and the effect of prices on choice of techniques into a single model, but nineteenth-century analytical techniques were not up to it. Models of this sort were constructed in the 1950s and 1960s (see Hahn and Matthews 1964, section 1.5b; Robinson 1958, chaps. 10–14).

extent" (631). If this argument could be accepted, it would restore the coherence of Marx's wage theory, and therefore of his theory of distribution, since rising unemployment would force wages down to subsistence. There are, however, three factors at work: the accumulation of capital increases the demand for labor-power, while technical change reduces it (according to Marx; see Blaug [1960] 1986), and the net effect of these two must be set against the growth of the supply of labor-power (which Marx did not model comprehensively, though he did have some interesting things to say about it).[23] There is no way of saying, a priori, what the net effect will be. In fact, wages rose while unemployment showed no clear trend, as Marx should have predicted on the basis of the model of wages described above. If technical change were to create unemployment and keep wages down, as Marx claimed, the effect would be to increase profits. The rate of accumulation, and hence the rate of growth of the demand for labor, would then increase, bringing unemployment down again and pulling wages up. Marx may have been misled by his claim that there is a tendency for the rate of profit to fall, since a falling profit rate would slow accumulation, keeping wages down and unemployment high. (The alleged tendency for the rate of profit to fall will be discussed below.) Marx did not link his treatment of wages and unemployment to the tendency for the rate of profit to fall, perhaps because he never finished *Capital* 3, so one can only speculate about his intentions. The few pages on wage dynamics are, in the end, something of an aberration, swamped by the pages of rhetoric devoted to the alleged growth in unemployment and misery.[24]

Marx's discussions of the wage or the value of labor-power are discussions of the wage per calendar period (he said, per day, but it is clear that he meant the daily average per week, month, or year), not per hour worked. They are complemented by a discussion of the length of the working day (or rather, the working year, since he discussed feast days, and the like), which is, he claimed, determined by class struggle outside the main framework of his economics (the only place where class struggle plays an operative role in his economics). In effect, he took the length

23. Hollander (1984) points out that Marx certainly expected employment to rise, so rising unemployment and low wages must be explained by a positive rate of growth of labor supply (as in Malthus).

24. Note that Marx explicitly predicted rising unemployment, rather than falling wages. What he predicted about wages is unclear (see Baumol 1983; Cottrell and Darity 1988; Hollander 1984; 1986; Ramirez 1986).

of the working day as given in any particular place and time, at least in the theoretical sections of *Capital*.

Rent

Rent was generally treated as an important economic issue throughout the nineteenth century (though the landed interest was losing ground rapidly, at least in Britain, in the last quarter of the century, so the real significance of rent as a category of income was falling). In explaining the reception of Marx's work, perhaps the most important fact about his treatment of rent is that it was, as was so much else, postponed to volume 3 of *Capital*, and was therefore not available until 1894. In the interim, Marx's distribution theory looked weak. When *Capital* 3 appeared, Marx's discussion of differential (Ricardian) rent would not have given readers any difficulty, but it was hardly original. Absolute rent is another matter. Marx argued that landlords would not be willing to rent out any land at all unless they got something for it, so there would be some rent, "absolute rent," even on marginal land. This betrays a failure to understand the marginal principle; the importance of marginal land is not that it is a significant type of land in its own right, but that it marks the boundary between land that is worth cultivating and land that is not.

Marx also discussed the relation between agricultural prices and values and contrived to give the impression, to some readers, that absolute rent could be explained by the alleged fact that the composition of capital is low in agriculture, so the (labor) value of agricultural goods relative to other goods exceeds their price of production (excluding rent). Some read this as saying that agricultural goods sell at their values and that absolute rent is accounted for by the difference. If Marx had said this, it would clearly have been wrong, by his own standards, since he emphasized elsewhere that market prices are set by competition and that values do not affect behavior directly. I do not think he intended to give this impression (see Brewer 1984, 175–76), but the misunderstanding shows how unclear and confused his discussion of absolute rent is.

The Concentration of Capital and the Polarization of Wealth

It seemed obvious to Marx that the minimum efficient scale of production increases as capitalism develops. He presented a sketch of the development of capitalism through successive stages ("manufacture," "modern industry") in the *Manifesto* in 1848 and developed it at considerable length in the first volume of *Capital*. There can be little doubt that there was in fact a steady increase in the significance of relatively large units of production during Marx's lifetime. He expected this trend to continue. Using the most relevant measure of size from Marx's point of view—the size of the (manual) labor force gathered on a particular site—the average size of establishments did indeed continue to rise for many decades after he wrote.[25]

The scale of individual businesses grows by "concentration" of capital, that is, by reinvestment of profits, but much more dramatic growth in the scale of individual units is possible as a result of the "centralization" of capital, when one firm takes over others. Small businesses fail, and their owners are dumped into the proletariat. This was the basis of Marx's claim that there would be a growing polarization of wealth, with fewer but richer capitalists facing an ever-increasing mass of dispossessed workers. This prediction has not worked out so well. Marx implicitly assumed that each business would be owned by an individual (or, say, a family or partnership), so that concentration of capital into fewer but larger units would lead to a corresponding concentration in the ownership of wealth. He failed to predict the rise of either the joint stock company or corporation,[26] which allows concentration of capital into larger units without a corresponding concentration in the personal distribution of wealth and income, as well as the growing importance of white-collar workers and other intermediate groups. Generally, he saw the tendencies that suited his case and overlooked those that did not.

Contemporary readers of Marx could not judge his predictions by comparing them to the record, as modern readers can. Pure logic could not settle the issue, either, since trends in the size of firms and the distribution of wealth depend on the net effect of a number of different factors. These issues were quite widely discussed in the later nineteenth century; Marshall can perhaps be taken as representative of the views of the mainstream (but see also J. S. Mill 1848, vol. 1, book 1, chap. 9). Marshall thought that economies of scale were important in some, but not all, lines of industry and argued that a business could, in principle, gain a

25. It has now started to fall in advanced countries, partly because of the growth of services (where average establishment sizes are smaller) relative to manufacturing.

26. He discussed it, of course, but failed to see its significance. He was not alone—other mid- and late-nineteenth-century writers were skeptical about joint stock companies (see Mueller 1992).

near monopoly of a particular market if economies of scale were strong enough. He then qualified this assertion by arguing that "long before this end is reached, [the capitalist's] progress is likely to be arrested by the decay, if not of his faculties, yet of his liking for energetic work" (Marshall [1920] 1962, 239)[27] and that marketing an increased output successfully would be difficult. As for the predicted polarization of wealth, Marshall observed that "the distribution of the national dividend, though bad, is not nearly as bad as is commonly supposed" (593). He did not predict that it would get worse. It is easy to guess how Marx, had he lived, would have been infuriated by this complacency, but it is equally easy to see how Marx could be dismissed as one-sided and prone to exaggeration.

The Reproduction Schemes

The "reproduction schemes" set out in the third part of *Capital* 2 are generally treated with a sort of respectful neglect by modern commentators. There is general agreement that Marx should be praised for them, but it is not very clear what conclusions they lead to or what purpose they serve. The centerpiece of the analysis is a scheme of simple reproduction, showing the exchanges between two sectors or departments: department 1, which produces means of production, and department 2, which produces consumer goods. "Simple" reproduction means that there is no growth, so the means of production used up in one period of production are replaced before the next, while all net incomes (wages and profits) are spent on consumer goods. In the usual notation, the values produced in each sector can be written as

$$\begin{aligned} w_1 &= c_1 + v_1 + s_1, \\ w_2 &= c_2 + v_2 + s_2, \end{aligned}$$

where subscripts identify the two sectors. Department 2 must replace the means of production used, c_2, by buying equivalent means of production from department 1, while the workers and capitalists of department 1 spend their incomes, $v_1 + s_1$, on consumer goods from department 2. Purchases by department 1 from department 2 must match purchases by

27. Here, Marshall, like Marx, seems to have identified the business with its owner, underestimating the potential of the joint stock company for allowing a company to expand beyond any limits set by the wealth or the energy of a single entrepreneur.

department 2 from department 1, so

$$v_1 + s_1 = c_2.$$

Marx presented a number of examples along these lines.[28]

On one level, this simply states that output must match demand for each sector. If any greater significance is to be claimed for it, it must be because it suggests a way of handling the relationships between sectors quantitatively or because it points to a particularly fundamental relation between the industries that produce final outputs and those that produce intermediate and capital goods. It does not seem to have been seen that way until the mid–twentieth century (and then only in rather vague terms). Along with other parts of Marx's work, the reproduction schemes clearly influenced Michel Kalecki and helped to inspire the growth models constructed by Joan Robinson and others in the 1950s and 1960s. More broadly, the reproduction schemes could be seen as forerunners of National Income accounts, of Leontief-style input-output models, of Keynesian models (in which investment and consumption demand are separated), or other things of the sort. These developments had to wait until the mid–twentieth century, both for the development of the mathematical techniques and computer hardware to allow simultaneous equation systems to be manipulated in a useful way and for the empirical data on inter-sectoral flows to become available. The fact that so many "descendants" can and have been suggested shows how undeveloped Marx's schemes of reproduction actually are.

Accumulation is the norm in capitalist economies. In a growing economy, consumption demand is smaller than in a static economy (because part of income is saved) and the demand for means of production is correspondingly greater (because producers plan to expand output, rather than simply replacing the means of production used up). An analysis of what Marx called "reproduction on an extended scale" might reveal whether continued growth is possible and, if so, what the necessary relationship is between different sectors. Unfortunately, Marx made little progress with it and left the chapter unfinished. He did get far enough to disprove crude versions of under-consumptionism, that is, of the claim that because workers are poor, there must be a chronic lack of demand. If

28. Marx set out his schemes in terms of values (c, v, and s are measured in values). They should clearly be restated in terms of prices, since different sectors exchange products according to their prices, not values. Given an appropriate price theory (which Marx lacked), it would be easy to restate the relation between the two sectors in price terms.

workers' consumption demand is low because of poverty, and if capitalists save so that their consumption does not fill the gap (as it does in the schemes of simple reproduction discussed above), the gap can be filled by investment demand.

The problems Marx encountered in developing this idea point to a fundamental difficulty with his analysis of reproduction. In a two-sector analysis of simple reproduction, Marx was able to treat the coefficients involved as if they were given, despite the obvious complexity beneath the surface. To discuss accumulation, even in Marx's two-sector version,[29] some behavioral content has to be added to describe the savings and investment decisions of capitalists. The implicit assumptions in Marx's first, and only, attempt were grossly implausible. To disaggregate the models further would involve additional behavioral assumptions about the division of final demand between different goods, and Marx lacked the necessary analytical apparatus for this task.

Crises

Marx never managed to put together a coherent analysis of the business cycle. The cyclical character of upswings and downswings had been recognized decades before. It was still common to treat crises as primarily financial events, but writers like Lord Overstone had already described them as real, and not merely monetary, disturbances (for example, Overstone [1837] 1858; cf. Backhouse 1985, 53–55). Marx was, therefore, not the first to identify the cycle, as is sometimes suggested, though he was, perhaps, ahead of most of his contemporaries in describing the effects of the "industrial cycle" in a number of places (for example *Capital* 1:453 and following). It is worth noting that he referred to the "industrial cycle" in descriptive passages but to "crisis" elsewhere; he treated cycles not as regular, wave-like movements, but as periods of normal growth interrupted by "crises," that is, by sharp breaks in continuity in which demand collapses, followed by a period of depression, and then by a slow resumption of normal growth (see Sardoni 1987, 4–5).

The key, then, was to explain the crisis, the abrupt shift from one pattern to another.[30] Marx laid the basis for an explanation by rejecting

29. In some of his schemes, Marx divided the consumer goods sector into necessities and luxuries.

30. The lower turning point also needs to be explained, but Marx had little to say about it. He did suggest, rather casually, that the buildup of replacement demand might explain the length of the recession.

Say's law, which could be, and was, used to claim that there cannot be any general deficiency of demand.[31] In a money economy, Marx argued, a seller is not compelled to buy again immediately, so that there can be a lack of aggregate demand if sellers try to hold on to their money.[32] This demonstrates "the possibility, and no more than the possibility, of crises" (*Capital* 1:114). Under normal circumstances, of course, some individuals add to their money stocks, while others run them down. The next step was to explain why a majority of potential buyers should hold back from buying at a particular moment.

Crises occur when expected profits are too low for investment to be worthwhile. That much is clear. Beyond that, it is hard to find a consensus interpretation of Marx's views, presumably because he did not have a well-developed view at all. One possible explanation for a fall in profits is that continued expansion leads to shortage of labor-power and hence to increasing wages. As wages rise, profits are forced down, until capitalists decide to delay new investment,[33] and thus provoke a crisis (for example, *Capital* 2:410–11; 3:246). However, in his account of the determinants of wages, discussed above (1:619–21), Marx seems to have entertained the possibility that rising wages might check accumulation without a crisis—at any rate, there is no explicit mention of crisis as a necessary part of the process—so it is not clear that labor shortage is the whole of the story. It is hard to construct a workable theory which combines (a) labor shortage as the main cause, or at least part of the cause of crisis, as discussed here; (b) increasing intensity of crises, predicted by Marx in the *Manifesto* and elsewhere; and (c) a growing reserve army of labor (predicted in *Capital* 1, chap. 25), particularly if technical change creates scope for rising real wages, so that wages have to rise ever further above subsistence before they prompt a crisis (Marx was probably unaware of this consequence of technical change). It is worth noting that Marx explicitly rejected any naive under-consumptionist explanation of crises (that is, a claim that crises are caused by a lack of working-class purchasing power because of low wages), on the grounds that "crises are always prepared by precisely a period in which wages rise generally" (*Capital*, 2:411). Once a recession has started, of course, lack of consumption demand is one of the factors contributing to the downward

31. On Say's law, see Backhouse 1985, 50–52.

32. Compare to J. S. Mill 1844, in which essentially the same point is made.

33. To initiate any form of production counts as investment, since it involves an advance of working capital.

movement. Some commentators have suggested that Marx may have intended to construct an analysis in which crises are prompted by growing "disproportions" between sectors or industries. It is possible that he intended to develop the schemes of reproduction (see above) in this way, but he did not do so. Nothing remotely like a coherent explanation of crises in these terms exists anywhere in his writings.[34]

Whatever the exact story about the causes of crisis, Marx had a number of sensible things to say about the consequences. For example, once demand starts to fall there is a need to finance growing inventories of unsold goods, while lenders lose confidence and want to get their money back. Interest rates rise to crisis levels, but it would be a mistake to blame the crisis on the financial disturbance, or to conclude that high interest rates represent a shortage of "capital" (for example *Capital* 3:472). Note that although Marx argued (against Say's law) that crises are possible because potential buyers may hang on to their money, he was quite right to say that the result, in the short run, can be a shortage, not a superfluity, of money. Any initial attempt by potential purchasers to increase money stocks simply means that the money is not passed on to others, who have less money than expected, and unsold stocks to finance. Contraction of credit does the rest.

Bitty and incoherent though they are, Marx's comments on crises and on the industrial cycle probably make as much sense as anything else available at the time. They are not easy to find—I have quoted widely separated passages from all three volumes of *Capital*, none of which tells anything like a comprehensible story on its own—and hindsight probably helps a good deal in reconstructing Marx's views, since a reader familiar with more recent cycle theories knows what to look for. The great variety of alternative models that have been "discovered" in Marx's writings and the even greater variety of "Marxian" models produced by Marxist economists demonstrate that Marx did not give a clear lead; at most, his scattered comments might act as an inspiration. What was lacking in late-nineteenth-century economics (as now?) was a framework that would allow systematic development and discussion of trade cycle theory. Marx did not provide one, and it is thus not very surprising that this aspect of Marx's work was ignored along with the rest, though late-nineteenth-

34. Howard and King (1985, 217–18) cite Robinson (1942, 49): "the distribution of income . . . is such as to set up a chronic tendency for a lack of balance between the two sectors" (217) and comment that this probably comes closest to Marx's own ideas. However, they offer very little support for this claim and admit that "Marx did not deal with the turning point" (217).

century economists might have learned more from it than from most other parts of Marx's writings.[35]

Technical Change and the Profit Rate

The nineteenth century was the century in which the industrial revolution came to full fruition. By the middle of the century there was no excuse for ignoring the changes that successive waves of technical advancement had brought. By this test, mainstream economic theory did not do well: it has always had surprisingly little to say about technical change, and even today many students complete a degree course in economics without hearing more than a lecture or two on the economics of technical change.

Marx, however, cannot be charged with ignoring technical change. The *Manifesto*, for example, contains long passages describing the way capitalism transformed the world.

> The bourgeoisie cannot exist without constantly revolutionising the instruments of production, and thereby the relations of production, and with them the whole relations of society. . . . The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of Nature's forces to man, machinery, application of chemistry to industry and agriculture, steam navigation, railways, electric telegraphs, . . . What earlier century had even a presentiment that such productive forces slumbered in the lap of social labour? (Marx 1848, 51, 54)

By the late 1840s, Marx had committed himself to a theory of history and a view of the future of capitalism that he restated in the preface to *A Contribution to the Critique of Political Economy* (1859) and stuck to for the rest of his life.[36] Successive modes of production start out by being progressive but eventually become incapable of further development, even on their own terms. A mode of production comes to an end when,

35. Some of Marx's intuitions eventually found their way into the common stock through writers like Kalecki and Joan Robinson in the mid-twentieth century, long after the period discussed here. Many elements of trade cycle theory have been reinvented time after time, so precise intellectual sources become rather irrelevant and difficult to trace.

36. See the preface to the 1872 edition of the *Manifesto*, in which Marx and Engels wrote that the principles laid down 25 years before remained "as correct today as ever."

and only when, it becomes a "fetter" on the development of the forces of production. "A social order never perishes before all the productive forces for which it is broadly sufficient have been developed" (1859, 7). To carry through the program he had defined for himself, therefore, Marx had to show that capitalism would inevitably find itself driven into an impasse from which there was no escape short of a complete social revolution.

Marx's recognition of the central importance of technical change is one of the strongest features of his work (see Blaug [1960] 1986). Since it corresponded to one of the weaknesses of the mainstream, it seems that his work might have had some influence in this area if no other, and it was precisely this aspect of Marx's work that Schumpeter took up. However, Marx found himself faced with a dilemma. He would have liked to be able to claim all of the following about capitalist societies: (a) technical change raises the productiveness of labor, making a post-capitalist society of abundance possible; (b) wages fall in real terms, giving workers a reason to rebel; (c) the profit rate falls and the system ultimately fails on its own terms. One can produce quotations, albeit out of context, to show that he at least flirted with all of these, but all three cannot be true.[37]

Marx argued that workers do not gain from capitalist development until they overthrow the system and take its fruits for themselves: "The modern labourer . . . instead of rising with the progress of industry, sinks deeper and deeper below the conditions of existence of his own class. He becomes a pauper, and pauperism develops more rapidly than population and wealth" (*Manifesto* 67). Later works, such as *Capital*, are rather more guarded, making it possible to deny that Marx predicted absolutely falling real wages, but it is clear that he did not expect workers' living standards to grow in line with growing productivity (as, in the event, they did).

If workers do not benefit from rising productivity, capitalists must. If, however, Marx had admitted that technical change with constant real wages—or, at least, with wages lagging behind productivity—must imply rising profits and thus a potential for even faster growth, he would have been faced with the possibility that capitalism could continue indefinitely, becoming more and more successful. Marx could not admit this possibility, since his theory of history only allowed capitalism to be

37. His classical predecessors did not face this problem, because Ricardian diminishing returns precluded (a). Later writers abandoned (b) and (c).

replaced when it had come to a dead end. He had painted himself into a corner.

Marx's "law of the tendency of the rate of profit to fall" can be seen as his answer to this conundrum, though he did not say so explicitly, and there are some doubts about its status. It is to be found in the unfinished third volume of *Capital*, and there is no way of knowing whether he would have published it in the form it now takes if he had lived to finish it or, indeed, whether it remained unfinished because he realized that there were insuperable problems with the analysis. Shalom Groll and Ze'ev Orzech (1987, 1989) point out that the final version of volume 1 of *Capital* was written *after* the drafts that make up the published version of volume 3, and they argue that various statements in volume 1 show that Marx had rejected his account of the tendency of the rate of profit to fall between writing the draft of volume 3 and finishing volume 1. There are indeed severe difficulties in reconciling the account of technical change in volume 1 with the "law" enunciated in the draft of volume 3, but that is not the same as showing that Marx had deliberately chosen to reject his own arguments of a few years earlier. What is certain is that without the "law," Marx's prediction of the inevitable demise of capitalism loses most of its force, since the prediction of growing unemployment, increasingly severe crises, and the rest depend heavily on it.

Marx's arguments for his "law," and the weaknesses in it, are well known and can be summarized quite briefly (see *Capital* 3, part 3; Roemer 1981, chaps. 4–6; Howard and King 1985, section 12.5). With the usual notation and the usual (easily relaxed) assumption of a one-year turnover of capital, the rate of profit in value terms, which Marx wrongly equated to the general profit rate, can be written as $s/C = s/(c+v)$. If s/v is constant, then a rising c/v leads to a falling rate of profit. Marx argued that c/v does in fact rise with capitalist development and technical change and drew an extraordinarily strong conclusion: "proceeding from the nature of the capitalist mode of production, it is thereby proved a logical necessity that in its development the general average rate of surplus-value must express itself in a falling general rate of profit" (3:209). However, he weakened this conclusion substantially by admitting a number of counteracting influences (3, chap. 14), inviting the question, why is the tendency of the rate of profit to fall counted as a "law," while the forces working in the opposite direction are merely "counteracting influences"?

Suppose the real wage is held constant. Any change that raises productivity (in wage goods industries) will raise the rate of surplus-value, even if it also raises the value composition of capital, c/v. This is what Marx called "relative surplus-value." According to his own argument, the effect on the profit rate is indeterminate. Nobuo Okishio (1961) has shown that any technical innovation that is worth adopting from the point of view of an individual capitalist, at the prices ruling before it is generally adopted, must raise the general rate of profit if the good concerned is a basic in Sraffa's (1960) sense, or leave it unchanged if the good is a non-basic (Okishio 1961, 1963; Samuelson 1957; on predecessors of Okishio, see Groll and Orzech 1989). If the profit rate falls, it is because wages rise. Technical change is not the cause of any fall in the profit rate. On the contrary, technical advance mitigates any fall in the profit rate caused by rising wages.[38]

Nineteenth- and early-twentieth-century readers did not have the benefit of Okishio's formal analysis, but Marx's argument can never have convinced anyone who looked at it objectively. It has two obvious weaknesses. First, the main presentation assumes a constant rate of surplus-value and thus assumes that the real wage rises in line with productivity. This is, of course, inconsistent with Marx's generally pessimistic view of the evolution of workers' living standards. Suppose that c/v tends to rise (this will be discussed below) and that s/v remains constant (with wages rising in line with productivity). Using Marx's own argument (*Capital* 1, chap. 25, discussed above), if the profit rate falls, checking accumulation, wages will rise more slowly, restoring profits. There is thus no need for wages to fall to sustain profitability; they need only rise more slowly than productivity. Second, Marx's argument rests on the assumed tendency for c/v to rise. He relies on a commonplace observation that the physical mass of means of production used by each worker rises over time, but what matters to the determination of the rate of profit is the value of the means of production used. (Where technical change involves the use of completely new types of equipment, as it normally does, it is impossible to give any meaning at all to Marx's conception of the "mass" of means of production used.) Since growing productivity in the industries producing means of production lowers the value of means

38. This much was a commonplace of the economic literature of the nineteenth century, from Ricardo on. Ricardo argued that wages would rise (in value terms) because of land scarcity, forcing down the rate of profit, but he explicitly allowed for "improvements" in the production of wage goods as a counteracting factor (for example, Ricardo 1817, 79–80). Torrens (1821, 122–43) worked through the analysis in rather tedious detail. J. S. Mill, Senior, and others argued on the same lines. They were right, and Marx was wrong.

of production, there is no good reason to expect c/v to rise at all, even in Marx's terms.

Marx admitted both of these points, but grudgingly and without giving them their full weight. An "increasing intensity of exploitation," that is, a failure of (hourly) wage rates to rise in line with productivity, is the first of his "counteracting influences," but the discussion is almost entirely cast in terms of obviously oppressive ways of increasing the rate of surplus-value, such as lengthening the working day, increasing the pace of work, and so on, as if the tendency for the rate of profit to fall could only be offset by increasing the burdens heaped on the workers. He seems not to have realized (or not been willing to admit) that a constant rate of surplus-value implies continuous improvements in workers' living standards. The "cheapening of the elements of constant capital" is also listed among the "counteracting influences," but again Marx failed to realize its significance, unequivocally asserting that it is only in isolated cases that the cheapening of means of production reverses the increasing tendency of c/v.[39]

It is fairly clear that Marx thought profit rates could fall as a result of increased productivity even with a fixed real wage. He argued, for example, that "compelling a laborer to operate a greater number of machines" would reduce the profit rate (3:227). This is clearly wrong. If fewer workers operate a given number of machines (with, presumably, the same quantity of materials and the like) to produce a given output, then non-labor costs remain the same, labor costs are lower (and capital invested is also lower, because the wage bill counts as part of capital advanced), and the profit rate must increase, both for a single firm and for the whole system, as a special case of the Okishio theorem. Marx was misled by his belief that labor was the unique source of profit into thinking that a reduction in labor input lowers rather than raises profit.

Marx deserves credit for taking technical change seriously, but his conclusions were willfully perverse. It would be unfair to judge him too harshly—he did not choose to publish his writings dealing with the tendency of the profit rate to fall—but readers were nonetheless unlikely to have been impressed by them when they did appear. Even before the analytical issues were fully sorted out, Marx's argument was transparently inadequate.

39. It is particularly odd that Marx missed the significance of "capital saving" changes, when he discussed the importance of changes that speed up turnover (reducing capital requirements) and the like at some length (for example *Capital* 3, chap. 5; cf. Blaug 1960; 1985, 250).

Conclusion

The delay before the publication of the third volume of *Capital* is probably the most important single reason why the work as a whole never made any significant impact on economics. Suppose, for the sake of argument, that all three volumes of *Capital* had appeared together, in or soon after 1867. The dominant theory of value and distribution at that time was still a watered-down version of Ricardo, so Marx's value theory would have seemed quite familiar, if somewhat unoriginal, and would not have been a barrier to the acceptance of *Capital* as a serious work. Indeed, if Marx's solution to the transformation problem had accomplished what he claimed for it, it would have been a technical advance on the existing state of theory (albeit of a purely formal character—his substantive theory was no different from that of his contemporaries). The fact that Marx's solution did not do what he hoped simply left him in the same position as everybody else. Marx's conclusions might have seemed rather one-sided and implausible, and it seems fair to guess that his political rhetoric and his vitriolic and unfair attacks on many of his contemporaries would not have endeared him to them, but *Capital* would still seem to have deserved some discussion. Even in this hypothetical scenario, interest in *Capital* might soon have faded away, precisely because it was no real advance on what had gone before. One could argue that *Capital* was the most significant single work of economics written in the 1860s and still say that it is of little real importance to the subject. The 1850s and 1860s were rather a dead period in the history of economics (try looking in any standard history of the subject for references to works, apart from *Capital*, written in those two decades).

In reality, however, only the first volume appeared in 1867. Shorn of any discussion of the transformation problem and lacking any coherent justification, Marx's value theory looked unacceptably crude. The theory of surplus-value, as presented in *Capital* 1, was based directly on this inadequate theory of value and lacked any clear link to observable magnitudes (profits, rent, interest, and so on). Add to this the criticisms that could have been made even if all three volumes had been available, and the most charitable response anyone could make to *Capital* 1 was to wait until further volumes became available. The publication of the second volume can have made little difference; it has never attracted much interest and did little to fill the gaps left by the first volume.

By the time the third volume of *Capital* finally appeared, in 1894, the context had changed radically. Neoclassical economics was firmly enough established to make the post-Ricardian framework of the 1850s and 1860s look thoroughly outdated. Marshall's *Principles of Economics* (1890) was swiftly replacing John Stuart Mill's *Principles of Political Economy* (1848) as the main point of reference (at least in the English-speaking world), while Walrasian general equilibrium theory was being developed in various continental centers. The concept of marginal utility had revolutionized the treatment of consumer demand. Factor demand theory had been adapted to take full account of substitution between inputs, while Böhm-Bawerk had independently rediscovered John Rae's analysis of capital and of inter-temporal choice. Marshall's analysis of the short run and the long run promised a much improved analysis of the short-run reaction to shocks and of the process by which the system returns (or tends to return) to long-run equilibrium. The mental landscape of economics had altered beyond recognition. In this context, *Capital* stood no chance. The new ideas of the 1870s and 1880s offered a range of exciting possibilities that kept economists busy throughout the last quarter of the nineteenth century and well into the twentieth.

The context in which the third volume of *Capital* appeared may therefore explain the fact that it was generally ignored, but it does not constitute a full justification for that neglect. Marx's supporters can still claim that the new direction economics took in the later nineteenth century was a mistake, that Marx *should* have been taken seriously, and thus that contemporary historians of economics should take him seriously as an economic theorist. The body of this paper is a reply to that claim. An examination of the main elements of Marx's economics shows (broadly speaking) that what was new was not helpful and that what was usable was simply a restatement of well-known ideas in new terms. This conclusion is quite independent of any assessment of neoclassical economics; it is perfectly possible to accept all my arguments while still regarding the "marginal revolution" as a step back from the achievements of the classics. The point is that Marx added little or nothing useful to the classical heritage. It is also worth noting (though nothing in my argument depends on it) that it is simply not true that the late nineteenth century saw a turn away from the big issues and that Marx can therefore be credited with keeping an interest in them alive. Marshall is the obvious counterexample, since he placed himself in a direct line of descent from the classics and combined narrow economic analysis with a discussion of broader issues, in the tradition of Smith and Mill.[40]

It might be possible to argue that *Capital* was a success in Marx's own terms, even if mainstream economists were right to ignore it. Marx did not, after all, set out to make a contribution to economics in the conventional sense, but rather wanted to prepare the way for a proletarian revolution.[41] From his point of view, what was important was to construct an account of a capitalist economy that would fit in with his wider system. For the most part, he was able to do this by recasting and adapting the work of his classical predecessors and of the "Ricardian socialists" (see *Capital* 3, chap. 21; King 1983). From time to time, he found that he had to do more than simply adapt the existing materials, but he only produced new economic ideas when he had to, either because he found himself unable to accept his predecessors' analysis or because he needed to extend the analysis to deal with problems they had neglected. From Marx's point of view, and from the viewpoint of his followers, the coherence of the whole and the political conclusions that can be drawn from it are what matters. Even by this standard, however, *Capital* must be counted a magnificent failure. Once it is recognized that Marx's value theory cannot bear the weight he put on it, the concept of surplus-value, as he defined it, falls, and the greater part of the analysis of *Capital* falls with it. The claim that there is a tendency for the rate of profit to fall also seems essential to the coherence of the whole, since it is the only plausible basis for a claim that wages will fall, relatively if not absolutely, that unemployment will rise, and that capitalism must eventually fail. Much of the debate over Marx's economics has focused on these two issues, and for good reason. If both fail, as they do, not much is left.

The bulk of the recent literature on Marx is not really about the history of ideas at all, but is a result of the peculiar character of modern Marxist economics. The normal pattern in economics, and in other reasonably

40. If there was a move away from interest in long-run dynamics and toward an exclusive focus on short-run statics, it was in the mid-twentieth century, not the late nineteenth, though even this is doubtful. The emergence of a narrowly technical and mathematical literature in the second half of the twentieth century was balanced by the expansion of other branches of the subject, such as development economics, which continued to deal with broader issues, and is best viewed as part of a growth in the internal division of labor in the subject. To take one notable example, Milton Friedman can hardly be accused of a lack of interest in the broad issues.

41. He also wanted to put his unique stamp on it. He was especially anxious to refute the arguments of rival critics of the status quo, such as Pierre-Joseph Proudhon.

well developed social sciences, is for the work of a particular individual to be discussed and debated for a period of time, perhaps a decade or two, usually much less. Eventually, the ideas that withstand the test of time become part of the common stock and can be used with no more than the most formal and cursory reference to their origins. Marxist economics is not like this. In the eyes of its practitioners, its identity depends on faithful adherence to the words of the master. Unlike other economists, Marxist economists habitually deny any originality and claim that their newest idea is really to be found in Marx. The result is a form of continuous strip-mining of the most trivial of Marx's jottings in search of quotations to support one point of view or another. There can be no objection to continued attempts to modernize or resuscitate Marx's ideas, but they have nothing to do with the *history* of economics and, therefore, should not be published in journals devoted to the subject.

If Marx's *Capital* failed to achieve what he hoped and if economists were right to ignore it, it does not necessarily follow that historians of economics should do the same. Historians must deal with the wider impact of economic ideas (whatever their merits), as well as with the development of economic theory in its own right. Marx's economic ideas deserve study because they are an integral part of a worldview that has had an immense influence outside economics. It was, of course, necessary to study Marx's theory in order to establish that it was indeed a dead end. Once that is established, the focus of interest shifts away from Marx's theoretical construction in the abstract and toward the task of setting the phenomenon of Marxism into its historical context. It is remarkable how little serious work has been done on the relation between Marx and his near contemporaries (Evans 1989; King 1983 are exceptions). There is also a small but growing literature on the history of Marxist economics (for example, Howard and King 1989; 1992). There is much to be said about the impact of Marx's economic ideas on political thought and on policy making (a good example is the fascinating account in Boss 1990 of the way Soviet planning was affected by a confused distinction between "productive" and "unproductive" labor derived from Marx and Smith). Marx's own writings on the history of economics also deserve critical attention (see Steedman 1982; Caravale 1991). The acid test is whether Marx is treated historically and not as if he were outside any normal temporal framework. Applying this test, the literature shrinks to a much more reasonable size, and there is still work to be done.

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