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SAY'S LAW, THEORY OF THE RATE OF INTEREST AND CAPACITY UTILIZATION IN RICARDO(*)

(Or, can one find solid reasons in support of Say's Law in classical economics?)

I

I.1. Can one find in the classical authors solid reasons in support of the thesis that growth is determined by the reinvestment of full-utilization savings, or, that recessions are not due to deficiencies of aggregate demand, or again, that 'general gluts' are impossible; in other words, in support of Say's Law? This is the question motivating the present paper; the inquiry here will be however limited, mostly, to asking why *Ricardo* accepted Say's Law.

The dominant opinion appears to be that Ricardo, just like his great opponent Malthus, simply

> took it as a fact that anyone who had saved would have used his savings to employ productive labourers, or would have lent it to others who would have so used it (Garegnani, 1978, p. 339).

On this basis, Ricardo is seen as taking it for granted that saving decisions are translated into investment decisions, to the point of using the term "savings" to *mean* investment too([1]). Thus Garegnani has argued that

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(*) The present paper is a considerably modified re-writing of Petri (1983).

[1] . Cf. e.g. Meek, 1950-51, p. 156, fn. *ii*; Corry, 1959; Corry, 1962, p. 126; Robbins, 1958, p. 248; Schumpeter, 1954, p. 64; Tucker, 1960, p. 135; Garegnani, 1978, *cit.*; O'Brien, 1975, p. 229;

> in Ricardo 'Say's law' was not the result of an analysis of the investment-saving process but rather the result of the *lack* of any such analysis (Garegnani, 1978, p. 340)

and, in particular, has denied the existence in Ricardo of a role of the rate of interest in bringing investment into equality with savings, a role which could on the contrary be attributed to the rate of interest in the later marginalist approach owing to the different theory of distribution of this approach, based on capital-labour substitution, a notion absent in Ricardo (*ibid.*, p. 339).

I.2. On the basis of his analysis of the connection between monetary theory and theory of the rate of interest in the classical economists, Caminati (1981) reaches a different conclusion. He argues that the monetary theory of classical authors implied the existence of a mechanism bringing the decisions to invest into equality with the decisions to save; and that, in this mechanism, a central role was played by the rate of interest for two connected reasons: first, because of the role of a positive interest rate in preventing savers who did not wish to become themselves entrepreneurs from simply hoarding their saved monetary revenues; second, because of the high sensitivity of investment decisions to the difference between profit rate and interest rate, a sensitivity which was the foundation of the gravitation of the interest rate towards its 'natural' level, and thus guaranteed the positivity of the interest rate and the capacity of decreases of the market interest rate to bring investment decisions to absorb the whole of the available investible funds. His conclusion is that the classical authors did not identify saving decisions and investment decisions and that

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Sowell, 1974, p. 41. In the more recent literature some doubts have been raised only about the correctness of this view as far as *Malthus* is concerned (the relevant recent works are cited by Hollander, 1997, p. 507 fn. 5: Hollander on the contrary re-affirms the traditional view). Anyway one should be careful not to view Ricardo as *identifying* saving decisions and investment decisions: as will be shown, he does see that the decisions to abstain from consuming one's entire income, and the decisions to employ productively the income saved, may be taken by different people - so that the question of whether savings will be all invested does arise.

> the strength of Say's Law in classical economics arose from the same premises supporting the classical analysis of the demand for money and of the relationship between financial flows and real flows (Caminati, 1981, p. 102)([2]).

I.3. Caminati does *not* say that the classics *explicitly argued* that Say's Law derived from the mechanism which, according to him, was implicit in their analyses "of the demand for money and of the relationship between financial flows and real flows"; on the contrary, he admits that the classical economists

> failed to show how the supply and the demand for loans were brought in equilibrium by changes in the rate of interest. In their analysis of accumulation they merely assumed the correspondence between saving and investment decisions. Nor did they usually point out that monetary influences disturbing the rate of interest would also affect the savings-investment relationship. (Caminati, 1981, p. 84)([3])

But the derivability of a possible defence of Say's Law from classical analyses is anyway important even if classical authors never enunciated it or became fully conscious of

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[2] . Caminati continues by arguing that this interpretation in no way conflicts with the point made by Garegnani that, differently from the marginalist/neoclassical approach to distribution, on the issue of Say's Law "Ricardo's theory of distribution is *open*, in the sense that it *neither* provides premises capable of justifying the tendency of investment to adjust to savings, *nor* depends on the existence of such a tendency" (Garegnani, 1978, p. 340). However, one element of Ricardo's approach to distribution – the given real wage, which is what makes the rate of profit insensitive to variations of the rate of interest – *is*, in Caminati's reconstruction, a premise for a defence of Say's Law; it stops being so only when it is argued – as I, for one, would tend to argue – that the classical approach may well take the forces determining distribution to act directly on the rate of profits (e.g. through the rate of interest, cf. below, para. VI.5) rather than directly on the real wage: so that it is not the given real wage as such that characterises the classical approach to distribution, but rather the determination of the distribution of the surplus (net of rent) between capital and labour on the basis of complex social, historical and political elements conditioning their relative bargaining strength.

[3] . The exception, according to Caminati, is Joplin, who analysed these problems "starting from the same premises of monetary theory shared by the classical economists" (*ibid.*) and clearly stated that the rate of interest brings about the equality between supply and demand for savings. However, O' Brien (1993) argues that Joplin admitted that this mechanism did not alway work (one reason was that the country banks kept the interest rate fixed) and "seems to have envisaged the possibility that the circular flow of income and expenditure could be in equilibrium at various levels", admitting effects of changes in the quantity of money on aggregate output (O' Brien, 1993, p. 93). A discussion of Joplin's writings is beyond the scope of the present paper.

it. The reason is as follows. The arguments adduced in support of Say's Law by the later marginalist approach must by now be admitted to be devoid of foundation. Those arguments revolve around the supposed capacity of the rate of interest to act as the 'price' bringing the decisions to invest into equality with the decisions to save, owing to a significant negative elasticity of investment vis-à-vis the rate of interest, an elasticity justified by the conception of capital as ultimately a homogeneous factor of production substitutable with labour just like land – a conception which has been shown to be indefensible in the capital debates. But the abandonment of that conception of capital deprives of its foundations not only the marginalist belief that savings determine investment, but also the entire marginalist approach to distribution([4]). The main alternative to the marginalist approach to distribution is the classical one of Smith and Ricardo, then taken over and developed by Marx. Now, the advocates of a resumption of the classical approach, including the present writer, argue in favour of the integration of the classical approach to value and distribution (as clarified and improved by Sraffa and others) with a theory of output, employment and growth not based on Say's Law but rather on the Keynesian principle of effective demand (it is savings which adjusts to investment through variations of the level of aggregate output). For this research programme, the possibility of a justification of Say's Law based not on the marginalist but rather on the classical approach to distribution is obviously a challenge: at least one of the assumptions of such a justification must be shown to be untenable, if one is to go on refusing the existence of a spontaneous tendency of decisions to invest to adjust to decisions to save.

The following inquiry aims at throwing some light on this question. Also because Caminati's article has had so far little impact, the present paper tries to list in as clear a manner as possible all the elements of the mechanism which, according to Caminati's interpretation, might have been used by the classical authors to justify Say's Law, and to show that indeed they can all be found in a single author: Ricardo. Concentration on a single author precludes the risk of treating as a single coherent body of thought what might be diverse positions. Ricardo is the chosen author because he is the one who most consistently

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[4] . As shown by Schefold (1997) and Garegnani (2000), the stability of the savings-investment market is questioned by reverse capital deepening in neo-Walrasian intertemporal or temporary equilibria just as much as in the traditional versions relying on homogeneous capital.

determines the rate of profits *independently* of the rate of interest, what is essential to the mechanism. I have chosen to quote extensively, to help the reader who is not a Ricardo specialist. I then proceed to discuss the solidity of the reconstructed mechanism: this is found wanting for several reasons. The conclusion is that the answer to the question opening the paper must be negative.

II

II.1. The explicit statements in which Ricardo denies the possibility of general gluts are well known, and amount to no more than a restatement of Adam Smith's basic propositions on the subject (it would not be far fetched to consider Adam Smith as in fact the originator of Say's Law). Two of the reasons advanced to support that denial are well summarised by G. S. L. Tucker as follows:

> first, that human wants are unlimited, their satisfaction being restricted only by the ability to purchase; and secondly, that accumulation from profits constitutes demand for commodities equally with the personal consumption of capitalists, the only difference being that accumulation results in demand for a different kind of commodities, namely wage-goods, materials and equipment (Tucker, 1960, p. 123);

to which the absence of hoarding of any relevance, and hence the fact that all income will be spent, must be added as a third basic proposition. The relevant passages in Smith's work are well known and it is unnecessary to quote them here (e.g. Smith, 1937, pp. 165, 268, 321, 323)([5]). Given the purposes of the present paper, it seems opportune to quote some of the statements by Ricardo:

> Is not this assuming that what is not spent is hoarded. The revenue is in all cases spent, but in one case the objects on which it is expended are consumed, and nothing

[5] . Also cf. James Mill: "Nothing is more clear, than that the self-interest of men, ever has impelled and ever will impel them, with some very trifling exceptions, to use every particle of property which accrues to them, either for the purpose of immediate gratification, or of future profit." (James Mill, [1808] 1966, p. 129).

> reproduced, in the other those objects form a new capital tending to increased production (*Works III*, p. 299[6]: *Notes on Bentham*, 1810-11).

> No mistake can be greater than to suppose that a nation can ever be without wants for commodities of some sort. It may possess too much of one or more commodities..... (No) country ever possessed a general glut of all commodities (*Works III*, pp. 107-8: Appendix to *High Price of Bullion*, 4th ed., 1811)

> We agree too that effectual demand consists of two elements, the power and the will to purchase, but I think the will is very seldom wanting where the power exists - for the desire of accumulation will occasion demand just as effectually as a desire to consume (*Works VI*, p. 133: Letter to Malthus, 16 Sept. 1814)

> If half as much corn again as usual were produced again next year, a great part of it would undoubtedly be wasted, and the same might be said of any commodities which we might be ingenious enough to name - but the real question is this; If money should retain the same value next year, would any man (if he had it) want the will to spend half as much again as he now does - and if he did want the will, would he feel no inclination to add the increase of his revenue to his capital, and employ it as such. In short I consider the wants and tastes of mankind as unlimited. We all wish to add to our enjoyments or to our power. Consumption ads to our enjoyments, - accumulation to our power, and they equally promote demand (*ibid.*, pp. 134-5).

> It appears to me, that no man would willingly lock up his money, he would endeavour to make it as productive as he could; he would not purchase commodities if he expected a fall of those commodities, but he would be glad to lend his money at interest during the interval that it was necessary for him to keep it (*Works V*, p. 399: *Evidence before the Committee on the Resumption of Cash Payments*, March 4, 1819).

In his analyses of accumulation and in his controversy with Malthus over the possibility of general gluts, Ricardo does not appear to rely on arguments other than these. Since it will be shown that in other parts of his writings one can find more detailed reasons in support of the thesis that all income will be spent – reasons where the rate of interest appears to play an essential role –, the fact that Ricardo does not cite those reasons to that purpose in

[6] . Ricardo's *Works and Correspondence* (Sraffa ed.) are referred to in this paper as simply *Works*, followed by the Roman numeral of the volume.

his controversy with Malthus, nor in any other occasion where the 'saving is spending' thesis and the impossibility of general gluts are mentioned, might be explained by suggesting that he had not fully grasped their relevance for the issue of Say's Law, or that it was unnecessary to mention them, because no one disputed that saving meant investment (or if someone did, Ricardo did not realize it); and probably there is some truth in both suggestions, in the sense that the general agreement on the 'saving is spending' thesis made it unnecessary for Ricardo to be clearer on why he thought that saving decisions always got translated into spending decisions. But as explained above, those more detailed reasons are interesting anyway and to them we now turn.

II.2. First of all, Ricardo is conscious that hoarding is one possible choice of income perceivers; if they choose not to hoard, there must then be a reason; this is in fact indicated by Ricardo in the passages quoted above: it is the possibility of earning profits, or interest, on the income saved, by employing it productively or lending it to someone else who will so employ it. This second possibility is admitted by Ricardo to be actually occurring and of great importance. To the last one of the quotes just given, one may add the following:

> They [the Edinburgh Reviewers, i.e. Malthus, who had reviewed Ricardo's *High Price of Bullion* and *Reply to Bosanquet*] appear to take it for granted that those who live on fixed income must consume the whole of their income, and that no part of it can be saved and annually added to capital. But this is very far from being the true state of the case, and I would ask, Do not the stockholers give as great a stimulus to the growth of the national wealth by saving half of their incomes and investing it in the stocks, thereby liberating a capital which will ultimately be employed by those who consume and produce, as would be done if their incomes were depreciated 50 per cent by the issues of bank-notes, and the power of saving were in consequence entirely taken from them, although the Bank should lend to an industrious man an amount of notes equal in value to the diminished income of the stockholder? The difference, and the only difference appears to me to be this, that in the one case the interest on the money lent would be paid to the real owner of the property, in the other it would ultimately be paid in the shape of increased dividends or bonuses to the bank proprietors (*Appendix* to *The High Price of Bullion*, 1811, in *Works III*, p. 122).

(This passage is of interest also because it shows that Ricardo identifies the value of the social product and the value of aggregate incomes, and that he clearly sees that to the monetary savings – at least in a situation of constant price level – will correspond a part of the product which remains available for investment expenditure.)

II.3. Then Ricardo's belief that ultimately all monetary savings are neither willingly hoarded nor unable to become translated into investments requires a positive answer to two questions:

(i) is there a guarantee that the rate of interest will be positive? (otherwise it would be difficult to dismiss the relevance of hoarding, which would no longer appear irrational, as stressed by Caminati (1981, p. 80))

(ii) is there a guarantee that savers who do not want to become themselves entrepreneurs will find borrowers-entrepreneurs who will accept and employ productively the money that savers do not spend?

The positive analysis to both questions appears to be provided by Ricardo's analysis of the determination of the rate of interest.

II.4. Here, again, Ricardo follows in Smith's footsteps: the rate of interest depends on the rate of profits (which depends on real forces, unaffected in their permanent operations by monetary influences); it is not affected, except temporarily, by changes in the quantity of money; the difference between the rate of profits and the rate of interest is determined by the necessity to compensate the borrower for the 'risk and trouble' he takes upon himself:

> It has been shown incontrovertibly by that able writer, Dr. Adam Smith, that the rate of interest for money is regulated by the rate of profits on that part of capital only which does not consist of circulating medium, and that those profits are not regulated but are wholly independent of the greater or lesser quantity of money which may be employed for the purposes of circulation; that the increase of circulating medium will increase the prices of all commodities, but will not lower the rate of interest (Letter to the *Morning Chronicle*, September 20, 1809, in *Works III*, pp. 25-6)

> The rate of interest depended upon the profit that could be made upon the employment of capital; and that again depended upon the wages of labour, which

> were regulated, in a great measure, by the price of food (Speech on February 18, 1822, in *Works V*, p. 130)
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> Their [the farmer's and the manufaturer's] motive for accumulation will diminish with every diminution of profit, and will cease altogether when their profits are so low as not to afford them an adequate compensation for their trouble, and the risk which they must necessarily encounter in employing their capital productively. (*Principles*, Ch. VI, in *Works I*, p. 122)
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> The rate of interest, though ultimately and permanently governed by the rate of profit, is however subject to temporary variations from other causes. With every fluctuation in the quantity and value of money, the prices of commodities naturally vary. They vary also, as we have already shown, from the alteration in the proportion of supply to demand, although there should not be either greater facility or difficulty of production. When the market prices of goods fall from an abundant supply, from a diminished demand, or from a rise in the value of money, a manufacturer naturally accumulates an unusual quantity of finished goods, being unwilling to sell them at very depressed prices. To meet his ordinary payments, for which he rised to depend on the sale of his goods, he now endeavours to borrow on credit, and is often obliged to give an increased rate of interest. This, however, is but of temporary duration; for either the manufacturer's expectations were well grounded, and the market price of his commodities rises, or he discovers that there is a permanently diminished demand, and he no longer resists the course of affairs: prices fall, and money and interest regain their real value. If by the discovery of a new mine, by the abuses of banking, or by any other cause, the quantity of money be greatly increased, its ultimate effect is to raise the prices of commodities in proportion to the increased quantity of money; but there is probably always an interval during which some effect is produced on the rate of interest. (*Principles*, ch. XXI, in *Works I*, pp. 297-8)

II.5. As the above quotations show, Ricardo did not alter his position on the connection between the rate of interest and the rate of profits as a consequence of the change his views on the determination of the rate of profits underwent in 1814. Ricardo's theory of profits is still a matter of heated debates but for our purposes all that matters is that Ricardo at least from 1814 onwards adopted the view of the rate of profits as regulated by the real wage and by the difficulty of production on no-rent land (on this there is little disagreement among scholars), and that the real wage could be taken as given in any concrete situation

(Ricardo was only disposed to admit very temporary and not very relevant 'forced savings'([7]) caused by inflationary increases in the quantity of money).

Now, the logic of Smith's explanation of the difference between rate of profits and rate of interest in terms of compensation of the "risk and trouble" of the borrower implies that, if the difference were less than required to that purpose, then very few borrowers would come forth, at least from would-be productive investors; the opposite being the case if the difference were greater: Ricardo clearly spells out the further implication that variations in the rate of interest, by causing variations in the request for loans, allow the Central Bank to place the amount of loans it wants to place:

> I do not dispute that if the Bank were to bring a large additional sum of notes into the market, and offer them on loan, but that they would for a time affect the rate of interest. The same effects would follow from the discovery of a hidden treasure of gold or silver coin. If the amount were large, the Bank, or the owner of the treasure, might not be able to lend the notes or the money at four, nor perhaps, above three per cent.; but having done so, neither the notes nor the money would be retained unemployed by the borrowers; they would be sent into every market, and would everywhere raise the prices of commodities, till they were absorbed in the general circulation. It is only during the interval of the issues of the Bank, and their effect on prices, that we should be sensible of an abundance of money; interest would, during that interval, be under its natural level; but as soon as the additional sum of notes or of money became absorbed in the general circulation, the rate of interest would be as high, and new loans would be demanded with as much eagerness as before the additional issues (*High Price of Bullion*, 1811, in *Works III*, p. 91. Cf. also *Works V*, p. 445.)

It appears to be implicit in these arguments that, unless the quantity of money is changing, and leaving aside exceptional periods like the end of a war, given the rate of profits there is a permanent or 'natural' level of the rate of interest (cf. e.g. *Works V*, p. 222); that only at that level the amount of loans demanded will correspond to the offer of loans; and that it is the discrepancy between the request and the offer of loans at other levels of the rate of interest, which causes the rate of interest to gravitate towards that level.

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[7] . Cf. e.g. *Works III*, pp. 302, 318-19, 321, 329; *IV*, pp. 36-7; *V*, pp. 107, 446; *VI*, p. 16.

II.6. In the *Principles*, Ricardo appears to think that even very small deviations of the interest raate from its natural level are sufficient to make the requests for loans become nearly infinite, or nearly zero([8]):

> The applications to the Bank for money, then depend on the comparison between the rate of profits that may be made by the employment of it, and the rate at which they are willing to lend it. If they charge less than the market rate of interest, there is no amount of money which they might not lend, if they charge more than that rate, none but spendthrifts and prodigals would be found to borrow of them. We accordingly find that when the market rate of interest exceeds the rate of 5 per cent. at which the Bank uniformly lend, the discount office is besieged with applicants for money; and, on the contrary, when the market rate is even temporarily under 5 per cent., the clerks of that office have no employment (*Works I*, p. 364)([9]).

[8] Ricardo had been in the past somewhat surprised that there had not been more inflation than observed, given the Bank's policy of maintaining the Bank rate below the market rate: "...it is matter of surprise that our circulation has been confined within such moderate bounds, after knowing the principles which the Bank Directors have avowed as their guide in regulating their issue" (*Reply to Bosanquet*, 1811: *Works III*, p. 221). From what he later writes in the *Principles* it would seem that the main mechanism limiting the expansion of loans when Bank Rate was below the market rate were, either a conscious rationing of credit on the part of the Bank, or the difficulty on the part of the borrowers to borrow beyond a limit set by the value for which "good security" could be offered (*Works I*, pp. 363-5; also cf. *ibid*., p. 362). This last observation introduces a new element potentially in contradiction with the statement in the next quote in the text. Ricardo does not discuss this problem.

[9] . The second sentence in this quotation might be interpreted as referring to a case where the Bank is charging a lower interest rate than the country banks; but the reference in it to "spendthrifts and prodigals" (as well as its coming immediately after a sentence where the comparison is witht he rate of profits, not the rate of interest of other banks) militates against this interpretation. In a private communication, C. Panico has reminded us that an increase of discounts, i.e. of bank loans, is not the same as an increase in (productive) investment, since it might be used to get rid of risky promissory notes, or for speculative purchases of commodities whose prices are expected to rise, etc. This is quite true, but does not seem to be what Ricardo was here thinking of. The immediately preceding lines to this quote run as follows: "Whether a bank lent one million, ten millions or a hundred millions, they would not permanently alter the market rate of interest; they would alter only the value of the money which they thus issued. In one case, 10 or 20 times more money might be required to carry on the same business, than what might be required in the other" (*Works I*, pp. 363-4). Now, a *permanent* increase in the price level achieved through a *temporary* variation in the interest rate appears to require a permanent stimulus (at least indirect) of the increased loans to monetary expenditure, such as neither a decrease of the undiscounted bills of exchange/bank loans ratio, nor speculative commodity purchases appear to be able to ensure.

As stressed by Caminati (1981), the same mechanism had an important role in Ricardo's acceptance of the Quantity Theory of Money: it has been seen above([10]) that according to Ricardo the usual way through which an increase in the quantity of notes in circulation would be brought about was through a lowering of the interest rate.

II.7. Furthermore, Ricardo clearly saw the interconnection between this role of the rate of interest and the international price-specie-flow mechanism:

> If the Bank had doubled its circulation, it still would have no permanent effect upon the value of money. If such a thing had taken place, the general level of interest would be restored in less than six months. The country only required, and could only bear, a certain circulation; and when that amount of circulation was afloat, the rate of interest would find its wholesome and natural level (Speech on July 1, 1822, in *Works V*, pp. 222-3).

The price-specie-flow mechanism ensures, in Ricardo's opinion, that ultimately – in a regime of convertibility – the amount of money will be what "the country only required"; the monetary authorities being anyway ultimately compelled to intervene in case the Bank's policy were perturbing the price level, even in a regime of inconvertible paper money, by the adverse exchange thus caused. The situation in which the amount of money has thus been adjusted to what "the country only required" is also the one in which the rate of interest will gravitate to its natural level.

III

III.1. Ricardo explicitly discusses only effects *on the price level* of decreases in the interest rate and increases in the amount of notes issued; but from his own analysis it seems possible to derive that the same mechanism would ensure that effective demand is equal to, and determined by, aggregate income.

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[10] . Cf. the quotation above, para. II.5, from *The High Price of Bullion*, *Works III*, p. 91; also *Works V*, p. 445.

This can be shown as follows. Let us assume that the offer of loans is equal to the value of gross income minus consumption expenditure and direct investment expenditure. Let us imagine that, initially, total investment based on borrowed capital was equal to the total offer of loans; and that at a certain moment the propensity to save increases. There will then be a reduction of demand for luxury consumption goods and an increased offer of loans. The excess of the loans offered over the loans accepted will cause a reduction of the interest rate; the increased difference between profit rate and interest rate will cause an increase of borrowing for the purpose of productive investment, until the extra loans are absorbed. The consequent increased demand for investment goods (if not foreseen) will cause an increase of the prices of the latter, a re-distribution of capital among industries([11]), and, finally, a total effective demand and a total product as great as before the change in the saving propensity, but with a changed composition.

III.2. This is not yet the place to assess the solidity of this *prima facie* plausible argument; this will be briefly attempted in the last Section of this paper. Now the problem is whether we are not seeing in Ricardo what is not really there. As we are not claiming that Ricardo himself explicitly formulated the argument, the only question which can be posed is: what are the assumptions of the argument sketched here, and can they be found in Ricardo?

The basic assumptions are 1) that purchasing power in real terms (expendable revenue) equals the value of production; 2) that the part of this purchasing power which is not directly expended is offered as loans, and 3) that this is what the supply of loanable funds consists of; 4) that the market interest rate will be sensitive to a discrepancy between demand for and supply of loanable funds; 5) that this flexibility of the rate of interest will ensure that this supply of loanable funds is absorbed.

Of these, all but the third have been met in the quotations given earlier. Thus, they are present in Ricardo; although their further justification is often quite weak. Panico goes in the same direction as Caminati when he argues that Ricardo's observations

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[11] . Ricardo knew that "sudden changes in the channels of trade" could cause much disruption, but he seems to have thought this a likely occurrence only at the commencement or at the end of a war, cf. *Works I*, p. 265; *VIII*, p. 277.

> do not amount to a developed analysis of the working of the money market or of the determination of the market interest rate (Panico, 1984, p. 28).

It is essentially the concept of a supply of loanable funds and, further, the identification of this supply with the revenue not directly spent, whose presence in Ricardo might be doubted. It must be admitted that the concept is not to be found explicitly in Ricardo and, what is more, it is clear that Ricardo saw the banking system - in particular the Bank of England - as capable of creating purchasing power independently of personal monetary savings, as shown by his admission of the possibility of 'forced savings', and by his concern to deprive the Bank of its power to cause inflation([12]).

III.3. But the creation of extra monetary purchasing power by itself does not disturb Say's Law, it simply causes inflation, and perhaps some forced savings. As to a decrease in the quantity of money and hence in loans, Ricardo was strongly against it if it was to be sharp, because the result would be disruption and depression:

> I am well aware that the total failure of paper credit would be attended with the most disastrous consequences to the trade and commerce of the country, and even its sudden limitation would occasion so much ruin and distress, that it would be highly inexpedient to have recourse to it as the means of restoring our currenty to its just and equitable value (*High Price of Bullion*, 1811, in *Works III*, p. 94).

But he believed that a decrease in the quantity of money would have next to no effect on economic activity if it was slow and gradual (in the long quotation in Section II above from pp. 297-8 of the *Principles,* there is no mention of a decrease of production accompanying the decrease in prices)([13]).

Anyway, Ricardo was a strong advocate of a "well regulated" currency, i.e. such that the exchanges were at par and thus there was no variation in the quantity of money; in which case banks, not creating nor destroying any buying power, necessarily act only as

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[12]. Cf. his *Plan for the Establishment of a National Bank* (1824) in *Works IV*.
[13]. Cf. also *Works V*, p. 416.

middlemen, offering loans to the amount corresponding to the saving deposited with them([14]):

> For example 10 men save out of their pecuniary revenue 1000 £ each, which they lend at interest or deposit at their bankers, – the society should therefore be richer by £ 10,000 money, but in all probability it is not £ 10 richer in money the greatest part has realized itself in goods which are in hands of those who have borrowed the money saved. It amkes no difference whether those who saved it lent it themselves or by depositing it with a banker enabled him to do it (*Notes on Bentham's Sur les Prix*, in *Works III*, p. 280).

> The whole business, which the whole community can carry on, depends on the quantity of its capital, that is, of its raw mateiral, machinery, food, vessels, &c. employed in production. After a well regulated paper money is established, these can neither be increased nor diminished by the operations of banking. If, then, the State were to issue the paper money of the country, although it should never discount a bill, or lend one shilling to the public, there would be no alteration in the amount of trade; for we should have the same quantity of raw materials, of machinery, food and ships; and it is probable, too, that the same amount of money might be lent, not always at 5 per cent. indeed, a rate fixed by law, when that might be under the market rate, but at 6, 7 or 8 per cent., the result of the fair competition in the market between the lenders and the borrowers (*Principles*, ch. XXVII, in *Works I*, p. 365).

> A Bank has fulfilled all its useful functions when it has substituted paper in the circulation for gold; when it has enabled us to carry on our commerce with a cheap currency, and to employ the valuable one which it supplants productively; provided it fulfils this object it is of little importance at what rate of interest it lends its money (*On Protection to Agriculture*, 1822, in *Works IV*, pp. 233-4)([15])

IV

[14] . Cf. also *Works I*, p. 363; *IV*, p. 277; *V*, pp. 436, 437.

[15] . The last sentence of this passage must be read while keeping in mind what has been said above, fn. 8: if the Bank keeps the amount of notes in circulation unaltered, in spite of keeping its rate of interest below the natural level, it must mean that credit is being rationed and the loans supplied are exactly the same amount as if the Bank rate were at the natural level.

IV.1. The reasoning above assumes full (in the sense of maximum) utilisation of productive capacity. That Ricardo made this assumption is crystal-clear from the numerous passages where he insists: a) that increases in the quantity of money do not increase production (even forced savings increase only the share of investment in the given total product); b) that increases of production in one industry can only be obtained by subtracting capital from other industries. Particularly interesting is the following passage:

> But can Mr. Blake's proposition [be accepted], that with the same capital by means of increas exertion and industry, the increased quantity of commodities, required by Gov.t, can be produced without occasioning any diminished supply of commodities in any other quarter? If industry be encouraged in one department, it is discouraged in another. Wages are always advanced to the workmen before the commodity is produced – the means of employing workmen are not increased at any rate in the first instance. If more warlike stores be produced more capital must be employed in that line whether the same labourers do more work or new labourers are employed, for the very wages which pay them for their work constitute a part fo the capital of the master. How is this capital to be augmented but at the expense of some other persons? – how can the same identical commodities be paid to two persons at the same time for wages?
> There appears to us this sort of contradiction in Mr. Blake's statement. The gunsmith, the army clothier, the gunpowder manufacturer are all to produce an increased quantity of commodities – they are to have an increased quantity of capital to enable them to do so and yet this additional quantity is to be found without influencing the production of any other commodity (*Unfinished Review of Blake's Observations*, 1823, in *Works IV*, p. 356)

V

V.1. Ricardo's possible justification of the 'saving is spending' thesis and hence of Say's Law, as reconstructed in the preceding paragraphs, appears then to rest on the following propositions:

1. Purchasing power in real terms in each period (effective demand) equals the value of production: as J. S. Mill was to put it later (Mill, 1965, pp.570-72), the power to purchase cannot be insufficient, the question remaining only concerns the *will* to purchase.

2. Hoarding (although a possibility) is in practice irrelevant (apart from exceptional circumstances): whatever purchasing power is not directly expended on consumption or on direct investment is either lent to someone oelse whill so use it, or deposited into banks.

3. Banks in their turn transfer the purchasing power thus bestowed upon them to other people (who will use it). If there is a "well regulated currency", banks will act as no more than middlemen without creating or destroying buying power.

4. Borrowing for productive investment purposes is very sensitive to the difference between the rate of profits and the rate of interest.

5. The rate of profits is given, so that variations in the rate of interest cause variations in the opposite direction of the difference between the rate of profits and the rate of interest.

6. The rate of interest varies according to the competition between borrowers and lenders.

7. There is a given level of the difference between rate of profits and rate of interest, at which in the long period the borrowers' demand for loans is horizontal: if interest falls below this 'natural' level, borrowing tends to increase enormously, if interest goes above it, borrowing for investment purposes tends to fall to zero (and only prodigals are left to borrow). Therefore the spontaneous working of the credit market, if the currency os well regulated, tends to establish equality between offer and request for loans at the 'natural' rate of interest.

8. In each period, the amount of product obtainable in the economy is given (by existing productive capacity).

9. Investment goods are only bought to be utilised at the maximum rate of utilisation and will be so utilised unless it is discovered that effective demand is insufficient.

10. Changes in the channels of trade of a limited amount or of limited speed do not prevent the full utilisation of capacity, as there is a sufficiently quick adaptation of supply composition.

From these ten propositions, which are all to be found in Ricardo's writings, the conclusion follows that, apart from disruptions caused by sudden changes in the channels of trade or by sudden credit contractions, effective demand will not be insufficient to buy the entire aggregate full-capacity production: Say's Law.

VI

VI.1. In the present Section some considerations will be advanced on the solidity of the argument reconstructed above.

An important weakness of the argument concerns points 8 and 9, which are the basis of the conclusion that output is fundamentally inelastic both upwards and (except in situations of radical failures of credit) also downwards, at the full utilisation level. Thus output can be taken as given, and increases of investment imply decreases of consumption. Ricardo's comments on Blake, quoted in Section IV, testify to the presence of this conclusion in Ricardo.

Thus Ricardo appears to ignore that normally of all goods there are at any time inventories, which can be run down in times of high demand, thus allowing an increase in the supply of circulating capital to industries even in the very short period, without a need for any other industry to step down production. The implications of this had been seen by Thornton, who had derived from them an opinion close to that of Hume([16]) on the effect of increases of the quantity of money on the level of activity:

> For industry is excited, strictly speaking, not by paper, but by that stock which the paper affords the means of purchasing..... It may be said, however, and not untruly, that an encreased issue of paper tends to produce a more brisk demand for the existing goods, and a somewhat more prompt consumption of them; that the more prompt consumption supposes a diminution of the ordinary stock, and the application of that part of it, which is consumed, to the purpose of giving life to fresh industry; that the fresh industry thus excited will be the means of gradually creating additional stock, which will serve to replace the stock by which the industry has been supported; and that the new circulating medium will, in this manner, create for itself much new employment (Thornton [1802] 1939, p. 237).

Ricardo's criticism of Blake, quoted above (para. IV.1), shows an inability to grasp this point (in spite of his having read Thornton). Given Ricardo's own admission of a limited

experience of the functioning of economic spheres different from the stock exchange; he must have been particularly ignorant of the functioning of manufactures, and thus of the elasticity of production made possible by inventories([17]).

VI.2. Another possible reason was perhaps the following. Ricardo gives particular importance to the impossibility of increasing the amount of wage goods in a short period of time, cf. above "the means of employing workmen are not increased at any rate in the first instance" (in the quotation in para. IV.1 from *Unfinished Review of Blake's Observations*). He may have been influenced here by his conception of the real wage as consisting, for the greatest part, of agricultural commodities, of which, it is true, it is not easy to conceive of a rapid increase in the amounts produced, owing to the yearly productive cycle.

Ricardo does not see, though, that it would be essentially the demand for non-agricultural wage goods, i.e. for the goods least strictly necessary for subsistence, which would increase. Either the same workers work longer hours, earn more, and clearly they are not going to spend the bulk of the extra revenue on corn; or previously unemployed workers get a job, but since they must have been consuming at least the strict necessaries for subsistence even when unemployed, then their demand for strict necessaries will simply substitute for the decreased demand of the relatives, or of the public institutions, by whom they were previously assisted. The increased demand for wage goods, being directed essentially towards industrial goods([18]), can be satisfied via the inventory mechanism outlined by Thornton. Furthermore, it is not only workers who consume 'wage goods', so an

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[16] .Cf. e.g. Hume [1752] 1973, pp.28-29.

[17] . Cf. *Works V*, p. 385: "but I am not engaged in trade, and it does not come much within my knowledge"; also *ibid.*, p. 345. Yet in one place at least (*Works IV*, p. 348) Ricardo admits of different degrees of utilisation of machinery. Cf. also Sayers (1953, p. 48) who stresses Ricardo's excessive optimism as to the quickness of price and quantity adjustments to changes in the quantity of money, and attributes it to Ricardo's lack of knowledge of the realities of industrial production. Caminati (1981, p. 85, fn. 27) suggests that the fact that Joplin (but the argument is applicable more generally to the classical economists) found it difficult to admit a variability of aggregate output "may be connected with the classical economists' idea of a product emerging at the end of an annual production period".

[18] . Meat and fish are to be considered industrial goods in this context, i.e. goods whose supply can be increased relatively quickly.

increase in the money wage bill by raising the price of necessaries would decrease the purchasing power of other classes and thus via some income redistribution create an increase in the quantity of necessaries available for workers.

The argument cannot rest even on this (anyway very weak) defence, if the case considered is one of a *diminution* of aggregate demand. It has been seen (Section I) that Ricardo admits that "When the market prices of goods fall from an abundant supply, from a diminished demand, or from a rise in the value of money, a manufacturer naturally accumulates an unusual quantity of finished goods, being unwilling to sell them at very depressed prices." Here again, Ricardo appears to view the manufacturer as producing all the time at the maximum rate, simply storing the unsold goods until they accept the lower price at which point they sell both the unsold production and the new production; but obviously it is much more plausible that the manufacturer will after a short while decrease production, and to a level for some time *below* the demand forthcoming, so as to be able to get rid of the undesired excess of inventories. Which means, if the insufficient excess demand is a general phenomenon, a decrease of aggregate production below the full-capacity level.

VI.3. The variability of the intensity or speed of production in response to variations of demand was also admitted some years later by John S. Mill, in his *Essays on Some Unsettled Questions....*:

> If every commodity on an average remained unsold for a length of time equal to that required for its production, it is obvious that, at any one time, no more than half the productive capital of the country would be really performing the functions of capital.... This, or something like it, is however the habitual state, at every instant, of a very large proportion of all the capitalists in the world. The number of producers, or dealers, who turn over their capital, as the expression is, in the shortest possible time, is very small.... every dealer keeps a stock in trade, to be ready for a possible sudden demand, though he probably may not be able to dispose of it for an indefinite period.... An additional customer, to most dealers, is equivalent to an increase of their productive capital.... if we suppose that the commodity, unless bought by him, would not have found a purchaser for a year after, then all which a capital of that value can enable men to produce during a year, is clear gain – gain to the dealer, or producer, and to the labourers whom he will employ, and thus (if no one sustains a

> corresponding loss) gain to the nation. The aggregate produce of the country for the succeeding year is, therefore, increased. (J. S. Mill, 1844, pp. 267-8)

It may then be asked, how could Mill nonetheless accept Say's Law. The answer is, that for unclear reasons in the *Principles* this admission of an influence of demand on aggregate production disappears completely; as to the 1844 essay, in it Mill restricts himself to the case of additional money coming from abroad as remittances, thus not considering the very relevant possibility of endogenous money creation; he then applies the price-specie-flow mechanism, and forgets that his own admission of an initial stimulus to production owing to the money inflow implies an increase of the amounts of goods to be exchanged internally, so that no outflow of gold, or a smaller one than the original inflow, is necessary to bring money prices (and possibly the interest rate) to the old level([19]).

VI.4. Hume's, Thornton's and Mill's admission of an influence of demand on aggregate production means that taking the level of aggregate output as given, as Ricardo does, is illegitimate unless one can argue that aggregate demand will always be equal to the level of output corresponding to normal utilization. But such an argument is rendered impossible by the structure itself of the classical reasoning, which argues that demand equals income, and in this way cannot determine demand unless income is determined, and cannot determine income unless demand is determined.

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[19] .The passage quoted in the text continues: "It follows from these premises, that the arrival of a new unproductive consumer (living on his own means) in any place, be that place a village, a town, or an entire country, is beneficial to that place, if it causes to any of the dealers of the place any of the advantages above enumerated, without withdrawing an equal advantage of the same kind from any other dealer of the same place.... [But] It will be seen that it does; and nothing will then remain but a comparison of the amounts. It is obvious to all who reflect (and was shown in the paper which precedes this) that the remittances to persons who expand their income in foreign countries are, after a slight passage of the precious metals, defrayed in commodities: and that the result commonly is an increase of exports and a diminution of imports, until the latter fall short of the former by the amount of the remittances. The arrival, therefore, of the strangers (say from England), while it creates at Paris a market for commodities equivalent in value to their funds, displaces in the market other commodities to an equal value.... It must, therefore, be a matter of mere accident, if by arriving in a place, the new unproductive consumer causes any net advantage to its industry, of the kind which we are now examining." (J. S. Mill, 1844, pp. 268-71)

The way out, clearly, is to admit that demand is determined in some other way, being at least partly independent of income and hence of the level of output. This requires to abandon the thesis that investment is determined by savings. Interestingly, here too we find, within the classical authors themselves, reasons to doubt this latter thesis.

VI.5. A first reason is the admission that the supply of credit may not correspond to the decisions to save. This admission is already implicit in Ricardo's discussion of 'forced savings' and in his proposals aiming at establishing a "well-regulated currency", proposals which admit the need to intervene in order to avoid excessive money creation i.e. credit creation. It is of course also implicit in the 'endogenous money' approach of Tooke and the Banking School([20]).

VI.6. A second reason is connected with a weakness of proposition 5. Both neoclassical economists, e.g. Wicksell, and a critical disciple of Ricardo like Marx who did not accept Say's Law, would have found little to object to proposition 5. In spite of this, it is no doubt a very weak point of the argument. The reasons adduced by Wicksell, and by Ricardo and Marx, would of course have been different and accordingly different is the criticism. In the case of neoclassical theory, the criticism is directed against the supply-and-demand mechanism which, according to this theory, simultaneously determines the rate of profits and the real wage: the critique of the neoclassical treatment of capital undermines that mechanism, so that the forces determining distribution must be sought elsewhere and proposition 5 cannot be accepted until a new theory of distribution is provided. If we then turn to Ricardo and Marx, the reason for the acceptance of proposition 5 is that, when discussing the determination of prices and of income distribution, they took the real wage and the conditions of production as given. The forces which kept the profit rate constant

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[20]. Besides the well-known modern defenders of the endogeneity of the money supply, such as Kaldor or Basil Moore, it is interesting that very recently David Romer (2000) has proposed to give up the LM curve of the IS-LM model owing to the observation that central banks increasingly target the interest rate rather than the money supply. Pivetti (1991, Ch. 2) summarises evidence suggesting that this is not only a recent tendency as Romer suggests, but a nearly universal aspect of capitalism in industrialised countries.

were actually keeping the *real wage* constant: the constancy of the rate of profits followed. Now, it does not seem that the forces discussed by the classical authors to explain the real wage could be trusted to be always capable of keeping the real wage constant in the face of a durable change in the rate of interest. As suggested by Sraffa (1960, p. 33), Dobb (1973, p. 271), Garegnani (1979), and in greater detail by Pivetti (1991) and Panico (1984, 1988), Tooke's idea that a decrease in the interest rate will – owing to competition – decrease prices (and hence the rate of profits, if the money wage is given) has prima facie plausibility. What is known about price formation in industrial economies suggests that, even without the actual entry and price-cutting competition of new entrepreneurs, it is probable that the already existing entrepreneurs will be induced by a reduction of costs due to cheaper credit to perform entry-preventing price reductions (perhaps not openly in the form of price reductions, but rather through e.g. special discounts, more favourable terms for hire-purchases, etc.). It is not clear, in fact, why the generally accepted thesis, that cost reductions due, e.g., to technical progress or cheaper energy or imports, will be passed onto prices, should not also apply to cost reductions due to lower interest charges. As for increases in the rate of interest, it seems even easier to argue that the common increase in costs will induce an increase in prices (together, in most cases, with an increased pressure on trade unions to accept money wage increases lower than the sum of the increase in prices and in labour productivity, on the basis of the argument that inflation must be combated).

Neither the Malthusian population mechanism, nor Marx's cycle of the reserve army of labour, offer reasons to argue that such an effect of the interest rate on income distribution is implausible. They might be set in motion by such a redistribution of income; but their effects would be felt only after a considerable time. No doubt the classical economists' vision of the forces determining the real wage is not reducible to a few simple mechanisms; but the presence of institutional, political etc. elements among the relevant factors would seem, if anything, to strengthen our argument by suggesting the possibility of a considerable independence of money wages from the price level. As noticed by D. M. Nuti,

> after Keynes we have to recognize that wage bargaining determines money wages, while the real wage rate is determined by the behaviour of the price level (Nuti, 1971, p. 32).

There appears to be especially little reason to expect money wages to decrease in proportion with the price level, if the latter were to decrease owing to a decrease of the rate of interest. Besides, the relative bargaining strength of the two sides in the money wage bargain would be affected by whatever causes made possible or necessary the monetary authorities' intervention directed at altering the rate of interest. But if, when the rate of interest moves, the rate of profits follows, proposition 5 does not hold and the reconstructed mechanism supporting Say's Law breaks down.

All one needs to admit then is that the rate of interest can move autonomously from the rate of profits for a time long enough for it to exert an influence on price formation and thus cause the rate of profit to move in the same direction (short-lived changes in the interest rate would hardly have a significant influence). Here I refer the reader to Pivetti (1991, Ch. 2) where it is convincingly argued that this possibility finds confirmation in historical experience, and further confirmation is found in the admission of the possibility of an autonomous determination of the average rate of interest in John Stuart Mill, in Marx, and in Keynes; this admission being particularly interesting in the first two authors because they, like Ricardo, believed in a given rate of profits and in competition, so they should have been rather induced by their theory of distribution to deny this autonomy, and must have been induced to accept it by the unprejudiced observation of reality. Panico (Ch. 1 of 1984 or of 1988) adds Tooke's early writings as one more example of a writer of the classical period who believed (although on less clear grounds than Mill or Marx) in a rate of profits determined independently of the conditions on the money market, and who nonetheless, on the basis of empirical observation, explicitly dissented from Ricardo on the dependence of the average rate of interest on the rate of profit([21]).

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[21] . It is only in his later writings that Tooke considers an effect of the rate of interest on the price level and thus, implicitly, on the rate of profits if money wages are fixed. Panico also notices that Ricardo too, in a letter to Malthus of 1817, admits the possibility of quite long-lasting divergences of the interest rate from its natural level: "Although interest is undoubtedly ultimately regulated by profits, rising when they are high, and falling when they are low, yet there are considerable intervals during which a low rate of interest is compatible with a high rate of profit, and this generally occurs when capital is moving from the employment of war to those of peace" (*Works*

This influence of the rate of interest on the rate of profits further undermines point 7, i.e. the argument that the rate of interest is capable of bringing the demand for loanable funds into equilibrium with the supply of loanable funds – in case the criticism advanced under para. VI.5 were not found sufficient.

VI.7. Another point worth mentioning relates to proposition 1. In a growing economy there are problems with this nearly universally accepted proposition. As argued in Petri (1982), the famous MV=PT formula implies that, if P and V are given and T is growing, then M must grow too, otherwise demand would be insufficient. The *accounting* identity between total product and total income is not sufficient to guarantee that monetary purchasing power will be sufficient, because before buying, one must have sold (as Marx would have put it, value must be 'realized' before it can be used to buy other things), and if production is growing, in order to sell it all at unchanging money prices either the same amount of money must circulate faster, or some extra money must come in from somewhere. This can be seen as follows. Assume for simplicity that all units of money circulate with the same velocity. Then $\theta=1/V$ is the average time each unit of money remains idle before it is used again. This means that the sale of goods at time t creates an income which, if spent again entirely, is spent at time $t+\theta$. So purchasing power at time $t+\theta$ is equal to sales at time t. If production is growing, purchasing power at time $t+\theta$ is insufficient to purchase it at unchanged money prices, unless some extra purchasing power has appeared in the meantime. So it is not true that the saving=spending assumption implies that there would be no problems in selling the entire production, if production is growing and if it is admitted that the savings which can be spent must have been first 'realized' in monetary form.

Ricardo does not discuss this problem, but he would have probably analysed it as follows: all that would happen in a growing economy is a decrease in money prices, and this wold be soon stopped and reversed by an inflow of bullion: the price-specie-flow mechanism would ensure that M increases as requested by the increase in output (or, in a closed

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VII, p. 199). Panico adds: "And by 'considerable intervals' – as we apprehend from Malthus' reply – Ricardo meant, in that case, two or three years [see *VII*, 214]" (Panico, 1984, p. 30).

economy including gold mines, the production of gold would be stimulated). But does Ricardo have the right to assume that this process will not affect the level of output? As he himself admits, the decrease in prices would only come about after an increase in inventories beyond their normal level; therefore the downward phase of an inventory cycle would be set up, with possible further repercussions on investment in fixed capital, if (as is indeed the case) this investment too depends on aggregate demand and its variations.

VI.8. These observations lend support to Garegnani's "lack of analysis" thesis (cf. para. I.1 above) in this sense: a more developed analysis than the classical authors were able to elaborate, of the forces affecting income distribution, aggregate expenditure, the degree of utilization of productive capacity, and of their interactions, makes any hope to rehabilitate Say's Law (after the demise of the marginalist arguments in its support) appear exceedingly remote.

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