Capital & Class 42(3), 2018

Sraffa versus Marx: why bother?

Robin Hahnel
Radical Political Economy: Sraffa versus Marx, London: Routledge, 2017; 110 pp.: ISBN 9781138050037, £21.99pb

Reviewed by Bill Jefferies,
SOAS University of London, London

Robin Hahnel is the Professor Emeritus of the Department of Economics at the American University in Washington DC. Hahnel's *Radical Political Economy: Sraffa Versus Marx* argues that 'Sraffian theory can now provide a stronger basis for radical political economy in the twenty first century than formal Marxian economic theory' (p. vii). In an accessible and lively fashion, Hahnel describes the key elements of the Sraffian physical price alternative to Marx's labour value theory. He argues that 'labour values unnecessary, i.e. redundant, they also mislead analysts about the process of price formation under capitalism' (p. 2).[1] Instead of Marx's theory of surplus value, 'Sraffians explain profits as the results of employers expropriating part of the surplus of goods produced in a productive economy from those who produced them' (p. 3). Sraffa's theory avoids the 'mistaken belief that capitalist profits derive only from the amount of labour they hire, when in fact profits derive from a markup on non-labour as well as labour costs of production' (p. 3). Hahnel's directness is to be applauded. His assertion of the superiority of Sraffa's theory provides a very clear opportunity to assess its viability as an alternative to Marx's model. Hahnel's argument hinges of the use of linear algebra and the assumptions necessary to make it work. Hahnel considers that, as Marx lacked this key mathematical tool, so he applied a redundant methodology that valued commodities (or explained price) by the amount of labour required to produce a given output (p. 5–6).

Basic goods, relative prices and the measurement of value

Hahnel starts with his version of Adam's Smith's nation of hunters. If, Smith explained, 'it usually costs twice the labour to kill a beaver which it does to kill a deer, one beaver should naturally exchange for or be worth two deer' (Adam Smith, cited in Hahnel (p. 5)). According to Hahnel, Smith assumes that 'there is only one "primary" input in

production, labour … everything is ultimately made by labour and labour alone … moreover … labour is homogeneous'… (p. 6). He continues, 'we assume that labour is the only non-produced input in the economy' (p. 6). By primary input, Hahnel means 'basic good'. Sraffians define basic goods as those goods 'which enter into the production either directly or indirectly of every good' (p. 35). Sraffian's believe these basic goods, 'play a different role in the economy than 'non-basic' goods' (p. 35). In all Hahnel's examples it is assumed that the goods 'are basic' (p. 35). If Hahnel took his definition literally then he would have to agree with Smith. An economy is a social organization through which humans produce their environment, by transforming raw materials (inputs) into different useful products (outputs). The only input common to all human productive activities is human labour. But if we took Sraffa's definition literally, this would be a rather short review. In fact what Hahnel means by basic goods are raw materials, the only physical inputs that can increase the physical scale of outputs. All other goods produced by manufacturing, services and so on, use up physical inputs. Consequently, logic demands that goods other than raw materials be excluded from Hahnel's model, not least as Hahnel applies the Forbenius-Perron theorem (p. 34). This requires that every sector expands physically in aggregate. Hahnel's model is, therefore, only really concerned with that small part of the economy that produces basic goods – the raw materials sector. Consistent with this Hahnel translates Smith's model into a two good economy with identical inputs and outputs, fixed relative prices, and an assumed 'surplus'. Hahnel provides 'recipes' for making each good that express these assumptions mathematically. Hahnel notes that, 'the first step is to write down an equation for each industry that expresses the truism that revenue minus cost for the industry is, by definition, equal to industry profit' (p. 10). But, is this a truism?

What is the unit for this revenue measurement? The unit, Hahnel answers, is the system of relative prices itself,

> But we are only interested in *relative* prices, i.e. how many units of one good trade for how many units of another good. If we set the price of good 2 equal to 1, p(2)=1, then p(1) tells us how many units of good 2 one unit of good 1 exchanges for, and w tells us how many units of good 2 a worker can buy with her hourly wage. (Hahnel's emphasis; p. 11)

This fixity of relative prices allows one good to be selected as a numeraire (or be set to one, or be divided by itself, as anything divided by itself equals one). All other commodities can then be measured relative to the numeraire commodity, and so any commodity can be the numeraire. This answers the key problem the Sraffian system is designed to circumvent, the commensurability of inputs and outputs in production.

Hahnel notes that, 'for those who recognised that surplus is generated in production the dilemma was always how to quantify and measure it' (p. 33). This was most famously answered by the Russian mathematical economist Dmitriev – the founder of the physical price system (Dmitriev is not included in Hahnel's book). Dmitriev imagined a single good economy consisting only of robots. Hahnel explains that production in a single good economy requires labour and 'some amount of a single good in order to produce a larger quantity of the same good' (p. 33; actually it does not require labour as if there were labour and some other physical good then the model would no longer be a single

good economy). Dmitriev's robots produced other identical robots without any human labour, while remaining unchanged. The new robots were identical to the old robots and represented an addition to production. To count the surplus, Hahnel continues, 'simply subtract the amount of the good used as an input from the amount of good produced as output, and you have a quantitative measure of the surplus in physical units of the only good in the economy, which can also be expressed as a fraction of the amount of the good produced' (p. 33–34). The rate of surplus is the proportion of the new robots to old robots. Something had been produced from nothing, and so no labour was necessary for the existence of surplus or profit. As the surplus was produced from nothing, so it was nothing. As the surplus robots were identical with the original robots, so the original robots were nothing. Hahnel's single commodity model is a model of nothing.

Hahnel continues, 'but in a multi-good world, where production requires both labour and specific quantities of *different* goods in order to produce larger quantities of many different goods, it was never obvious how to measure the size of the surplus' (p. 33–34). As the purpose of production is to produce outputs that are physically different to inputs, so they are incommensurate. As inputs and outputs are incommensurate so the quantity of production, let alone surplus, cannot be measured. This incommensurability is the *raison d'etre* for the labour theory of value, the use of external social numeraire means that the entirety of physically different production can be reduced to a common universal standard – socially necessary labour time. This is what Hahnel opposes, so he explains, 'Sraffa demonstrated that if different goods were produced in specific proportions which he called the "standard commodity" the amount of every good left over as "surplus" divided by the amount of that good produced would be the same for every good … no matter which good we used to calculate the answer' (p. 34). The condition for the measurement of surplus and indeed of output itself is that relative prices are fixed: the proportions of the production matrix, expressed in the standard commodity, do not change. Hahnel continues, 'Sraffa's standard commodity was simply the right eigenvector of the input coefficient matrix for the economy' (p. 34). An eigenvector is a set of relative prices that are multiplied by some scale, while remaining relatively unchanged. Marx discussed the relation between the physical numeraire and its objectification in price and observed that 'if one assumes that a given labour-time is invariably materialised in the same proportion in silver and gold, then one assumes, in fact, that silver and gold are the same substance, and that silver, the less valuable metal, represents a constant fraction of gold' (Marx 1970[1859]). If relative prices are fixed, then any commodity can act as the numeraire, so what is good for silver and gold is good for any other commodity. The assumption that commodities exchange in fixed proportions is equivalent to the assumption that the physical goods are identical. Hahnel's multi-commodity model is then, a single commodity model in disguise, a model of nothing too. Surplus is produced while inputs are 'unchanged' (Shaikh 2017). The insistence on the fixity of relative prices is the equivalent of the instance that the multi-commodity economy acts as a one commodity one.

The origin of surplus

Hahnel points out that, 'a person working today the same number of hours as a similar person in 1800 – and working as hard and no harder – can produce many, many times

the economic output' (p. 27). This measures output across the entire economy, not just the raw materials sector, in money an external numeraire not present in Hahnel's model. Surplus is created by some technology reducing the cost of production, but this technology leaves all relative prices intact and produces no new basic commodities (which is the same thing). Basic goods must have always existed and always be used. They can never become redundant, like asbestos, or be discovered, like genetically modified wheat. A new product is as a product produced for the first time, so none of these raw materials can have been produced, as every product must be produced a first time. This assumption violates the essential nature of technological advance, which precisely changes relative prices and discovers new things.

As, paradoxically, Hahnel acknowledges in his later discussion of the Okishio theorem, Okishio was a Japanese Marxian who observed in 1961 that if profits are the difference between costs and prices, if costs fall and prices remain unchanged then a fall in costs must raise profits or as Hahnel puts it, 'Okishio proved that *any* technological change that reduces costs at current prices and the current wage rate, and therefore would be adopted by profit maximizing capitalists, would either raise the uniform rate of profit in the economy, or leave it unchanged as long as the real wage remained constant' (p. 42). Conversely, if current prices fall due to technical innovation then profits do not rise and the theorem does not apply. As Hahnel demonstrates in a later example,

> Once a new cost reducing technology has been adopted by all in an industry, and once the prices of all goods have adjusted to re-equalize the rate of profit in all industries, the new vector of relative price, **p'** will be different from the old vector of relative prices, **p**. So technical change will lead to changes in *relative* prices, *eventually.* (p. 53)

But if relative prices fall, not only does the Okishio theorem not apply, but Sraffa's standard commodity and Hahnel's eigenvector do not either. The numeraire is no longer the numeraire, so there is no internal standard of value in the Sraffian model. As there is no external standard of value either, then the capitalist cannot know if they have produced a surplus or indeed anything at all, even after exchange.

Marx observed it was precisely because the relative prices of physical commodities changed that,

> Gold must be in principle a variable value, if it is to serve as a measure of value, because only as reification of labour-time can it become the equivalent of other commodities, but as a result of changes in the productivity of concrete labour, the same amount of labour-time is embodied in unequal volumes of the same type of use-values. (Marx 1970[1859])

Furthermore, as Sraffa's system rests on a series of simultaneous equations, there is no such thing as *eventually*. All changes in relative prices are simultaneous, that is, immediate. Instantly transmitted throughout the model, as relative prices change constantly as a direct result of technological innovation itself, then there can be no physical measurement of price, or indeed, any measurement of price at all, in Sraffa's model.

What's so special about labour?

Hahnel defines a productive economy as one, 'capable of producing a surplus of physical goods even after all produced inputs are replaced' (p. 25). If all basic goods (raw materials) are capable of increasing the scale of production then every basic good is 'exploited' during the process of production. Therefore, following John Roemer, Hahnel asserts that it cannot be maintained that,

> Labour power is that one special commodity that mysteriously produces more value than is embodied in it, and hence its exploitation is the sole cause of profits. For, as an alternative to labour value, one could choose corn to denominate value, defining the embodied corn values of all commodity, and the following would be true: The economy is productive in the sense of being capable of producing surplus if and only if corn is exploited. (p. 29)

Hahnel considers that there are four problems with the idea that profits originate from the exploitation of from labour alone,

1. As in the case of prices, labour values are not necessary to explain profits, that is, they are redundant.
2. The choice of labour power as the input capitalists 'exploit' is arbitrary, since any other input can be used to tell the same story.
3. The implication that only one input is an 'exploitable' source of profits is misleading because in fact capitalists mark-up on the cost of every input they buy.
4. Finally, the belief that profits derive only from exploiting labour can mislead one to think that automation will depress profits, which it does not (p. 23).

But how can surplus exist if aggregate profits cannot emerge, 'from the exchange of commodities which merely distributes whatever surplus was already there' (p. 33) and if competition means that output is sold at its cost of production? Surplus cannot be a mark-up, a subjective addition to costs added by capitalists, as this either means that profit arises in distribution or that output is sold above cost, which amounts to the same thing. The divergence of prices from values due to the transfer of value to equalize profit rates creates the illusion that inanimate objects can add a higher value than they themselves cost to produce. Surplus labour is transferred between sectors to equalize profit rates, and as a result prices deviate from values, so that it appears that surplus arises from a general mark-up across all inputs, in distribution not production.

Hahnel develops a 'Fundamental Sraffian Theorem, FST, which says: If and only if there is a physical surplus of goods after wages have been paid will profits be positive' (p. 25). Given that wages are just another cost in Sraffian theory, then there can be no profits, as if output is sold at its cost of production, then prices cannot be higher than costs. If output is sold above its cost of production, the surplus arises in distribution and not production. The Sraffian assumption that goods are sold at their cost of production, but that this cost includes an addition or surplus to the cost of production is a contradiction in terms.

The $n \times n$ input–output matrix of the Sraffian model posits a potentially infinite, but once defined, paradoxically finite, number of goods, in which new goods are simply

recombination of old goods. No such limit applies to Leontief matrix of the actual capitalist economy, where inputs and outputs are assumed to be physically homogeneous, insofar as they are groups of similar use values, but they are not uniform, *they are not actually homogeneous.* In the Leontief model, inputs and outputs are incommensurate use values, measured by a variable external numeraire, money. Leontief's homogeneous categories are actually made up of heterogenous goods (albeit broadly conceived of in the same way, as similar use values). The assumption of homogeneity in the Leontief input–output matrix fosters the illusion that all inputs can create surplus as it obscures the incommensurability of physical input–output and deals in money (or values that have already been transformed into price). The unique social quality of labour is disguised. Viewed physically, manufacturing and services output cannot exceed the quantity of physical inputs required to produce it by definition. Yet a surplus nonetheless exists, how?

Marx's theory of surplus value resolves this contradiction. It explains how surplus can be produced even when output is sold at its cost of production. Unlike other commodities (e.g. corn, coal or iron) labour has free will. Unlike corn, coal or iron labour cannot be manufactured. In a capitalist economy predicated on free labour, labour uniquely cannot be owned by its purchaser. The product of labour is owned by its purchaser, not the labour itself. As the purchaser does not own the labourer or their labour, but only the output they produce, so there can be a difference between the capacity of labour to produce, its expression in the value of output produced, and its cost of production or wages. The surplus value extracted from labourers is a real cost of a production – but it is unpaid. It is extracted from workers by their need to live, to sell their labour capacity to the capitalist, the monopoly owner of the means of production. Corn, coal and iron do not have wages. They cannot be paid, let alone unpaid. They are owned by people. People produce them, and their human owner is paid their cost of production. As competition means that their price cannot exceed their cost of production, so corn, coal and iron, cannot add more value (or price) to production than they themselves cost. This is all very elementary. Hahnel repeats some of these points themselves, but does not appreciate their qualitative significance.

In *Capital I* and *Capital II* Marx assumes that values equal prices, as the divergence of price from value obscures the essential laws of the capitalist mode of production. Through numerous empirical and historical examples, Marx proves that the extraction of value determines the social laws of capitalist production. In *Capital III* Marx shows how the movement of capital between capitals of different compositions causes price to systematically diverge from value. As Hahnel notes Marx himself realized that, 'in capitalist economies labour values do not appear first, and then require transformation into prices of production' (p. 18). Values are already transformed into prices by the time generalized commodity production occurs. Paradoxically, the social laws that Marx analysed in *Capital I* and *Capital II* determine capitalist production, even though by the time capitalism is the hegemonic mode of production the price does not equal value in the case of any individual commodity.

Hahnel's advocacy of Sraffa continues into an exploration of Sraffian crisis theory, nature and as a moral criticism of capitalism. These are similarly direct and accessible explanations of the Sraffian take on these issues, and suffer from the same fundamental flaws outlined above.

Conclusion

Assume that profit accrues in equal proportions to all inputs, assume that relative prices are fixed, assume that when goods are sold at their cost of production there is a surplus, assume that goods are unchanging, assume that technology does not revolutionize production, assume that technology does not change relative prices or discover new things. Assume that social labour is qualitatively identical to coal, assume that something can come out of nothing, assume that relative prices can change even though you have previously assumed they cannot, assume that technology changes prices and then assume that it does not, assume all this and who could but agree with Hahnel – the labour theory of value: 'why bother?' (p. 13–14).

Note

1. I have translated the American labor into the English labour throughout for consistency's sake.

References

Marx K (1970[1859]) *Contribution to the Critique of Political Economy*. Moscow, Russia: Progress.
Shaikh A (2017) *Capitalism: Competition, Conflict, Crises*. Oxford: Oxford University Press.

Author biography

Bill Jefferies is an Economics Lecturer at SOAS University of London.

Book Reviews

Jörg Wiegratz
Neoliberal Moral Economy: Capitalism, Socio-Cultural Change and Fraud in Uganda.
London: Rowman & Littlefield, 2016; 375 pp.: ISBN: 9781783488544, £29.95

Reviewed by Leo Zeilig, *University of London, UK*

In some of the most powerful and engaging passages in *Capital*, Karl Marx wrote about the systematic fraud at the heart of market relations. Fraud, adulteration of food (a topic close to Marx's heart) and corruption, was an element of capitalist development from the earliest days. As Marx wrote, 'the bread of the poor' was unlike that of the rich. Loaves purchased by the poor were frequently subjected to 'the adulteration of the flour with alum and bone earth'.

In Jörg Wiegratz's important book on Uganda, *Neoliberal Moral Economy*, he explains, 'markets are … not just the sites of economic transaction but of deception, intimidation, domination, humiliation … and, of course, morality' (p. 342). Wiegratz looks at the