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MARX, SAY'S LAW AND COMMODITY MONEY

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Under Marx's critique of Say's Law, as originally devised by Say and James Mill, money hoarding leads to a shortfall in aggregate demand. This paper responds to a Post Keynesian argument that hoarding does not restrict aggregate demand since for Marx money consists of a produced commodity, and hoarding is just one form of commodity demand. Drawing on Marx's monetary writings, a new monetary equilibrium is suggested in which produced gold is used to replace wear and tear in circulation. An alternative critique of Say's Law is thus proposed as a contribution to understanding the complexity of Marx's monetary foundations.

I. INTRODUCTION

A key problem with Marx's critique of Say's Law is his use of a commodity theory of money. Say's Law can be undermined by money hoarding when an interruption or delay in the circulation of commodities drags aggregate demand below aggregate supply; but if the money hoard consists of a produced commodity, which for Marx is gold, then hoarding can be considered to be just one form of commodity demand. Aggregate demand is unchanged, since under hoarding the structure of demand merely shifts from non-money commodities to the money commodity. As observed by [Foley \(1985, p. 189\)](#), 'In principle an expansion of the money-commodity could offset such changes in spending delays'.

This commodity money issue has two main implications for Marx's economics. First, Marx is confined to an internal critique of Say's Law in which, following [Lange \(1942\)](#), the only shortfall is in the aggregate demand for non-money commodities. Within the confines of a generalised Say's Law, applying to all commodities, it is possible to have excess demand of the money commodity alongside excess supply of non-money commodities. This interpretation has a well-known basis in Marx's writings on the possibility of crises, with overproduction attributed to excess demand for the money commodity; but, as pointed out by [Howard and King \(1985, p. 211\)](#), this scenario is 'perfectly in accord with Say's Law' as applied to all commodities. The generalised Say's Law remains intact under Marx's internal critique.

The second implication of the commodity money issue is that it suggests a re-focusing of Marx's monetary theory. For [Hein \(2006, p. 117\)](#), 'money has to be non-commodity money to sustain the critique of Say's Law in Marx's 'possibility theory of crisis' and to pose the problem of effective demand to capitalist economies'. On this

basis, any development of Marx's monetary foundations must start by stripping out the role of commodity money and focus instead on non-producible assets—an approach to the critique of Say's Law pursued by Post Keynesians, in which money has a zero elasticity of production (see Davidson, 1982, p. 60).

In response to these arguments, this paper contends that Marx has more to say about commodity money than has been supposed in these discussions of Say's Law. Though it has been lamented that Marx did not fully spell out the mechanism by which commodity money enters and leaves circulation, there are pointers in Marx's writings on money which can be brought together in confronting Say's Law. Of particular importance is Sardoni's (1987) analysis of how in an economic crisis the increase in money hoards can be offset by a reduction in circulating money balances—leaving the demand for produced gold unchanged. This insight, which is mentioned somewhat in passing by Sardoni, is developed and formalised here based on a detail study of Marx's writings on money in direct confrontation with Say's Law. Drawing on *Capital*, volume 2 (Marx 1978), the proposed monetary mechanism specifies how produced money is exchanged for non-money commodities, and how gold production is required to replenish wear and tear of circulating money. Using these insights an external critique of Say's Law can be formulated in which there is a shortfall of aggregate demand across all commodities due to an interruption in the circulation of commodity money.

In addition to criticising Say's Law, this critique therefore suggests a new monetary framework, based on Marx's work, for understanding how commodity money circulates. The aim is to throw new light on Marx's monetary theory in its original form, where for simplicity gold is assumed to be the circulating medium as a theoretical starting point. For some scholars, a study of what Marx wrote about commodity money is considered unnecessary since gold has lost its institutional relevance. In, for example, David Harvey's detailed study of *Capital*, volume 2, the production of gold in Chapter 17 is ignored: 'I will not consider the details of this case here, because I think it is irrelevant to the general conditions of money creation and use in contemporary capitalism' (Harvey, 2013, p. 305). Aside from this obvious institutional observation, a case can be made for trying to understand the rich complexity of Marx's monetary theory on its own terms, as originally formulated with commodity money at its core.

In Section II, Say's Law is introduced in the form which Marx examines it, as devised by Jean Baptiste Say and James Mill, and formalised in the modern literature by Clower and Leijonhufvud (1973). Say's Law is an aggregate identity between supply and demand, which in Section III is shown to allow for partial disequilibria: gluts and shortages. Based on such disequilibria, Section IV then considers Marx's internal critique of Say's Law, before developing the external critique in Section V, with both accounts based on an examination of Marx's writings. Some conclusions are offered in Section VI.

II. SAY'S LAW

A starting point is to consider the original expositions of Jean-Baptiste Say, in his first edition of the *Traité*, and of James Mill in *Commerce Defended*. In Say's chapter 22, 'Des

Débouchés', each producer generates a surplus: 'Every producer produces a quantity of a particular good that considerably exceeds his own consumption' (Say, 1803, Vol. 1, pp. 152–155).¹ A farmer produces more grain than required to feed his family; a hatter produces more hats than required to clothe his family. Each producer's surplus may be viewed as a market outlet for surplus goods of other producers. The farmer may, for example, trade his surplus with the surplus produced by the hatter—surplus grain creating a market outlet for hats, surplus hats creating an outlet for surplus grain. Thus for Say, as shown in Chapter 5 of his book, 'one can make purchases only with what one has produced' (Say, 1803, Vol. 2, pp. 175–180).²

James Mill places the same emphasis on production as the basis for providing a market outlet: 'every man who has goods to dispose of should always find all those different sorts of goods with which he wishes to supply himself in return' (Mill, 1808, p. 136). Individuals have purchasing power which is based on the quantity of goods they can produce. Furthermore, 'Whatever be the additional quantity of goods therefore which is at any time created in any country, an additional power of purchasing, exactly equivalent, is at the same instant created' (Mill, 1808, p. 135). A precise equivalence is proposed between the quantity produced and the power to purchase other goods.³

This equivalence is later clarified, in Mill's *Elements of Political Economy*, by building the power of purchasing into a two-part definition of demand.⁴ 'Two things are necessary to constitute a demand. These are – A Wish for the commodity, and An Equivalent to give for it. A demand means the will to purchase, and the means of purchasing' (Mill, 1821, p. 188). Demand is the amount desired of a commodity, backed up by the means of purchasing that commodity. For Mill demand is generated by the surplus of commodities produced over and above a producer's own consumption requirements: 'this demand, is exactly equal to the amount of what he has produced and does not mean to consume'; hence 'the supply and demand of every individual are of necessity equal' (Mill, 1821, p. 189).

¹ As translated by Baumol (1977, 147).

² See Baumol (1977, 155).

³ There are strong arguments for the primacy of both J. Mill and Say in formulating the law of markets. The role of Say has been questioned, for example, by Thweatt (1979, 89) in relation to how it was viewed in 1814: 'neither Ricardo nor Malthus, at this time, ever thought of associating the theorem with J.B. Say. Their letters refer to Mr. Mill's proposition, his error, his idea, or Mr. Mill's theory.' This is consistent with the charge (see Chipman 1965, 213), that at this time Say built on Mill in his 2nd edition of the *Traité* (Say, 1814). The case for Say's primacy, however, was made by no less authority than Ricardo (1817, 7), who writes that Say's chapter, "Des Débouchés", contains, in particular, some very important principles, which I believe were first explained by this distinguished writer'. This is the position taken by Kates (1998) and Sowell (1972), that the original ideas of Say (1803), in the first edition of the *Traité*, provide the catalyst for subsequent developments by Mill (1808) in *Commerce Defended*.

⁴ James Mill's (1821) *Elements* offer a clear and abstract definition of concepts. Though Winch (1966, 189) refers to the 'crudity' of Mill's exposition, he states: 'We are presented with the Ricardian interpretation of the classical model in its simplest form'. Others are more dismissive. Hollander (2005, 22) refers to Say's 'formal charge against the British writers of excessive 'abstraction'', similar to the problem of the 'Ricardian Vice' considered by Schumpeter (1954).

In the modern literature on Say's Law, this equality between supply and demand, based on each individual's 'wish' for commodities, has been interpreted in behavioural terms. Sowell (1974, p. 40) interprets Mill as having a behavioural theory in which 'supply equals demand *ex ante*, since each individual produces only because of, and to the extent of, his demand for other goods'. As formalised by Clower and Leijonhufvud (1973), a budget constraint holds under which each individual producer has a planned level of income, all of which is intended to be spent on commodities. On this basis, in his extensive review of the literature, Kates (1998, p. 197) argues that 'it is Clower and Leijonhufvud who come closest to fostering a revival of Say's Law'.

To explore the formal structure of this interpretation of Say's Law, let each individual producer, i , make and supply a given physical quantity S_i of commodity i . Assume also that there is a given money price, p_i , and that each given term is exclusively positive, i.e. $p_i > 0$ and $S_i > 0$. Each individual therefore has an autonomous positive amount of income from production of $p_i S_i$. In order to distribute this income for consumption purposes, let D_{ji} be the consumption demand for commodity j by each single commodity producer i . The total quantity demanded by producer i must satisfy the budget constraint set by her autonomous income from production, such that:

$$\sum_{j=1}^n p_j D_{ji} = p_i S_i \quad (1)$$

Autonomous income from production is represented on the right hand side of equation (1); through summation, the money value of the producer's total demand for all n commodities is represented on the left hand side. The total demand by producer i across all commodities is constituted by, and equal to the money value of S_i , the physical quantity of commodity i supplied by producer i . In specifying the underlying assumptions of this budget constraint we follow Becker and Baumol (1952, p. 356): 'Suppose that at *any* given set of prices people will supply commodities when and only when they use (and intend to use) the money received to demand other commodities "immediately", i.e. during the period under consideration'.⁵ With given money prices and a given supply of output, equation (1) requires that each individual i sets her demand for n commodities according to this budget constraint.

The budget constraint can be interpreted as a mathematical hypothesis. It does not have to be true; individuals could plan to save part of their planned income from production or spend more than they plan to receive. But if the hypothesis is true, and there is zero saving for each individual, a mathematical conclusion can be drawn about the relationship between aggregate supply and demand, i.e.

Say's Law. $\sum_{j=1}^n p_j D_{ji} = p_i S_i$ implies $\sum_{i,j=1}^n p_i D_{ij} \equiv \sum_{i=1}^n p_i S_i$.

Proof. Aggregate equation (1) across n producers.

⁵ It has been pointed out by Kates (1998, 200) that despite the obvious synergy between approaches, 'curiously, at no stage is reference made [by Clower and Leijonhufvud] to Becker and Baumol nor any of the discussions that preceded their summation'.

By aggregation of equation (1), it is established that aggregate supply (summing up the quantities supplied by each producer) is identical to aggregate demand (summing up the quantities demanded by each producer):⁶

$$\sum_{i,j=1}^n p_i D_{ij} \equiv \sum_{i=1}^n p_i S_i \quad (2)$$

With $D_i = \sum_{j=1}^n D_{ij}$ representing the total demand for each commodity by all producers, equation (2) can also be written as:

$$\sum_{i=1}^n p_i D_i \equiv \sum_{i=1}^n p_i S_i \quad (3)$$

As summarised by Mill (1808, p. 136): ‘Thus it appears that the demand of a nation is always equal to the produce of a nation’. Similarly, for Say (1803, p. 155): ‘The demand for products in general is therefore always equal to the sum of products available’. Becker and Baumol (1952, p. 356) introduced the expression ‘Say’s identity’ to describe this conclusion: ‘Again, by summing over all individuals, we can see that at any set of prices the total money demand for *commodities* will be equal to the total money value of the quantity supplied of all *commodities*’.⁷

Clower (1965), followed by Clower and Leijonhufvud (1973), used the expression ‘Say’s principle’ to describe what we refer to here as Say’s Law: the mathematical proposition that if each individual keeps to their budget constraint then aggregate demand must be identical to aggregate supply.⁸ Under Say’s principle, ‘individuals can expect to require commodities from other individuals only by giving commodities (or money) of equal market value in exchange’ (Clower and Leijonhufvud, 1973, p. 148). And as summarised by Jonsson (1997, p. 208), another supporter of the Say’s principle interpretation: ‘since all sellers intended to receive something of equal value for all the items that they intended to sell, by definition, the aggregate value of all planned sales equals the aggregate value of all planned purchases’. This Say’s principle interpretation is distinctive in its derivation of an aggregate version of Say’s Law—in keeping with Say and Mill—from a behavioural (zero savings) assumption about individual behaviour.

With its assumption of zero saving, this is a rudimentary model of Say’s Law. Even in his early formulation of the Law, Mill (1808) considers what might happen if part of revenue is saved. In polemic with Spence, Mill considers the case of a landholder

⁶ Under symmetry of subscripts, the summation term for demand in equation (2) can be expressed interchangeably as $\sum_{i,j=1}^n p_j D_{ji}$ or $\sum_{i,j=1}^n p_i D_{ij}$.

⁷ We are interpreting Say’s identity as the mathematical conclusion of the budget constraint hypothesis. Confusingly, Say’s identity has also been referred to as Say’s Law itself (see, for example, Blaug, 1968, 147).

⁸ As pointed out by Kates (1998, 201), since Clower and Leijonhufvud ‘use their own Say’s Principle interchangeably with Say’s Law’ there is an argument, given the confusion that abounds in the literature, for simply referring to this as Say’s Law.

with revenue of £10000, all of which is spent on luxury items of consumption. What will happen if half of this revenue is saved? Both Mill and Spence agree that landholder 'will lend not hoard it' (Mill 1808, p. 133). The money is lent to a linen manufacturer who uses it to buy more raw materials, hire more workers, and build more looms. 'In this manner the £10000 of the landholder is completely consumed as ever it was' (Mill, 1808, p. 133). The £5000 of savings, directed for example to building more looms, facilitate more production of linen in the future (what might now be referred to as investment).

This investment of savings in additional future production can also be found in Ricardo's *Principles*: 'No man produces, but with a view to consume or sell, and he never sells, but with an intention to purchase some other commodity, which may be immediately useful to him, or which may contribute to future production' (Ricardo, 1817, 290). There is hence by assumption a channelling of savings into investment; but note that no mechanism is required for theorising the relationship between savings to investment. As argued by Garegnani (1978, 340), this limits the theoretical relevance of this approach might have in relation to more recent debates concerning Say's Law and marginalist representations based on demand and supply schedules (that are used to relate savings to investment). This limitation most certainly applies to the rudimentary model of Say's Law developed here, in which the zero savings hypothesis is assumed throughout, and hence Say's identity between aggregate supply and aggregate demand is established by assumption.

Illustration. The derivation of Say's identity from individual budget constraints can be illustrated for a three-producer example. Assume here for simplicity that demand is earmarked exclusively for commodities supplied by other producers, such that $D_{ij} = 0$ when $i = j$. Starting with equation (1), three single commodity producers translate their supply into demand such that

$$\begin{aligned} p_2 D_{21} + p_3 D_{31} &= p_1 S_1 \\ p_1 D_{12} + p_3 D_{32} &= p_2 S_2 \\ p_1 D_{13} + p_2 D_{23} &= p_3 S_3 \end{aligned} \quad (4)$$

Assume given money prices are $p_1 = 1$, $p_2 = 2$ and $p_3 = 3$, and given physical outputs supplied by producers are $S_1 = 27$, $S_2 = 30$ and $S_3 = 16$. Equation (4) thus has the structure

$$\begin{aligned} (2 \times D_{21}) + (3 \times D_{31}) &= (1 \times 27) \\ (1 \times D_{12}) + (3 \times D_{32}) &= (2 \times 30) \\ (1 \times D_{13}) + (2 \times D_{23}) &= (3 \times 16) \end{aligned} \quad (5)$$

A solution to equation (5) requires a particular configuration of demand. One possible solution, which may be considered for illustrative purposes, is provided when

$$\begin{aligned} D_{21} &= 12, D_{31} = 1, \\ D_{12} &= 15, D_{32} = 15, \\ D_{13} &= 12, D_{23} = 18 \end{aligned} \quad (6)$$

It follows from equations (5) and (6) that the total money value of output supplied and the total money value of output demanded are both equal to 135, where

$$p_1S_1 + p_2S_2 + p_3S_3 = (1 \times 27) + (2 \times 30) + (3 \times 16) = 135 \quad (7)$$

Say's identity is demonstrated for this particular configuration of demands constituted by supply.

III. GLUTS AND SHORTAGES

Although Say's Law, as interpreted here in relation to Say and J. Mill, guarantees an identity between supply and demand for the economy as a whole, it does not follow that equilibrium between supply and demand is established for each commodity—there may be shortages and gluts (partial disequilibria).⁹ Mill (1821, p. 188) recognises this possibility: 'It may very well happen, notwithstanding this equality in the general sum of demands and supplies, that some one commodity or commodities may have been produced in a quantity either above or below the demand for those particular'. And for Say (1803, p. 156): 'I realize that trade can be obstructed by the overabundance of particular products'.

Although under Say's Law, set up in equation (1), each producer operates under a budget constraint in which income from supply is immediately translated into demand, these are no more than intentions on the part of each producer. Both supply and demand for each individual producer are *ex ante* quantities, taking place before trade takes place between producers (see Jonsson, 1997, p. 207). The supply of the producer consists of actual output produced in anticipation that it will be sold to others; out of the anticipated income the producer has immediate demands for other commodities that he anticipates will be realised—dependent on supplies being made available by other producers. There is nothing to prevent mistakes from occurring, with demand for each commodity either exceeding or falling short of supply.

To show how partial disequilibria may occur, Say's Law can be related to the occurrence of partial gluts and shortages for each commodity. Let G_i represent a partial glut, in physical units, of each commodity i . If positive a glut represents the excess of supply over demand; if negative, it represents the excess of demand over supply (a shortage). The money value of the glut for each commodity takes the form

$$p_iG_i = p_iS_i - p_iD_i \quad (8)$$

⁹ As argued by Clower and Leijonhufvud (1973, 156), general equilibrium 'should never be confused with Say's Principle'. This position is contrasted with the association of Say's Law with equilibrium by Schumpeter (1954, 619).

Using equation (3), it can thus be inferred from equation (8) that the money value of these partial gluts, aggregated across all n producers, is as follows:

$$\sum_{i=1}^n p_i G_i = \sum_{i=1}^n p_i S_i - \sum_{i=1}^n p_i D_i \equiv 0 \quad (9)$$

Hence, we know that in money value terms these partial gluts all add up to zero, i.e. the summation of these gluts is identical to zero. It follows under Say's Law that it is impossible for there to be a partial glut in which there is excess supply ($p_i G_i > 0$) for commodity i without this being matched by excess demand ($p_j G_j < 0$) for commodity j , or for a subset of multiple commodities. There is, therefore, no possibility of a general glut, where supply exceeds demand for the economy as a whole. This interpretation is consistent with Clower and Leijonhufvud's (1973, p. 153) view that when a 'general glut of commodities is impossible' this can be seen as a 'version of SP [Say's principle] that was much in vogue among early nineteenth century economists'.

As stated by Mill (1808, 137): 'The quantity of any one commodity may easily be carried beyond its due proportion; but by that very circumstance is implied that some other commodity is not provided in sufficient proportion'. This is the same position adopted by Ricardo (1817, p. 292), under which overproduction 'cannot be the case with respect to all commodities'. On this interpretation, there is not a problem of shortage of aggregate demand, the problem being the occurrence of partial gluts rather than general overproduction applying to the economy as a whole. As shown by Kates (1998, p. 35), Say and Mill viewed the occurrence of partial disequilibria as requiring adjustment mechanisms—including both price and quantity adjustments—to rectify imbalances between supply and demand of particular commodities. It should be emphasised, however, that no such adjustment mechanism is required to establish the identity between aggregate supply and demand, which is true by definition under Say's Law.

These adjustment mechanisms can be distinguished from those considered in more recent marginalist formulations of Say's Law. First, as we have seen, since zero savings are assumed there is no mechanism for relating saving to investment, such as the fluctuations of interest rates associated with loanable funds theory. As Garegnani (1978) pointed out in relation to Ricardo's (early classical) interpretation of Say's Law, the system is open as to how the relationship between savings and investment might be theorised. Second, there is no presumption in this early classical approach that labour will be fully employed. As shown by Milgate (1982, 57), for the classics there is 'no mechanism of adjustment', such as that associated with fluctuations in the real wage, pushing employment to its full employment level.

IV. MARX'S INTERNAL CRITIQUE

In his effort to capture fundamental aspects of the capitalist system of relations, Marx employs a method of abstraction. Although economists tend to be drawn towards concrete phenomena, in the *Grundrisse* Marx proposes a method of empirical enquiry that seeks through abstraction to capture the most important elements. 'The economists of the seventeenth century, e.g., always begin with the living whole, with population, nation, state, several states, etc.; but they always conclude by discovering through analysis a small number of determinant, abstract, general relations such as division of labour, money, value, etc' (Marx 1973, p. 100). A method of successive approximations is introduced that starts as an abstraction of the most important relations, before moving towards concrete reality. Levels of analysis 'approach step by step the form in which they appear on the surface of society' (Marx 1981, p. 117).

The most abstract starting point is provided by the 'simple circulation of commodities', assumed by Marx throughout the first three chapters of *Capital*, volume 1 (Marx, 1976, 212). Individual producers specialise in the production of particular items, a division of labour in society that is distinct from the division of labour in manufacture. 'The division of labour within manufacture presupposes concentration of the means of production in the hands of one capitalist; the division of labour within society presupposes a dispersal of those means among many independent producers of commodities' (Marx 1976, p. 476). This social division of labour is captured in pure form as the exchange of commodities and money between independent producers.

Under simple commodity circulation, Marx (1976, p. 208) considers what we now refer to as Say's identity: the 'dogma' that sale and purchase 'are one identical act'. Further discussion in part 2 of *Theories of Surplus Value* is of the idea that 'no general glut of the market is possible', something that 'really belongs to [James] Mill, adopted by Ricardo from the tedious Say . . .' (Marx, 1968, p. 493). Say's identity is established when 'demand is determined only by production, or also that demand and supply are identical' (ibid, p. 493). Marx (1968, p. 493) quotes Ricardo's statement (reported earlier): 'No man produces, but with a view to consume or sell, and he never sells, but with an intention to purchase some other commodity . . .' (Ricardo, 1817, p. 290). Each producer uses sales from products in order to purchase other products, as formalised above in equation (1).

A starting point for Marx's critique is his emphasis on the mediation of exchange by money.¹⁰ As considered by James Mill: 'This, then, is the true idea of a medium of exchange. It is some one commodity, which, in order to effect an exchange between two other commodities is first received in exchange for the one, and is then given in exchange for the other' (Mill, 1821, p. 96). Similarly, as quoted by Marx (1968, p. 499, p. 504), for Ricardo money is the 'medium by which the exchange is effected' (Ricardo, 1817, p. 292).

¹⁰ In addition to Marx's monetary critique of Say's Law, as considered here, Shoul (1957) has identified two other dimension of Say's Law in Marx's writings (not considered here), in relation to the reproduction schemes and business cycles.

As part of his abstract method, Marx states, at the start of Chapter 3 of *Capital*, volume 1: 'Throughout this work I assume that gold is the money commodity, for sake of simplicity' (Marx 1976, p. 188). The exchange of commodities for commodity money takes place in two stages that make up the simple circulation of commodities in the process C-M-C. The purpose of the first stage, C-M, is through sale to transform the commodity into money. Since money is a produced commodity (gold), the abstract labour time required to produce the commodity is transformed into an equivalent volume of labour time expended in gold, or gold coins that are made up of gold (see Marx 1970, p. 99).

In the second stage, M-C, the money is used to purchase commodities. The problem with this exchange process is that 'the commodity must be turned into money but the money need not be immediately turned into commodity' (Marx, 1968, p. 509). The producer may sell his commodity but the subsequent purchase of other commodities is not mandatory because of the separation between acts of purchase and sale. As also argued in *Capital*, volume 1: 'But no one directly needs to purchase because he has just sold' (Marx, 1976, p. 208): the basis for Marx's 'possibility of crises' under simple commodity circulation (Marx, 1976, p. 209). This is the first pillar of Marx's possibility theory of crisis, the second being the possibility of financial fragility due to debt-credit relationships with the introduction of money as a means of payment. 'Both these forms are as yet quite abstract, although the second is more concrete than the first' (Marx 1968, p. 510). Though Marx emphasises the limitations of a focus on the mere possibility of crises occurring, as opposed to the theorising of actual crises, he also makes clear that all forms of crisis (including those based on debt-credit relationships) are based on the abstract separation of purchase from sale.

Marx (1968, p. 503) contrasts his approach with the 'metaphysical equilibrium' posited by James Mill, 'which sees only the unity, but not the separation in the process of purchase and sale'. Marx's separation process under monetary circulation introduces the possibility of overproduction: 'there is nothing to prevent *all commodities* from being superabundant on the market . . .'; but with an important caveat: 'That is, all commodities, apart from *money* . . .' (Marx, 1968, p. 504, his emphasis). Marx makes the same point about James Mill in the *Contribution*:

'Using Mill's confusing language one may say that there are times when it is impossible to sell all commodities, for instance in London and Hamburg during certain stages of the commercial crisis of 1857/58 there were indeed' 'more buyers than sellers of *one commodity, i.e., money*, and more sellers than buyers as regards *all other forms of money, i.e., commodities*. The metaphysical equilibrium of purchases and sales is confined to the fact that every purchase is a sale and every sale a purchase, but this gives poor comfort to the possessors of commodities who unable to make a sale cannot accordingly make a purchase either' (Marx, 1970, p. 97, his emphasis).

This can be interpreted as an internal critique of Say's Law in its generalised form. Marx assumes that Say's Law (as applied to all commodities) holds, but within its confines there may be excess demand for money. The internal critique can be formalised as follows. Define commodity n as the money commodity, with the other $n - 1$ representing non-money commodities. It follows under Say's identity (3), the outcome of Say's Law, that

$$\sum_{i=1}^{n-1} p_i D_i = \sum_{i=1}^{n-1} p_i S_i \quad (10)$$

if and only if $D_n = S_n$ (Lange, 1942, p. 51; Blaug, 1968, p. 147). Say's Law, as applied to non-money commodities requires the establishment of monetary equilibrium between the demand and supply of money.

Internal to Say's Law, it is therefore only possible for there to be a general glut for non-money commodities, i.e.

$$\sum_{i=1}^{n-1} p_i D_i < \sum_{i=1}^{n-1} p_i S_i \quad (11)$$

if and only if $D_n > S_n$, an excess demand for money.¹¹ As Marx emphasises, an excess demand for money may have serious consequences for overproduction in a large part of the production economy, but overproduction is not generated across all (money and non-money) commodities for the economy as a whole. Excess supply is still partial, applying only to the subset of (non-money) commodities. Under Say's Law, there can be excess demand for the money commodity, but aggregate demand for all commodities (including money) will match the aggregate supply of all commodities (including money). Say's Law thus remains intact on the assumption that money is a produced commodity, just like any other commodity. On this basis, it can be argued that the commodity money approach precludes the demonstration of a disjuncture between aggregate supply and aggregate demand. For Hein (2006, p. 217): 'Marx, however, does not seem to have been aware of this problem and of the contradiction that arises between the rejection of Say's law, on the one hand, and the simultaneous acceptance of a commodity theory of money, on the other hand'.

Against this Post Keynesian interpretation, it can instead be suggested that Marx is merely using the demand for money to engage in polemic with Mill by showing how a crisis of overproduction can occur even within the limitations of 'Mill's confusing language' and the 'metaphysical equilibrium of purchases and sales'. This does not, however, preclude a more thoroughgoing critique of Say's Law, based on Marx's

¹¹ It is on this basis that Lange (1942) restricts Say's Law to being the refutable equality between aggregate supply and demand applying *only* to non-money commodities. This restricted version of Say's Law can be refuted under an excess demand for money. Lange then redefines the identity between aggregate supply and demand for all (money and non-money) commodities to be Walras' Law. Following Clower and Leijonhufvud (1973, 161), however, the Walras' Law label can be rejected, with Say's Law (what they refer to as Say's principle) taken to apply to all commodities, including the money commodity.

monetary writings, in which the theory of money is more sophisticated than in this polemic with Mill.

V. AN EXTERNAL CRITIQUE

An alternative reading of Marx can be developed by focusing on the relationship between hoarded and circulating money in an overproduction crisis. An important insight is provided by [Sardoni \(1987\)](#) into how producers may increase their hoards without this resulting in additional demand for gold production. It is possible that ‘the increased demand for hoards is offset by a decrease in the demand for “active balances” (money as a means of circulation), so that the gold industry is not induced to produce and invest more by any significant increase in the demand for gold (money) at the aggregate level’ ([Sardoni, 1987](#), p. 40).

Drawing on Marx’s approach in part 2 of *Theories of Surplus Value*, [Sardoni \(1987](#), p. 38) considers an ‘initial partial overproduction’ in which there is excess supply of one commodity, cotton cloth (see [Marx, 1968](#), p. 520). This initial overproduction spreads to other industries, with a consequent reduction in prices and quantities of outputs supplied, together with unemployment and reduced investment. Firms in other industries increase their money hoards, and with lower levels of economic activity there can be an equivalent reduction in the demand for active circulating money balances—hence the money required for gold production remains unchanged.

This is a nascent type of multiplier process that is of course important to understanding how overproduction crises develop. It might, however, be argued that in order to directly refute Say’s Law the analysis should be confined to a strictly partial overproduction scenario. Taking Say’s Law on its own terms, prices, and quantities supplied are given, as explained earlier in relation to equation (1). Partial overproduction can thus be restricted to a change in the structure of demand for particular producers (or subsets of producers) without considering the knock-on effects between producers—that is, taking the outputs supplied as given. This is the approach adopted in the internal critique of Say’s Law.

The question can thus be posed: can a strictly partial overproduction scenario occur *without* an increase in the demand for produced money? This question is addressed by further analysis of Marx’s writings of money.

Under simple commodity circulation, which Marx uses as foundational starting point for his monetary theory, ‘the mass of money is always equal to the sum of money present as a hoard and as money in circulation’ ([Marx, 1978](#), p. 400). In order to enable circulation to take place in each production period, there is a reserve hoard of money that has built up in previous periods, which can be drawn from and replenished as the requirements of circulation fluctuate. In Chapter 17 of *Capital*, volume 2, Marx also considers how producers of precious metals throw them into circulation as commodity money. He makes three assumptions. First, abstracting from international trade relations, gold and silver required in a country are produced in that country. Second, Marx ignores gold and silver production required for luxury purposes. Finally,

he assumes that the production of these precious metals is required in order to replace the quantity lost in circulation through wear and tear. Producers 'pursue the production of gold and silver . . . only within the bounds of the average annual wear and tear and the average annual consumption of gold and silver necessitated by that wear and tear . . . ' (Marx, 1978, p. 401).

Produced money enters circulation through the purchase of non-money commodities by the money commodity producer: 'at the sources of their production the precious metals are directly exchanged for other commodities' (Marx 1976, p. 228). This is direct barter of the money commodity for other commodities. Direct barter does not take place, however, between producers of non-money commodities, since under C-M-C exchange is mediated by money. This is a pure monetary economy, as defined by Clower (1969, p. 207) in which 'one and only one commodity can be traded directly for any other commodity': the money commodity. In the analysis that follows the money commodity will be gold.

Assume for simplicity that each unit of circulating gold has one only circuit, required to facilitate one transaction; each unit has a velocity of circulation equal to 1. This is the case of 'simultaneous sales' under which the sum of prices is equal to the value of money required for circulation (Marx, 1976, p. 215). Let gold circulate with a rate of depreciation (wear and tear), δ , such that the demand for commodity n (produced gold) by $n - 1$ non-money commodity producers has the value:

$$D_n = \delta \sum_{i=1}^{n-1} p_i S_i \quad (12)$$

The right hand side of equation (12) shows the amount of wear and tear on gold which non-money commodity producers expect to incur in supplying their commodities in exchange for money. This translates, on the left hand side of equation (12), into the demand for produced gold by non-commodity producers. As posited by Marx, suppliers of non-money commodities demand just enough gold to replace the proportion of the amount circulating used up under wear and tear.

Under Marx's direct barter process, supply of produced gold is provided by producer n in order to facilitate her demand for $n - 1$ non-money commodities:

$$S_n = \sum_{i=1}^{n-1} p_i D_{in} \quad (13)$$

Hence, the monetary equilibrium,

$$D_n = S_n \quad (14)$$

is defined by

$$\delta \sum_{i=1}^{n-1} p_i S_i = \sum_{i=1}^{n-1} p_i D_{in} \quad (15)$$

An implication of this new monetary equilibrium is that it is in large part separate from the demand for non-money commodities. To demonstrate this, a strictly partial overproduction scenario can be considered in which at least one of the non-money commodity producers decides to hoard as money a part of his expected income from sales, instead of directing it to demand for non-money commodities.

Assuming the monetary equilibrium to hold, it is possible to first explore the conditions required for equilibrium between supply and demand of non-money commodities, as established under Say's Law when all expected income from output translates into demand. To do this, the total supply of $n - 1$ non-money commodities can be decomposed such that

$$\sum_{i=1}^{n-1} p_i S_i = \delta \sum_{i=1}^{n-1} p_i S_i + (1 - \delta) \sum_{i=1}^{n-1} p_i S_i \quad (16)$$

Using the monetary equilibrium equation (15), it follows that

$$\sum_{i=1}^{n-1} p_i S_i = \sum_{i=1}^{n-1} p_i D_{in} + (1 - \delta) \sum_{i=1}^{n-1} p_i S_i \quad (17)$$

Equation (17) is a condition that holds under monetary equilibrium.

Under Say's Law, it can now be assumed that all of the income from expected sales of non-money commodities, which is not spent on replacement gold, is instead spent on non-money commodities:

$$(1 - \delta) \sum_{i=1}^{n-1} p_i S_i = \sum_{i,j=1}^{n-1} p_i D_{ij} \quad (18)$$

Hence under monetary equilibrium, substituting equation (18) into equation (17), the total supply of non-money commodities is equal to the total demand for non-money commodities:

$$\sum_{i=1}^{n-1} p_i S_i = \sum_{i=1}^{n-1} p_i D_i \quad (19)$$

where

$$\sum_{i=1}^{n-1} p_i D_i = \sum_{i=1}^{n-1} p_i D_{in} + \sum_{i,j=1}^{n-1} p_i D_{ij} \quad (20)$$

However, a partial overproduction can be posited in which not all of the expected income from supply by non-money commodity producers (net of replacement gold requirements) is spent on non-money commodities. A particular non-money commodity producer, j , may choose a new lower level of demand, D_{ij} , which results in an inequality

$$\sum_{i,j=1}^{n-1} p_i D_{ij} < (1 - \delta) \sum_{i=1}^{n-1} p_i S_i \quad (21)$$

Using the condition for monetary equilibrium equation (17), together with equation (20), it follows that:

$$\sum_{i=1}^{n-1} p_i D_i < \sum_{i=1}^{n-1} p_i S_i \quad (22)$$

It is possible under monetary equilibrium for the aggregate demand for non-money commodities to be lower than aggregate supply for those commodities. From equation (22), together with the monetary equilibrium assumed in equation (14), it also follows that:

$$\sum_{i=1}^n p_i D_i < \sum_{i=1}^n p_i S_i \quad (23)$$

Aggregate supply exceeds aggregate demand across all (money and non-money) commodities. This is a refutation of Say's Law, as generalised to all commodities, under monetary equilibrium. This refutation is possible because the components of equation (15), which defines the monetary equilibrium, are all unaffected by this (relatively) low level of demand by one of the non-money commodity producers. On the right hand side of equation (15), prices are given (as assumed under Say's Law) and the demand for non-money commodities by the gold producer is unaffected by the demand decisions of non-money commodity producers. On the left hand side of equation (15), the rate of depreciation of gold, together with prices and quantity supplied of non-monetary commodities are also unaffected. The insufficient demand for non-money commodities in equation (22) is not offset by an excess demand for produced money, since the hoarding which takes place impacts on the private hoards of producers, not the money demanded (for wear and tear) from the gold producer. The upshot, under this interpretation of Marx's writings on money, is that a shortfall in aggregate demand under strictly partial overproduction is *not* counterbalanced by an increase in demand for produced money.

TABLE 1. Demand by three producers under Say's Law

	1	2	3	Total
1		15	12	27
2	24		36	60
3	3	45		48
Total	27	60	48	135

Illustration. This refutation of Say's Law can be illustrated using our earlier numerical example presented in equations (4)–(7), in which for three producers an aggregate supply of 135 (in money value units) is matched by an aggregate demand of 135. Table 1 shows the structure of demand under Say's Law, with all flows measured in money units, producer 1 assumed to be a gold producer, and a 25% rate of depreciation for gold.

On this basis, the configuration of demand can be considered for each producer in turn. Producer 1 (the gold producer) demands 24 monetary units worth of commodity 2, which she intends to purchase with 24 units of her own produced gold. Another 3 units of gold are earmarked for exchange with commodity 3. This is the direct bartering of gold for other commodities identified in Marx's writings, and formalised in equation (13).

The other two (non-gold) producers demand commodities from each other with gold to be drawn from their own private hoards. Producer 2 demands 45 monetary units worth of commodity 3 with gold to be drawn from his hoard; producer 3 demands 36 units of commodity 2, to be drawn from his hoard. These two producers also demand gold from the gold producer, to replace wear and tear incurred under circulation, as defined in equation (12). Producer 2 demands 15 units of commodity 1 (gold) which will be required because of the expected amount of wear and tear. Since producer 2 plans to receive 60 units of gold in income for his total output supplied of commodity 2, then at a rate of depreciation of 25% it follows that 15 units of this circulating gold will be lost, through wear and tear, and will have to be replenished by the 15 units demanded from the gold producer. The remaining 45 units of gold that producer 2 plans to receive in income merely replace the 45 units he will expend (from his own hoard) on commodity 3. Similarly, producer 3 expects to receive 48 in income, a quarter of which will be required in replacement gold, a demand of 12 from the gold producer. The remaining 36 units of income are earmarked as hoard replacement for the 36 units to be outlaid on commodity 2.¹²

¹² Note that although Say's Law holds for Table 1, this is not a barter economy. There is not a *quid pro quo* exchange, for example between producers 2 and 3, of the type that would take place under barter (see Clower 1969, p. 206). Producer 2 advances 45 units of gold for commodity 3; producer 3 advances 36 units of gold for commodity 2: commodities 2 and 3 are not directly bartered for each other.

TABLE 2. Demand by three producers under partial overproduction

	1	2	3	Total
1		15	12	27
2	24		36	60
3	3	0		3
Total	27	15	48	90

This role for money in commodity exchange introduces the possibility of disjuncture between supply and demand. Consider a scenario in which all three producers continue their combined aggregate supply of 135, but producer 2 reduces his demand for non-money commodities. Producer 2 plans to reduce his intended outlay on commodity 3 from 45 to 0, with all 45 units of gold remaining in his private hoard. With all outputs supplied and under strictly partial overproduction other intended demands taken as given, producer 2 will expect to expand his money hoard by receiving these 45 units of gold, as part of his 60 units to be sold of commodity 2. He therefore sells without buying, as Marx posits in his possibility theory of crises.

This interruption between purchase and sales is illustrated in Table 2, with the replacement of 45 with the new 0 entry ensuring that the total demand for commodity 3 is now 3 instead of 48: an excess supply of 45 units worth of output. Say's Law is refuted since the given aggregate supply of 135 is now met by only 90 units of aggregate demand.

The key outcome here is that the reduction in demand for commodity 3 does *not* result in an increase in the demand for produced money. With given supplies by non-money commodity producers the demands for produced money are also given. Producer 2 continues to expect to receive circulating money of 60 units, out of which 15 are required from the gold producer for wear and tear. Producer 3 continues to expect to receive 48 units of gold from supply, out of which 12 units are required for wear and tear. The total demand for produced gold by non-gold producers remains at 27 (see Table 2). Under strictly partial overproduction, producer 1 also continues to plan an outlay of 27 units of gold on the other two commodities. The shortfall in aggregate demand does not disturb this monetary equilibrium, and does not depend on an excess demand for money.

VI. CONCLUSIONS

Marx attacks Say's Law in its early classical form developed by Say, J. Mill, and Ricardo. If producers plan to translate all of their income from supply into demand, this results in an identity between aggregate supply and demand, which makes the occurrence of general gluts impossible. In polemic with this proposition, Marx offers an internal critique in which even if Say's Law holds it allows for the possibility of crises,

with the oversupply of non-money commodities. Instead of demanding commodities, producers can hoard commodity money in the form of gold. The problem with Marx's critique, however, is that there is still by definition an identity between aggregate supply and demand across all commodities, since money is a commodity in Marx's monetary approach. A Post Keynesian critique is instead suggested under which Say's Law can only be refuted if money is taken to be a non-producible asset.

This paper offers an alternative external critique of Say's Law based on a more developed monetary framework than required by Marx's internal critique. As shown by [Sardoni \(1987\)](#), a key distinction is between produced money and hoarded money. Building on this insight through a study of Marx's writings on money, produced money can be given a particular role in the purchase of other commodities by the gold producer, and its use by other producers to replenish the wear and tear of circulating money. On this basis, a new monetary equilibrium can be formalised under which an interruption in the circulation of money due to hoarding is shown to *not* affect the demand for produced money—the increase in private hoards does not have to impinge on the demand for produced money to replenish wear and tear. Money can be hoarded and Say's Law refuted without requiring non-producible money. A new insight is provided into how, in Marx's writings, the circulation of commodity money intertwines with the circulation of commodities: a contribution to understanding the rich complexity of Marx's monetary foundations and their role in the critique of Say's Law.

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