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Abstract

Classical political economy was underpinned by a shared view of the economy as a circular flow. This begged the question of how the value of produce can exceed the value of factor inputs: the ‘Profit Puzzle’. This paper addresses the intellectual history of the ‘Profit Puzzle’. It offers three contributions. It advocates an understanding of the Profit Puzzle as a monetary paradox arising from Say’s Law. It presents a comparative study of the analyses by Marx, Kalaiecki, Keynes, Schumpeter and Samuelson. And it suggests that the work of Bentham contained a solution to the Profit Puzzle.

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1. Introduction: The Profit Puzzle

Classical political economy was underpinned by a shared view of the economy as a circular flow. The circular flow concept gave Classical economists a handle on thinking through problems of value creation, rent, productivity, and price formation. But it also posed problems of its own. In a consistent flow conception, the total value of factor inputs must equal the total value of output at nominal prices, so that aggregate profit accruing to entrepreneurs must be zero. The same should be true of interest paid by entrepreneurs. Moreover, if all revenues accrue to owners of production factors, no monetary resources should be left for fresh investment leading to economic expansion. This, however, cannot be squared with economic growth and the pursuit of profit as the motive force of the economy, topics also central to Classical economic thinking. Thus there is a ‘Profit and Interest Puzzle’ and a related ‘Expansion Enigma’: if the economy is indeed a circular flow, how can there also be profit-oriented entrepreneurship, interest, and economic growth? In this paper we refer to these related conundrums generically as the ‘Profit Puzzle’.

This paper aims to make three contributions to the debate around these questions. A first is to bring out the logical and monetary nature of the Profit Puzzle. We argue that it is a logical paradox because it appears to violate per-definition relations in the circular flow. And it is monetary because the puzzle is about the source of the liquidity to monetize profit and interest, not about its rationalization e.g. in value terms (which are non-monetary). We emphasize this because it explains the difference between theorists engaging with the Profit Puzzle (such as Marx) with those who reasoned in value terms, and either did not recognise the Profit Puzzle as a problem (as did Samuelson), or did not address it in the (logical, monetary) terms in which it is here posed (as did Keynes and Schumpeter).

A second contribution is to trace how three prominent economists engaging with the Classical tradition - Marx, Schumpeter and Keynes - addressed this puzzle, and how later economists mostly neglected it. Marx in *Capital* asked “How can the entire capitalist class manage to draw continually £600 out of circulation, when it continually throws only £500

into it?” Schumpeter (1934:30-31) observed that “price totals of the services of labor and of nature ... must always equal the receipts obtained for the products... [T]herefore, production must flow on essentially profitless... a paradox”. He similarly wrestled with the issue of “the source of interest”, recognizing the tension between his conviction that “in the circular flow the rate of interest goes to zero” (Wolfson 1958:50) and the reality of positive interest rates. Keynes in a draft chapter in his *General Theory* attempted to resolve the Profit Puzzle in terms of Marshallian quasi rents; but the chapter never made it into the published version. Samuelson in his *Foundations of Economic Analysis* (1948) recognized that the existence of profit was theoretically problematic and wrote of profit that “this residuum must be “due” to something”, but continued that “it may be labeled by any name we please...” and that “[t]he existence of this residuum does not imply any indeterminacy whatsoever”. Likewise, later neoclassical writers also ignored the Profit Puzzle, and paradoxically this neglect was central to the post-war development of macroeconomic theory. The standard Walrasian model is built on the assumption that profit does not exist, and introducing profit undermines its coherence (Godley and Shaikh 2002).

A third contribution of this paper is to suggest that the work of Jeremy Bentham (1748-1832) provides a framework to formulate a solution to the Profit Puzzle centred on the credit system, and distinguishing between the uses of credit. The credit system can create liquidity “out of thin air“, as Keynes famously wrote. New credit creation which finances additional productive capacity (‘productive credit’), is equivalent, in money terms, to the growth of output, as in the Classical circular flow, and this accounts for the ‘Expansion Enigma’. But new credit creation which does not finance current production, nor fresh productive investments (‘unproductive credit’), and which is therefore not claimed by factor owners, provides the monetary means for profit and interest. The distinction is important, because credit claimed by factor owners is logically not a solution to the Profit and Interest Puzzles: profit is not factor income, in the Classical analysis. As Heyn-Johnson (1992) put it, “money profits are possible only if demand for current output not originating from the community's money income can be found..... this monetary demand can occur only via a direct provision of cash to wage earners by the bank as consumers’ loans”. This solution, we suggest, is foreshadowed by Bentham’s analysis of new liquidity creation (or ‘fresh money’, in his terms) in the *Institute of Political Economy*, even though he, like other Classical economists, did not explicitly address the Profit Puzzle. Schumpeter (1934:33) notes that the

Profit Puzzle “in classical times was not expressly stated because the older economists were not very rigorous in recognizing the consequences of their own principles”.

We then relate the solution back to the works of Marx, Keynes, and Schumpeter. Bentham’s *Collected Works* were published only in 1952 (on Keynes’ urging) so that neither Marx, nor Keynes, nor Schumpeter were fully familiar with his manuscripts. Elements of the solution to the Profit Puzzle can be found in their works. Marx recognised the link between credit and the existence of profit, and Schumpeter distinguished between ‘productive’ and ‘unproductive’ uses of credit. But neither of them, nor Keynes, analysed how only ‘productive’ credit is logically related to factor income, and that other liquidity creation (‘unproductive’ credit such as consumption and mortgage loans) exists to monetize profit. Schumpeter, for instance, states that he is only interested in productive credit (1934:157) and deemed the ‘loan made for consumption .. for my purposes quite irrelevant’, though he added that ‘ I may have underestimated it’ (quoted in Reisman, 2004:69).

2. Smith’s ‘Great Wheel of Circulation’ and Say’s Law

The Profit Puzzle is a problem only if the economy is viewed as a circular flow, or circuit. Rochon (2008:125) notes that “the existence of monetary profits at the macroeconomic level has always been a conundrum for theoreticians of the monetary circuit.” Schumpeter, for instance, starts his 1934 *Theory of Economic Development* with a chapter titled “The Circular Flow of Economic Life As Conditioned By Given Circumstances”. This was the setting for his (1934:31) claim “that the economic system ... should operate without profit” is “a paradox”. A similar problem arises with respect to interest (Schumpeter, 1934: chapter V), and Wolfson (1958:50) notes that Schumpeter’s “interest rate controversy rests on his insistence that *in the circular flow* the rate of interest goes to zero.” (our italics).

The circular flow idea was present in Classical thought from the start. In the *Wealth of Nations* (book 2, chapter 2) Adam Smith wrote of the economy as moved by the ‘great wheel of circulation’, an idea adopted from Francois Quesneau, who depicted the circular flow in the famous *Tableau Economique*¹. But neither Smith nor the Physiocrats clearly

¹ In his writings, Smith recognized his intellectual debt to Quesnay and he planned to dedicate *The Wealth of Nations* to him. In the event, Quesnay died before the publication of Smith's work.

articulated the value equality of inputs and outputs inherent in the *Tableau*, which in turn implies zero aggregate profit. Moreover, there is no monetary dimension in the *Tableau*, nor in its famous successor, the input-output framework developed from it by Leontief and others. To emphasize the monetary side of the circuit was left to the brilliant Jean Baptiste Say, not himself a Physiocrat but closely affiliated to this school and an admirer of Smith. Indeed, "Say's Law can be traced back to a common origin in the Physiocrats" (Sowell 1972:219).

The 'law' that bears his name is the subject of an ongoing interpretation debate² and usually encountered as 'supply creates its own demand', as for instance stated in Chapter 3 of Keynes' *General Theory*. This translation may be misleading if it suggests causation from supply to demand, or automatic equilibrium between supply and demand. The literal translation from the French in Say's *Treatise on Political Economy* is that "inherent in supply is the wherewithal for its own consumption", and in Chapter 15 Say writes that "...a product is no sooner created, than it, from that instant, affords a market for other products to the full extent of its own value." This reading of Say's Law suggests more that supply constitutes demand than that supply causes demand; it articulates per-definition equality of supply and demand, not causality from supply to demand. Say's Law so taken is not a causal but a logical statement (one of Baumol's (1977) eight interpretations).

It is also, we suggest, a *monetary* statement, where 'the wherewithal' is perhaps best understood as 'the monetary means' or 'the purchasing power'. Another version of Say's Law is that 'there will be an excess supply of goods if there is an excess demand for money.' In other words: the purchasing power embodied in the funds acquired by producers to produce goods, passes via (intermediate payments and) wages to become the funds that embody the demand for those goods. The following quote from his *Letters to Malthus* suggests that this fits in with Say's emphasis on the sale (rather than just the production) of produce in the circular flow:

"To a proprietor of a mine, the silver money is a produce with which he buys what he has occasion for. To all those through whose hands this silver afterwards passes, it is only the price of the produce

² See Baumol's (1977) 'Says (at Least) Eight Laws, or What Say and James Mill May Really Have Meant'. For a contemporary summary, see the 2003 bundle edited by Steven Kates *Two Hundred Years of Say's Law*.

which they themselves have raised by means of their property in land, their capitals, or their industry. In selling them they in the first place exchange them for money, and afterwards they exchange the money for articles of consumption. It is therefore really and absolutely with their produce that they make their purchases.... As no one can purchase the produce of another except with his own produce, as the amount for which we can buy is equal to that which we can produce, the more we can produce the more we can purchase.”

This passage shows Say had in mind the equality of actual spending and purchasing in terms of money quantities, not of abstract ‘values’. Say describes the intermediating role of money in the logical equality of supply and demand: only the actual sale of goods moves the funds that constitute the demand for those goods. Inputs and output must be equal in monetary terms. This points to a monetary interpretation also of the Profit Puzzle which arises from this equality. Say’s Law as stated by Say is an accountant’s logical equality: all sold output will be bought. It is the monetary counterpart of Quesneau’s circular flow *Tableau*, and a tautology in the sense in which equations in physics (such as $E=mc^2$) are tautologies: true by definition, but not therefore analytically unhelpful. In sum, the Profit Puzzle so taken is a paradox relating to a logical equality in monetary theory: if the proceeds of the sale of output by definition equal the monetary rewards to factors of production, how can there be monetary profit?

3. In Say’s Shadow: The Reflux Theory of Profit

The Profit Puzzle remained unexplored until Marx, often viewed as the last of the Classical thinkers. Schumpeter (1934:33) writes that the Profit Puzzle “in classical times was not expressly stated because the older economists were not very rigorous in recognizing the consequences of their own principles”. This neglect was also noted by Marx when he wrote that it “is not explained and [it] remains obscure where this comes from, but the above Political Economy considers it a fact”, and that “[t]his question seems difficult at the first glance and neither Tooke [a British Banking School economist, GT & DB] nor any one else has answered it so far.” (*Capital* vol 2, chapt 16). Marx did attempt to answer it.

Central to that attempt was Marx’ understanding of capitalism as *monetary* capitalism. It led him to postulate the famous M-C-M’ transformation of capital as capitalism’s essential

process. Marx identified the Profit Puzzle by postulating that the monetary revenues accruing to the capitalists upon sale of the finished product must be greater than the c initially paid for production commodities from one capitalist to another, plus the v paid to workers. It must also include profit, or surplus s . How, in the aggregate, can $c + v + s$ come out of a process starting with $c + v$? Marx, like Say, viewed this Profit Puzzle expressly as a monetary problem, not a value problem. In *Capital* (vol 2, chapters 16 and 17) he was careful to make the distinction between form (money) and substance (surplus value):

“The question, then, is not where the surplus-value comes from, but whence the money comes into which it is turned.... How can the entire capitalist class manage to draw continually £600 out of circulation, when it continually throws only £500 into it? ... Where does the money for this purpose come from? ... It will not do to obviate this difficulty by plausible subterfuges.... Mind you! The question at issue here is not the formation of surplus-value. ... The question is not where the surplus-value comes from but whence the money comes into which it is turned.”

Marx proposed two solutions. In a time when money was habitually equated to gold, one solution was that additional gold came into circulation. “Finally, as concerns the surplus-value, it is likewise equal to a certain portion of the new gold product, which is thrown into the circulation in every new period of turnover in order to be unproductively expended, according to our assumption, on means of subsistence and articles of luxury.” (*Capital* vol 2, chapter 17, section 1). This was an empirical solution to a logical problem, and therefore unsatisfactory. Only by chance would there be just the right amount of additional gold put into circulation to monetize capitalist profit at the going gold-money rate. But Marx had identified that “ money unproductively expended” was the key to the Profit Puzzle.

Another suggestion was that the additional money was created by the capitalists themselves. The mechanism envisaged by Marx (in *Capital*, vol 2, chapt 16) part foreshadows the role of the ‘velocity of money’ in Fisher’s quantity equation. Faster money turnover (in Marx’ terminology) allows a small sum of money capital initially advanced by capitalists to produce positive profit for the entire class of capitalists. “Variable capital of £500, which is turned over ten times per year, producing an annual surplus-value of £5,000 for which, therefore, the yearly rate of surplus-value is 1,000%.” In this reflux theory of profit described

at length in Chapters 16 and 17, the capitalist class brings forth its own profit (*Capital* vol. 2, chapt 17):

“[t]he class of capitalists cannot extract from circulation what has not previously been thrown in.... In fact, although paradoxical at first sight, the capitalist class itself throws into circulation the money which serves to realise the surplus value embedded in the commodities.” ... They would all have to sell a portion of their product without buying anything in return. There is nothing mysterious about the fact that they all have a certain fund of money which they throw into circulation as a medium of circulation for their consumption, and a certain portion of which returns to each one of them from the circulation.“

The sequence would be that capitalist A spends an initial sum (say, 110) on the produce of capitalist B who spends 100 on costs of production ($c + v$), which passes into the hands of B's owners of production factors. B has now realised surplus value s (=make a profit) to the amount of 10. Now B and his owners of production factors spend their 110 on products sold by C, who therefore also makes a profit 10, and so on. In the end, capitalist Z may spend her 110 on A's output, who can so recoup his initial outlay. Due to 'money turnover' a large number of capitalists can make a profit because of A's initial spending.

A problem with this mechanism as a solution to the Profit Puzzle is the following. Marx recognizes that profit cannot exist within the circular flow logic, and therefore, appropriately, locates the monetisation of surplus value outside of the goods-and-services circular flow (the money has to be 'thrown in'). However, the determination of surplus value itself is firmly within the circular flow – indeed, for Marx it is a central part of how the (real) economy operates. Therefore also the amount of money to be 'thrown in' is determined within the circular flow, by capitalists - but this is precisely impossible because of the Profit Puzzle. Thus Marx does not solve the Profit Puzzle at its most fundamental level; a logical conundrum remains.

Three other questions arise. A has initially to decrease his wealth to the amount of the total value of the produce sold by B. Hence A just exchanges money for goods at the going final-product price (which is $(c + v + s)$ divided by the quantity of goods) and so does not make a monetary profit. If anything, he makes a loss of 10 as he finances the surplus value appropriated by other capitalists, at the costs of obtaining his consumption goods at a higher price. There is no incentive for A to spend 110 and at best recoup it later without a

profit, and hence the solution makes no sense in terms of individually rational behaviour (though this may be viewed as an anachronistic criterion). Second, by introducing money turnover, Marx decreased the magnitude but did not offer a solution to the Profit Puzzle as a *monetary* problem. Marx does not answer where the “certain fund of money which they throw into circulation” comes from. In addition, an empirical problem is that in Marx’ account, profit levels are proportional to levels of consumption by entrepreneurs. However, there is no evidence that profit levels vary systematically with (capitalist or otherwise) consumption levels, not even in the long run. This is why current ‘circuitist’ thinkers such as Rochon (2008), who are familiar with Marx’ analysis, still hold that “the existence of monetary profits at the macroeconomic level has always been a conundrum for theoreticians of the monetary circuit” and that while “economists have proposed a number of possible solutions to this conundrum”, none of them are deemed satisfactory.

After Marx, the reflux theory of profit was widely recognized but the Profit Puzzle remained. Keynes in his 1930 *Treatise on Money* (vol 1, p 139) noted:

“There is one peculiarity of profits (or losses) which we may note in passing, because it is one of the reasons why it is necessary to segregate them from income, as a category apart. If entrepreneurs choose to spend a portion of their profits on consumption (and there is, of course, nothing to prevent them from doing this), the effect is to increase the profit on the sale of liquid consumption goods by an amount exactly equal to the amount of profits which have been thus expended.”

Keynes so said that profit is logically separate from (factor) income, and that profits may enhance profits as in Marx’ money turnover mechanism, but did not address the question how this is monetized. Likewise his Cambridge colleague Michal Kalecki, building on Marx, in his 1930s research on Polish national accounts had worked out that profits must, by definition, be equal to the sum of gross investment, plus the fiscal deficit, plus the trade surplus, plus capitalists’ consumption minus workers’ savings (Toporowski 2008:122). Therefore in a simplified world without government deficits and trade surpluses and where workers spend all of their wages, profits, in Kalecki’s analysis, must be equal to whatever capitalists spend on investment and consumption goods – that is, on the output produced by other capitalists, as in Marx: “If some capitalists increase their investment by using for this purpose their liquid reserves, the profits of other capitalists will rise *pro tanto* and thus the

liquid reserves will pass into the possession of the latter” (quoted in Toporowski 2008:123). His Cambridge colleague Joan Robinson succinctly summarized the reflux theory of profit as ‘workers spend what they get, capitalists get what they spend’. Kalecki so analysed what funds (investment or consumption) moved into capitalists’ accounts to become profit, not where the additional money came from. Like Keynes in the *Treatise*, Kalecki did not address the Profit Puzzle as a monetary problem.

This has also been noted by the ‘Circuitist’ school of analysis (within the wider strand of Post-Keynesian economics), which has arguably remained closest to Say’s monetary conception of the circular flow economy and to Marx’ preoccupation with how surplus value is realized (that is, monetized). Circuitists insist that the modern economy by necessity is a monetary economy given the ‘significance of the monetary context of economic behavior’ (Fontana and Gerard 2002). Rochon (2008) notes some attempted solutions to the puzzle and concludes that all extant attempts to answer this question were unsatisfactory. One is to assume that several circuits overlap so that firms do not borrow and reimburse their debt all at the same time. As such, several sources of monetary outlays would exist simultaneously, thereby (in Marx’ terms) providing firms with more than M at any given time. Another suggestion has been to introduce additional sources of liquidity provided by the state (via taxation) or the rest of the world (via exports). These were also the sources of profit listed by Kalecki in the 1930s. But, as noted by Rochon (2008), these are not satisfactory solutions for two reasons. They fail to explain profit within a single non-overlapping monetary circuit, so that monetary circuit theory as such still fails to explain the existence of profit. Also, they do not account for profit in economies where the trade surplus plus the budget deficit are negative, a common situation. They are incidental, not theoretical explanations.

Rochon (2008) himself suggests that the solution lies in the financing of investment, and proposes a variation on the overlapping circuits idea. Assuming that investment is financed with long-term credit, firms do not reimburse the whole value of investment within the same period, so that firms in the aggregate reimburse a fraction of that total value, which would account for the existence of profits at the macroeconomic level. The problem with this solution is, again, that it relies on the introduction of an *ad hoc* empirical assumption (investment is financed with long-term credit) which are external to the basic circular flow

and which are often violated in the real world (most investment is financed by firms' own funds in the form of retained earnings).

Chapman and Keen (2006) writing in the same Circuitist tradition also note that all attempts to solve the paradox within the context of the circuit have concluded that profit is a “zero sum gain”: profit earned by one capitalist *must* be at the expense of someone else—be it worker, other capitalist, or banker. They explicate Rochon's idea that a multiperiod analysis might solve the puzzle, and introduce “continuation analysis” to replace the conventional “single period analysis”. Developing a mathematical model in differential equations, they show that profit can exist in a monetary economy and hence, ultimately, that ‘economic activity is possible’ in a circuitist approach. “The economy can function at a sustained level with only a single injection of money and economic activity continues because a proportion of it continues to be lent, renewing the supply of circulating money, and hence production and the generation of income” (Chapman and Keen 2006). Andresen (2009) develops a similar differential equations framework formalizing the reflux theory of profit. This is, of course, a methodologically innovative way to state what Marx suggested, and what Keynes and Kalecki echoed: entrepreneurs need to spend part of their income on consumption for there to be profit to other entrepreneurs. As such, it is open to the same qualifications noted above in the discussion of Marx' reflux theory of profit.

4. In Say's Shadow: Schumpeter and Keynes

Joseph Schumpeter was more explicitly preoccupied with the Profit Puzzle as a central theme in his work than any other theorist. Like Say and Marx, Schumpeter treated the Profit Puzzle in the context of “the circular flow of *traded* goods” (1934:8; our emphasis). In his *Theory of Economic Development* (1912; 1934) he notes that “the fundamental proposition of the equality between the value of the product and of the services of labour and land still excites astonishment”, that this “theoretical conclusion leading to the dilemma (of the Profit Puzzle, GT & DB] may be denied”, and then spent a long section refuting this denial (1934:161,160). He devoted two chapters - one on profit, one on interest – to showing how the Puzzle, to him, was key to understanding the nature of profit and interest. However, while Schumpeter recognized the source of profit and interest as a problem, he treated it as a value problem, not a monetary problem, and embarked on “the investigation of value

phenomena which are at the bottom of profit” (p139). For him the “nature of entrepreneurial profit has nothing at all to do with money.” His explanation of profit was innovation and development: entrepreneurs offering ‘new combinations’ would temporarily reap profit, until others caught up and profit shifted to a new developing sector in the economy (pp130-131). Likewise, Schumpeter asserts that there is also an Interest Puzzle arising from the surplus of the value of products over their costs (p.181) and views also interest as a “value phenomenon -in common with every scientific theory of interest” (p 173). Unlike profit, interest for Schumpeter attaches not to goods but to money, since it is a premium of present over future purchasing power. But again, this does not mean that his analysis concerns the question of how interest is monetized, but rather what its nature is. Indeed, he writes that “the question confronting the traditional theory of interest is: where does it come from? For more than a century theorists have been attacking this impossible, indeed meaningless question” (p.182). Instead, Schumpeter explains interest as a “tax on profit” (p175), arising because of the separation of ownership of capital from its use (p177). Thus, while Schumpeter recognized a Profit Puzzle in value terms, he did not address the question how a monetary profit can arise in a circular flow economy. His analysis was that profit value arises because of development, and interest (a ‘tax on profit’) exists due to the separate functions of entrepreneurs and capitalists.

In contrast, Keynes’ engagement with the Puzzle *was* in monetary terms. Say’s law that supply creates ‘the wherewithal for its own consumption’ mattered to him because he asked how an “increase in the quantity of money is capable of increasing employment” (Hicks, 1973). Keynes’ entry point so was the ‘Expansion Enigma’ related to the Profit Puzzle. In contrast to Schumpeter, to Keynes the Puzzle was not central to his theorizing but encountered as a conundrum while writing draft version of the *General Theory (GT)*, when he thought through the concept of aggregate demand. As we discuss in this section, his *Collected Writings* show that he continued to work on it up till the semi-final version of the *GT*. But he was not satisfied with the outcome and the draft chapter never made it into the published *GT*.

Keynes viewed the topic of aggregate demand as one that had been obscured by the dominance of Ricardo’s ideas. In chapter 3 of the *GT* Keynes writes that "the idea that we can safely neglect the aggregate demand function is fundamental to the Ricardian economics, which underlie what we have been taught for more than a century." In a letter to

Hicks (Hicks, 1973), responding to Hicks' 1937 paper on "Mr Keynes and the Classics", he wrote:

"From one point of view you are perhaps scarcely fair to the classical view. For what you are giving is a representative belief of a period when economists had slipped away from the pure classical doctrine without knowing it and were in a much more confused state of mind than their predecessors had been. The story that you give is a very good account of the beliefs which, let us say, you and I used to hold. But if you were to go further back, how far back I am not sure, you would have found a school of thought which would have considered this an inconsistent hotch-potch." ... "The inconsistency creeps in, I suggest, as soon as it comes to be generally agreed that the increase in the quantity of money is capable of increasing employment. A strictly brought up classical economist would not, I should say, admit that. We used formerly to admit it without realizing how inconsistent it was with our other premises."

Keynes' view was that those 'other premises' in Classical thought had crowded out an earlier understanding that "an increase in the quantity of money is capable of increasing employment". In the *GT* he set out to return to this understanding, and to develop his own analysis of money and employment. How Keynes wrestled with the Profit Puzzle arising from Say's Law while thinking through what would become the *GT* is clearest in his attempt to incorporate 'quasi rents' in draft versions of the *GT*. Drawing on Heyn-Johnsen (2009) and Marcuzzo (2002), we can trace his engagement with the topic from his letters and sketches in the *Collected Writings*, volumes xiii, xiv and xxix.

How did Keynes define profit? Over the course of the year 1935, he corresponded extensively on this question with Harrod. Their exchanges centered on the definitions of user costs and quasi rents, and on how they related to income and profit. Later, he would in chapter 4 of the *GT* include the 'definition of income' as one of three 'perplexities which most impeded my progress in writing this book, so that I could not express myself conveniently until I had found some solution for them'. In grappling with the issue, Keynes' starting point was with the conceptual apparatus developed by his mentor. Marshall in his *Principles of Economics* (Book V, ch IX) had written that "[q]uasi-rent is correctly described as an unnecessary profit in regard to short periods ... it is no part of cost under any conditions". In *CW* xix:68 written in 1933, Keynes incorporated Marshall's quasi-rents in a restatement of the 'fundamental equations' that he had introduced in 1930 in the *Treatise*. Total income Y now included profit Q (for quasi rents) in addition to earnings E (aggregate wages). Earnings

plus profit equated ‘disbursements’ D. At the same time, ‘disbursements’ are also equal to consumption C plus investment I. Thus, Keynes’ reshaped ‘fundamental equations’ in 1933 read:

$$Y = E + Q = C + I = D$$

By introducing ‘disbursements’, Keynes emphasized actual monetary payments (rather than value), linking back to what had been essential in Say’s writings: the per-definition equality of the demand and supply of traded goods in *monetary* terms. Keynes had reformulated Say’s Law in such a way that the Profit Puzzle was staring him in the face. Monetary disbursements to pay for Consumption and Investment had to equal those financing Earnings and Profit. This begged the question – if ‘earnings’ were the rewards to workers and suppliers of capital who consumed or invested it, where does the money to monetize Q come from? With per-definition equalities in a true circuit, there is no possible source. Either the reshaped ‘fundamental equations’ are inconsistent, or profit does not exist.

The latter was of course an unacceptable conclusion, and in the published version of the *GT*, Keynes had departed from Marshallian quasi rents and modified the ‘fundamental equations’ away from the monetary formulation he favoured until 1935. For Marshall, profit was a monetary variable. In 1935, Keynes was still thinking in the same terms. He wrote to Harrod that ‘surely one means by quasi-rent the excess price over average cost, multiplied by the number of units?’ (*CW* xiii, p 538). But shortly afterwards, Keynes changed the formulation of profit from an actual to an expected variable. In his draft chapter on quasi rents, he wrote that ‘[b]y an adaption of Marshall’s convenient term, I shall designate by quasi-rent the excess of the sale proceeds of output (or more strictly, as we shall see in the next chapter, the *expected* excess) over its prime costs” (*CW* xiv, p 412; italics are in the original). He had shifted from an actual, *ex post* profit (as in the *Treatise*) to an expected *ex ante* variable, existing in the entrepreneur’s mind. Of course, this evaded the Profit Puzzle as a monetary problem: entrepreneurial expectations can exist without being monetized – unlike actual profit. Keynes retained this formulation, writing later again that it is the “amount by which the sale proceeds of output as a whole are *expected to* exceed their variable costs” (*CW* xxix 1979:64; italics added). In the end, he omitted the term quasi-rent altogether from the published version of the *GT*. Harrod wrote to him that he was ‘very glad to hear of

your simplification of the chapters dealing with user cost, income etc. [and quasi-rent, GT & DB] because, though very interesting, they did provide a curious stumbling block for the average educated reader.’ (*CW* xiv, p539).

Two questions arise. If Keynes in 1935 removed the ‘stumbling block’ of defining profit as quasi rents, then how did he address the Profit Puzzle in the published version of the *GT*? We relegate a technical account of this ‘how’ to the Appendix so as to move to the second question: *why* did Keynes not pursue the Profit Puzzle as a monetary problem? The answer, perhaps, is that his preoccupation with the ramifications of uncertainty left him no analytical room to also trace monetary relations in the same analysis. Indeed, this appears to have been a conscious decision: in the preface to the *GT* (p. vii), he noted that “whilst it is found that money enters into the economic scheme in an essential and peculiar manner”, he let “technical monetary detail fall into the background”. This was to prove a fateful decision. If Say’s Law, as suggested above, is a statement about the equality of demand and supply in terms of the funds used in sale and purchase, then the Profit Puzzle should also be viewed as a *monetary* problem, and its solution be found in the “technical monetary detail” that Keynes abstracted from in the *GT*. By switching from actual to expected profit, Keynes attempted to resolve the Profit Puzzle in terms of value theory (as outlined in the Appendix), not in terms of monetary theory.

Related to this approach was Keynes’ preference for discussing income in terms of a general price level, rather than in monetary terms. He noted (in the *GT*, ch 4) “the well-known, but unavoidable, element of vagueness which admittedly attends the concept of the general price-level”. Keynes was well aware of the difficulties that would arise when trying to resolve this vagueness; he had confronted them in his draft chapter on quasi-rents where he had tried to pin down profit in monetary terms. He advised against pursuing such problems: “These difficulties are rightly regarded as conundrums. They are purely theoretical in the sense that they never perplex, or indeed enter in any way into, business decisions and have no relevance to the causal sequence of economic events” (*GT*, ch 4). We suggest that Keynes was here committing an error of categories. Businesspeople indeed need not be bothered by such “purely theoretical conundrums” as the Profit Puzzle since there is nothing they can do about it and no way to benefit from it commercially. But that does not mean it is irrelevant to the economy or to economists. The question how a monetary, actual profit can arise in the aggregate does matter on the macro-level and lies squarely in the domain of issues to be

addressed by political economists. One reason is that the existence of monetary profit must be made logically compatible with the circular flow view, if it is to be a framework for analysis of monetary capitalism. Another is that the monetization of profit may well have “relevance to the causal sequence of economic events”, Keynes’ claim notwithstanding.

And so for Keynes the Profit Puzzle remained unfinished business. He retained a lifelong interest in going “further back, how far back I am not sure” to retrace that understanding of “the pure classical doctrine” and to go beyond his contemporaries’ “much more confused state of mind than their predecessors”, as he had written to Hicks in 1937. Among other things, he urged the publishing by the Royal Economic Society of hitherto unpublished manuscripts by a then little known Classical economist. Keynes would not live to see the results, or he would have recognized that here was a theorist who addressed precisely his own question of how “the increase in the quantity of money is capable of increasing employment” and also profit – a tenet wholly “inconsistent with our other [Ricardian] premises”. Before we turn to this, we first conclude tracing the profession’s engagement with the Profit Puzzle after Keynes.

5. From Say’s Law to Walras’ Law: The Profit Puzzle in Post-War Macroeconomics

Just as the Profit Puzzle was neglected in political economy debates before Marx, so it was in economics after Schumpeter and Keynes (the Circuitists excepted). The emblematic treatment is by the young Paul Samuelson in the first edition of his famous textbook in 1948, which was repeated throughout subsequent editions (including the Samuelson and Nordhaus editions). In *Foundations of Economic Analysis*, Samuelson recognized the Profit Puzzle but did not pursue it. He attributed the problematic existence of profit (or ‘net revenue’) simply to ‘something’ and asserted that this ‘something’ is of no further consequence:

“It is quite clear that in the real world net revenue is not zero for all firms, nor is it tending towards zero. This is true under pure competition as well as impure competition. It is clear that this residuum must be “due” to something, and it may be labeled by any name we please (rent to institutional advantage, etc.).... The existence of this residuum does not imply any indeterminacy whatsoever.” (Samuelson 1948: 87)

Likewise on interest, in a paper titled *Schumpeter as an Economic Theorist* written forty years later, Samuelson took issue with Schumpeter's preoccupation with the source of interest, another manifestation of the Profit Puzzle (see also Samuelson, 1971). Samuelson recognized that underlying the formulation of the problem was the circular flow "doctrine that *all* value is decomposable into land rent and labor wages" (Samuelson 1988:22; italics in the original) and countered it with a 'naïve' or 'real' theory of interest. He concluded that Schumpeter must "throw in the towel: when 100 rice as input yields 110 rice output at the end of the year, no steady-state (real, 'own') rate of interest can obtain other than 10 % per year." (Samuelson 1988:23). Samuelson so conceived of the problem as one of physical productivity, not as a monetary problem. It appears he also misconstrued Schumpeter's (1934:158) position, who expressly wrote that "interest attaches to money, not to goods". In any case, the 'something' that profit and interest must be due to was irrelevant to his analysis. It is this position against which Schumpeter had in 1934 defended himself writing that "I have not been able to convince myself that such questions as the source of interest are either unimportant or uninteresting. They could be made so, at all events, only by the fault of the author." Likewise, Schumpeter's inspiration Marx had warned against "obviating this difficulty by plausible subterfuges".

And yet macroeconomic analysis as it developed after the first edition of Samuelson's textbook proceeded to obviate the Profit Puzzle still more completely. Paradoxically, the Profit Puzzle is important to post-war macroeconomics precisely because of its absence, as argued by Godley and Shaikh (2002). They discuss that the central models of macroeconomics are consistent *because* there is no real net income of the business sector not completely distributed to households – that is, no profit. Godley and Shaikh (2002) address the (Walrasian) 'Standard Macroeconomic Model' with four markets - for labour, commodities, bonds and money – underpinned by microfoundations and overall budget constraints. Key properties of the model are a strict separation of real and nominal variables, and (significantly) the absence of defined flows of real financial payments. Thus the monetary dimension is left out of the model. A precondition for its solution is Walras' Law that excess demand in these four markets must sum to zero. Say's Law which, as argued above, was very much about the flow of funds, is so replaced by Walras' Law, in the process omitting an explication of the flow of funds.

The point made by Godley and Shaikh (2002) is that this omission is not incidental but essential. They demonstrate that attempts to specify the flow of funds undermine the model's general equilibrium properties and its separation of real and nominal variables. The entry point in explaining this is a 'curious ... inconsistency in its treatment of the distribution of income', connected to 'the apparently innocuous assumption that all of the real net income of the business sector (the real value of the net product) is somehow distributed to households' (Godley and Shaikh 2002:1). The implication of this assumption is that there cannot be profit (and investment) at levels required by the model since 'profit ... would be taken from funds which would otherwise be used for investment, and which then have to be made up by extra borrowing.' In other words, 'full disbursement of profit to households implies that firms must finance investment entirely through borrowing... They would simply be robbing Peter to pay Paul' (Godley and Shaikh, 2002:11). Rectifying the Standard Macroeconomic Model to correct this inconsistency (by specifying the financial payments to households) leads to important anomalies, such as the crowding out of investment and falling prices by a rise in the money supply. More generally, nominal variables now have real effects, which contradicts the model's microfoundations of optimization in real terms, disregarding nominal development. In brief, the Standard Macroeconomic Model cannot survive an explication of its structure (specifying the financial payments to households) consistent with one of its assumptions (all of the real value of the net product is distributed to households).

Nor have the value and monetary approaches to the macroeconomy since been reconciled. For instance, Patinkin (1965) in his *Money, Interest and Prices: An Integration of Monetary and Value Theory* is forced to make a number of strained and unmotivated behavioural assumptions to resolve it in *ad hoc* manner. Later authors using Walras' Law equally sidestepped the problem of where financial flows come from and go to - e.g. Buiters' (1980) seminal paper on Walras' Law posits 'dividend payments' without explaining them. The contemporary, applied form of the 'Standard Macroeconomic Model' is the Computable General Equilibrium model widely used today in policy analyses as diverse as fiscal reform, development planning, international trade and environmental regulation. Also these models are characterized by the absence of monetary flows, and by implication of monetary profit.

6. Bentham's Theory of 'Fresh Money'

We have argued that the Profit Puzzle was not satisfactorily solved either by locating a solution within the circular flow economy (e.g. consumption, as in the reflux theory of profit), by explaining the nature of profit but not its monetary source (as Schumpeter did), by redefining its monetary character in terms of psychological variables (as Keynes did), or by treating it as unimportant (as Samuelson and postwar macroeconomics did). In this section we tentatively suggest that a solution is possible inspired by the work of an early Classical thinker who did none of the above. He traced monetary flows as conceptually separate from the circular flow of goods and services. This is important - for there to be profit, something must be 'thrown in' (Marx) or 'injected' (Keen). Money must therefore be viewed as conceptually separate from the real economy, as Adam Smith emphasized in the *Wealth of Nations* (Chapter 2, Book 2 - italics added):

“[M]oney, by means of which the whole revenue of the society is regularly distributed among all its different members, *makes itself no part of that revenue.* The great wheel of circulation is altogether different from the goods which are circulated by means of it. The revenue of the society consists altogether in those goods, *and not in the wheel which circulates them.*”

While Adam Smith had stated the separate role of the financial sector, it would be left to his student Jeremy Bentham to think through the implications. Bentham was highly regarded by the founding fathers of British political economy, but had little impact on later theorists such as Marx and Schumpeter - plausibly because Bentham's writings remained relatively obscure until the second half of the last century. We relegate a brief discussion of the reasons to Appendix B.

Bentham's frame of reference was Say's Law in monetary terms, which Bentham in *The True Alarm* (Bentham 1952, vol II) stated as a logical equality: “all prices given for all the salable articles sold within a year cannot be anything but the total amount of money given for them”. His ideas on money and growth were part of a lively debate in the 18th century on the effects of an increase in money in circulation. The common representation of this debate is to pitch mercantilists such as Josiah Tucker and James Steuart (who argued that money expansion could increase economic activity) against 'price-specie flow' advocates such as

John Law and David Hume (who held that new money would only increase prices). In fact, as Hudson (2007:41-49) argues in a review of this literature, it is more probable that both sides recognized that under normal 18th century conditions of underemployment, the first effect of more money was for more labour to be employed and economic activity to increase, with the price-specie flow mechanism and rising prices as a special case towards which the economy tended under full employment (Hudson 2007:41). The debate thus was, (in Bentham's terms discussed below) about the business cycle conditions under which 'fresh money' would add to "the growing mass of real wealth" or alternatively to the "increase of prices" – a debate that Keynes revisited in his *GT*.

In his *Institute of Political Economy* Bentham (1952, vol I) asked when "fresh" money (i.e. Keynes' 'increase in the quantity of money') can increase the 'growing mass of real wealth' or, in contemporary terms, economic growth (and employment, which preoccupied Keynes). His two key ideas were that an increase in "fresh" money, if productively invested, would imply an increase in the size of the economy and the remuneration of production factors; and, second, that there are is also another type of monetary flows not claimed by factor owners. This creates the possibility of monetizing profit (and interest) *outside* of the circuit of productive investment and the remuneration of production factors, so avoiding the paradox of the Profit Puzzle. Bentham so outlined the linkages between, on the one hand, "fresh" money productively used and the increase in employment that Keynes studied and, on the other hand, between "fresh" money used otherwise and profit. The central passage, in this respect, from Bentham's *Institute of Political Economy* is worth quoting at some length (Bentham, 1952: 347, 349):

"If the fresh money, on the occasion of the first employment or expenditure made of it, is employed in purchases, the immediate effect of which is to make an immediate addition to the mass of really productive capital, it then makes by the amount of such purchase a clear addition to the growing mass of real wealth, beyond what would have existed otherwise.

"If the fresh money, on the occasion of the first employment or expenditure made of it, is employed in purchases, the immediate effect of which is not to make any immediate addition to the mass of really productive capital, it then makes no addition to the growing mass of real wealth."

“No sooner, however, does it [“fresh money”] pass on from this its primary destination (that of adding to real capital) to the other, viz. that of adding to unproductive consumption, than its power of producing an addition to the mass of the matter of real wealth is at an end: thenceforward and for ever it keeps on contributing by its whole amount to the encrease of prices, in the same manner as if from the mines it had come in the first instance into an unproductive hand without passing through any productive one.”

Bentham’s analysis is brief but more subtle than was usual in the debate on the growth-versus-inflation effects of ‘fresh money’. He discusses three types of financial flows. First, money newly entering into circulation and spent on purchases “the immediate effect of which is to make an immediate addition to the mass of really productive capital”. Second, money newly entering into circulation and spent otherwise (i.e. not on ‘productive capital’). Third, money remaining in circulation after having financed “an immediate addition to the mass of really productive capital”.

The repeated “immediate” indicates that Bentham, like Say, was not portraying long causal chains, but immediate, per-definition equality of money spent and “wealth added” – “by the amount of such purchase”. The qualification is that the money should be spent ‘productively’ – and, importantly, Bentham explicitly allows for the possibility of it being used ‘unproductively’. What sort of ‘unproductive’ uses Bentham had in mind is also clear from the citation: ‘unproductive consumption’. Again, recognizing that in contemporary terms the money stock is increased not by ‘the mines’ but in the process of bank credit creation, Bentham was distinguishing between consumption credit and credit invested in productive enterprise. Productive credit creation was to be the exclusive focus of later analyses of the credit-growth relation. Schumpeter would write that “banks do not of course, ‘create’ ... machines. They do, however, something ... which may lead to the creation of ‘real capital...’”. (Schumpeter 1954:1114; quoted in Werner, 2005:214). But Bentham was special among Classical economists in explicitly tracing the effects of other liquidity flows unrelated to rewards to factors of production and to total value-added growth.

Bentham also distinguished between the primary and secondary uses of money. Money once introduced into the circuit would thereafter only increase prices. Significantly, Bentham does *not* equate money in the first instance used for ‘unproductive consumption’ to money ‘passing on’ in the financial circulation and causing inflation. In this, he went beyond

the dichotomy of his days. It begs the question - if the money described in the second paragraph of this quote neither adds to real wealth nor to inflation, then what is its effect?

This, we suggest, directly relates to the Profit Puzzle. Since the first type of financial flow must all go to factor owners as their income (as Marx and Schumpeter emphasized repeatedly), by elimination any profit *has* to be monetized from an increase in the quantity of money of the second type, “the immediate effect of which is *not* to make an immediate addition to the mass of really productive capital”. ‘Unproductive’ credit, while not financing factors of production, is nevertheless key to the production process as it increases effective demand and allows for monetary profit to be made.

This interpretation foreshadows Keynes’ emphasis on supporting effective demand by deficit spending – however, it leaves open the option that deficit spending can originate in the private as well as the public sector. Indeed, credit creation for private consumption purposes (equity withdrawal via mortgage lending) is very sizeable in modern economies and an important component of effective demand. This ‘fresh money’ (borrowing) unrelated to factor rewards also anticipates Godley and Shaikh’s (2002) logical conclusion on what the introduction of profit would do to the Standard Macroeconomic Model if it were taken from factor rewards: ‘profit ... would be taken from funds which would otherwise be used for investment, and which then have to be made up by extra borrowing.’ Further, it is related to Marx’s solution of new money being ‘thrown in’ into the real economy, but with important differences discussed below.

The existence of fresh money (borrowing) unrelated to factor rewards is also relevant to the non-monetary nature of Leontief’s input-output model and of Computable General Equilibrium models based on it. Since these liquidity flows are by definition unrelated to factor rewards, their volume is by definition indeterminate in a real-economy framework, and this would lead to non-solvable models. It follows that the absence of money and profit from models grounded in the real sector circular flow is not incidental, but necessary - as already asserted (but for other reasons) by Godley and Shaikh (2002).

7. An Evaluation

In this penultimate section we ask how our interpretation of Bentham’s analysis compares to that by the three great economists who grappled with the Profit Puzzle. While Bentham’s

writings were not explicitly about this conundrum, his special contribution, we suggest, lies in combining (i) a distinction between productive and other investments financed by fresh money, and in (ii) his vision of a role for a financial sector separate from the real economy (following Smith). He so escaped Marx' strict identification of capitalists with money creation, as well as his insistence that surplus value was generated within the circular flow even if realized with money from outside the flow. Bentham also avoided the isomorphic 'investment' that clouded Keynes' analysis and Schumpeter's neglect of unproductive credit. In this section we briefly discuss these features.

The solution to the Profit Puzzle suggested here is closely related to Marx's solution of new money being 'thrown in' by capitalists into the real economy. There are three differences. The most important one is that it avoids linking the generation of profit to forces within the circular flow economy (which immediately brings in the Profit Puzzle), unlike the Marxian analysis in which surplus value *generation* is determined in the real economy and surplus value *realization* is passively accommodated from 'money hoards'. Marx, as noted, expressly made this distinction between form and substance. Another difference is that the monetization need not be capitalists'. It is essential that some consumers (be it a worker or capitalist, in Marx' dichotomy) go into debt in order to consume, and immaterial from which class he or she is - it could be the government. This is important because, as we noted, capitalists have no rationale for 'throwing in' money which they can at best only recoup. In the rationale of the credit creation process (where loans are a source of income to banks), there is. Also, this explanation emphasizes that *fresh* money is the key, and so accords the credit system a prime mover status in generating profits in the system. For Marx, as just discussed, the credit system was a secondary phenomenon, especially "so far as it supplies or sets in motion money-capital." Finally, this explanation avoids recourse to some *ad hoc* assumption made in the reflux theory literature building on Marx, such as multiple circuits or trade surpluses (Rochon 2008).

It is also noteworthy that Marx did recognize that the credit system enormously expanded the scope of modern capitalism. In Chapter 30 of *Capital* titled "Money-Capital and Real Capital", he wrote that "[t]his disposes also of the absurd question whether capitalist production in its present volume would be possible without the credit system (even if regarded only from this point of view), that is, with the circulation of metallic coin alone. Evidently this is not the case. It would rather have encountered barriers in the volume of

production of precious metals”. Further, Marx also wrote of ‘productive’ “credit, whose volume grows with the growing volume of value of production”, as different from “the plethora of moneyed capital—a separate phenomenon alongside industrial production” (*Capital*, Ch 30). But while Marx made the distinction, he did not link ‘moneyed capital’ to the existence of monetary profit, or discussed the role of the credit system in its realization. He continued the above quote that “[o]n the other hand one must not entertain any fantastic illusions on the productive power of the credit system, so far as it supplies or sets in motion money-capital. A further analysis of this question is out of place here.”

Marx’s student Schumpeter also made, and maintained, the distinction between productive and unproductive credit, most explicitly in his 1939 *Business Cycles*. But Schumpeter did not apply this distinction in an analysis of the conditions under which credit creation was a solution to the monetary source of profit or interest. He used it primarily to characterize stages of the business cycle, to explain that “[d]ebt arising from credit created to finance the innovations and business expansions that increase productivity is ‘productive’ debt. But credit created in the secondary wave for consumers, speculative businesses and financial speculators, results in a build-up of ‘unproductive’ debt... (as summarized by Leathers and Raines, 2002:672). Early in life, he did recognize that credit was the key to the Interest Puzzle, but he proceeded to develop his thoughts only about *productive* credit. In his 1908 *The Nature and Essence of Theoretical Economics*, Schumpeter (1908:417, 418, quoted in Shionoya: 1997:147) had written that “the essential thing is the interest on lending that is used for the creation of new industries, new forms of organization, new technologies, and new consumer goods... In development and credit lies the source of the interest phenomenon, and the explanation must be sought here.” Wolfson (1958:50) notes with respect to Schumpeter’s “insistence that in the circular flow the rate of interest goes to zero” that “he could only have meant the "productive" rate”.

As noted, for other types of credit - such as consumptive credit— the doctrine that *all* value is decomposable into land rent and labor wages is not applicable, and hence there is room for profit, and for resolving the Profit Puzzle. But Schumpeter never wrote on the role of ‘unproductive’ credit in monetizing profit and interest. In his 1934 *The Theory of Economic Development* he recognised that ‘development’ – his explanation of profit – starts with borrowing, but only as a means of purchasing power for new business to be founded (p.130), not specifically to monetise profit. His separates the (pejorative) treatment of

consumption loans by writers in antiquity and by the Schoolmen from his own theory, which is about productive loans only (p.179). Indeed, Schumpeter (1913:449, quoted in Reisman, 2004:69) deemed the ‘loan made for consumption .. for my purposes quite irrelevant’, though he added that ‘I may have underestimated it’. In the preface to *The Theory of Economic Development* he wrote that he hoped “to supply before long the detailed material which is here missing by more "realistic" studies in money and credit, interest, and cycles." It may well be that such material never materialised because Schumpeter later in life came to favour a general equilibrium framework of analysis, where money does not figure.

Keynes appreciated that credit creation meant that money appeared ‘out of thin air’ and therefore was truly exogenous to the circular flow economy. He also introduced a distinction in the *Treatise on Money* between the ‘financial circulation’ and ‘industrial circulation’, not unlike Bentham’s distinction of money within and outside of the real sector. But Keynes did not develop this further and “let technical monetary detail fall into the background” in the *GT*. His “savings = investment” equality fatefully implied that *all* liquidity of savings must support productive investment, leaving no room for liquidity generated in the savings process but used for purposes which do not directly contribute to “the mass of really productive capital”. In Keynes’ framework, therefore, it was not possible for “fresh” money (that is fresh credit creation) to cause profit; it could only increase factor content.

8. Reflections and Conclusion

This paper has made three contributions to the Profit Puzzle debate. The first is to argue for a monetary interpretation of the puzzle, and to view it as a logical (not an empirical) paradox in the context of Classical circular flow economics. A second contribution was to provide, using this lens, a bird’s eye view of the intellectual history of the Profit Puzzle. We analysed how Marx, Keynes, Schumpeter and Samuelson engaged with the profit and interest puzzles. A third contribution has been to suggest that the work of Jeremy Bentham in the *Institute of Political Economy* provides a framework to address the Puzzle.

The paper so aims to make a contribution to our understanding of the history of economic thought. In conclusion, it may be fitting to also briefly discuss the relevance of those ideas today. It seems appropriate, writing at a time of global recession caused by a

credit crisis, to draw attention to an early Classical economist who pointed to the role of ‘fresh money’, or credit creation, in understanding how an economy’s profit and expansion are monetised. Precisely because in this analysis profit levels are both supported by credit creation and not fully determined in the real economy, this allows for credit booms and busts in a profit-driven monetary economy, and for lagging investment and productivity in goods and services alongside an expanding financial sector trading in credit and its derivatives.

The analysis in this paper may be connected to the now vast empirical literature sparked by King and Levine (1993) with their paper “Finance and Growth: Schumpeter Might Be Right“. Following Schumpeter’s lead, this strand of research quantifies credit flows and their impact on GDP growth, but without recognizing the different functions that ‘fresh money’ can have; and this may well account for some important anomalies in the empirical findings. The role of credit is also curiously disconnected from current monetary theory and research – prompting e.g Borio and Lowe of the Bank for International Settlements in 2004 to write a paper titled “Should Credit Come Back From The Wilderness?”. This is recurrent theme: in 1933 Lauchlin Currie likewise complained about “Treatment of Credit in Contemporary Monetary Theory” in a *Journal of Political Economy* article so titled. Tracing this treatment, going back to the 19th century Banking School controversy in Britain (Skaggs 1999), would make for a fascinating study in itself.

If the analysis of credit is to be reintroduced into mainstream monetary theory - as today e.g. Werner (2005), Gardiner (2006) Geanakoplos (2009) and Schularick and Taylor (2009) argue it should - then the Benthamite distinctions appear relevant in understanding its different potentials. Bentham’s principles directing a “further analysis of this question” (which Marx ruled out) appear in line with the still relatively rare contemporary analyses that do distinguish between ‘productive’ credit growth and GDP growth on one hand, and the existence of other credit flows unrelated to productive, real-sector transactions, which therefore can monetize profit. For example, Werner (1997) disaggregated credit into productive (real-sector) credit and other credit (e.g. for consumption or mortgages). He found that GDP expands in a one-on-one relationship with growth of productive credit to the real sector, and he finds empirical confirmation of this in credit data from Japan. Likewise, the Federal Reserve Board comments that many contemporary “[a]nalysts have found that over long periods of time there has been a fairly close relationship between the

growth of debt *of the nonfinancial sectors* and aggregate economic activity” (Board 2009:76; italics added) – that is, between ‘fresh money the immediate effect of which is to make an immediate addition to the mass of really productive capital’ and ‘the growing mass of real wealth”, in the words of Jeremy Bentham. These findings (also Caporale and Howells, 2001; Benk et al, 2005; Lown and Morgan, 2006) serve as empirical illustration of the points made by Bentham. Thus, we hope to provide one more instance of the contemporary relevance of lessons from the history of economic thought.

Appendix A: Keynes' Non-Monetary Solution to the Profit Puzzle

If Keynes in 1935 removed the 'stumbling block' of defining profit as quasi rents, then how did he address the Profit Puzzle in the published version of the *GT*? The answer centres on his definition of savings. As traced by Marcuzzo (2002), in the *Treatise* he had defined saving as 'economising', but in 1933 he redefined saving *S* as income minus consumption (Keynes 1979:69) while introducing a variable *S'* for his previous notion of saving as 'economising'. He maintained saving *S* defined as income minus consumption into the published version of the *GT*: in chapter 6 he wrote that '[s]o far as I know, everyone is agreed that saving means the excess of income over expenditure on consumption.' Writing in 1933, Keynes held of the *Treatise* and *GT* definitions that 'they deal with essentially the same concept' (Keynes 1979:72).

If one accepts Keynes' *GT* definition of savings, and also that this is 'essentially the same concept' as the 'economising' introduced in the *Treatise*, one runs into inconsistencies which are inherent in the Profit Puzzle. For it turns out to be the *difference* (not the 'essential sameness') between saving *S* and economising *S'* which is the single reason why Keynes could have positive profits in his framework. But Keynes never clarified what precisely that difference might be, and how it relates to his earlier assertions that *S* and *S'* represent 'the same concept'.

Keynes' reasoning runs as follows. Having Savings equal to Income minus Consumption implies

$$S = Y - C = E + Q - C$$

which in flow terms (indicated by *d* for 'delta'), and combined with the tenet that savings equal investments, translates to

$$dS = dQ + d(E - C) = d(I)$$

In contrast to saving *S*, the change in economizing *S'* was defined to be the change in the community's excess of earnings over consumption, which is also assumed to equal to investment:

$$d(S') = d(E-C) = d(I)$$

Combining the above, Keynes could conclude that Profit Q is the difference between saving and economizing - even though he had earlier proclaimed them to be 'essentially the same concepts' so that Profit, logically, should be zero:

$$d(Q) = d(S) - d(S')$$

This gave Keynes his ground to conclude that profit could be positive: namely, if investment is increasing faster than the community is economizing (Rhymes 1989:11), then entrepreneurs have positive profit expectations. Keynes had thus not really addressed the question of how a positive monetary profit can exist, but rather the question how output will be increased by the expectation of positive profits – which he postulated rather than explained, and this by contradicting his earlier statement that Saving and Economising are 'essentially the same concepts'. The monetization of actual, *ex post* profits remained unaddressed.

Appendix B: James Mill, Ricardo and Bentham's Late Publication

Jeremy Bentham (1748-1832) has been described as “the most formidable reasoner who ever applied his gifts to the practical questions of administration and politics” (A.J.P. Taylor, quoted by Nicoll, 2009). And yet in 1968 when the first two volumes of a new edition of his *Collected Works* appeared, it was noted by Maurice Cranston in *The Guardian* that “[o]f all the great theorists of the Age of Reason, Jeremy Bentham has hitherto been the most neglected” (Nicoll, 2009). One reason was perhaps, as his editor W. Stark wrote in the preface to the first edition of his *Collected Works* (Bentham, 1952), that he “did not write in order to publish: he wrote primarily in order to clear his mind, and he left it willingly to others to make books out of his materials”. But his long obscurity is the more surprising as he was highly regarded by the founding fathers of British political economy. “A very superior man,” was Adam Smith’s reported view, and also David Ricardo thought very highly of his ideas.

Like Say, Bentham was an ardent admirer of Adam Smith. “The perusal of Adam Smith’s *Wealth of Nations* was of decisive importance for the later development of Bentham’s economic thought. He read it and re-read it until he was thoroughly familiar with the work. “The *Wealth of Nations* was Bentham’s economic bible and he assimilated it until he thought in its terms and spoke its language.”, wrote Stark. Bentham himself acknowledged his intellectual debt to Adam Smith in a letter written to Smith in 1787 as follows: “Instead therefore of pretending to owe you nothing, I shall begin with acknowledging, that, as far as your track coincides with mine, I shall come much nearer the truth, were I to say I owed you everything.” (Bentham 1952:167).

James Mill, father of John Stuart Mill and Ricardo’s mentor, played a decisive role in the delayed publication of Bentham’s ideas. The story involves a manuscript, written around 1800 and translated into French with a view to its publication on the continent. In 1810, the translator approached James Mill for an “authoritative” view on the work’s merits before deciding on its publication. Mill was not much impressed. Writing to Ricardo, he held the work to be “in some respects too elementary – in others too abstruse – the premises and conclusions are not placed in the most lucid order, and the views are not always correct.” (Ricardo 1952: 14). “I do not think it will do for publication,” he concluded, adding: “I shall thank you to jot down your remarks [on the work] – and to make them pretty minute.

Because as my opinion will be followed in regard to the propriety of publishing, I shall be glad to have my opinion fortified by yours.”

But Ricardo disagreed. “I have read,” Ricardo wrote, “more than half of the MS which you sent to me with which I have been very much pleased. As far as I am able to judge it contains some very able and just views of the subject on which it treats, which I should be sorry should be wholly lost to the public; but at the same time I am of opinion that it contains some radical defects which will prevent it, as a whole, from effecting much good without considerable alterations.” (Bentham 1952:14-15). Ricardo then listed some of these “radical defects,” but concluded his letter to James Mill as follows: “These are a few of the principles which have struck me as radically wrong in the work which I have perused. It contains however much that is excellent and I should be sorry if we should lose what is good because some error may be mixed with it.” (Bentham 1952:17-18). Mill’s advice with respect to the “propriety” of the work’s publication was heeded. It would remain “wholly lost to the public” for another 142 years.

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