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Financial Derivatives and Marxist Value Theory

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ABSTRACT

The extraordinary growth of financial derivatives since the mid 1980s is an issue with which Marxian value theory needs to engage. This paper contends that the growth of derivatives results from a problem of commensuration in the international money system. Although Marx's own analysis of money is inadequate to the task of explaining derivatives, his conception of commodity money is useful. Derivatives can be explained as new forms of commodity money which provide infinite flexibility in commensurating diverse forms, localities and temporalities of financial assets.

Key words: Marx, Financial derivatives, international money
JEL classification: B14, B24, F31, G15

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1. Introduction

There have been major developments in international finance in the past 15 years associated especially with the development of financial derivatives.[1] Conservative and liberal commentators on global finance, and the process of 'globalisation' generally, not infrequently acknowledge the perspicacity of Marx and Engel as having depicted these tendencies 150 years ago in *The Communist Manifesto* (eg Sachs 1999). Coincidentally, Marxist value theory has been in relative decline as a means to understand economic change. One effect is that there is little work within even a 'broadly Marxist' framework that has addressed developments in international finance. The analysis that has emerged has generally not included a direct engagement with the theory of value - it addresses 'hot money', 'speculative bubbles' and over-expansion of credit rather than questions of money as a representation of value.

Despite its important contributions, two things are missing from this literature. First, there is rarely an engagement with the specific details of global financial market expansion - of who is raising what sorts of funds, how, and for whom. Notions of hot money and speculative bubbles often reside at a highly aggregated level, usually content with the proposition that all that happens within financial markets is 'unproductive'. Engagement with the details is important in part so that the complexities and factual details are revealed and, in the process, challenging recourse to generalising labels such as 'speculative' and 'unproductive'. Moreover, the details are important for we need to consider the possibility that the enormous expansion of global financial markets has seen what Marx called a transformation of quantity into quality - that activities in finance and the role of money must be understood in new ways.

This issue then points to the second absence in the existing literature: an apparent reluctance to rethink the role of money within capital accumulation. For Marxist theory, this is a bit of a no-go area. Marx's analysis was largely conceived within, and is a reflection of, the Gold Standard and is in conspicuous ways completely outdated in the light of the disappearance of any semblance of a connection between gold and the international financial system. But attachment to the Gold Standard is not the only problem: all economic theories are having enormous problems explaining international capital flows generally

1 A recent IMF report identifies the recent growth of financial derivatives as "the single largest innovation in global financial markets in the past fifty years" (Vrolijk 1997).

and foreign exchange markets in particular. Indeed, they cannot even explain why their models do not work (Engel 1999, Brock 1999). Perhaps the silence of Marxists is a sign of wisdom.

For contemporary Marxists looking to engage with recent financial developments the tendency has been to draw on other theoretical traditions - especially Keynesianism and radical nationalism, rather than to construct analyses based formally within Marxian economics. The proposition of this paper is that Marxism needs to respond creatively to the challenges of explaining international financial developments, and it will not benefit significantly from becoming either more orthodox or more radical.

In seeking to meet that challenge this paper must be immediately seen as broad in its scope and somewhat speculative in its argument. Neither is a wise attribute to employ. But the paper is conceived around a simple proposition. Financial derivatives represent (at least in value of turnover) the largest and fastest-growing industry in the world, [2] and one that is fundamentally transforming the way in which the production of commodities is being funded and commodities themselves circulated as values.

Marxian value theory needs to engage with and explain this growth. This is essential if Marxism is to remain a useful means to explain accumulation and broad trends in capitalist development. Derivatives require of Marxian value theory recognition that value, determined by socially necessary labour time, has to be qualified by the need to hedge against inter-temporal and spatial movements in prices, in socially necessary labour times, and sustained spatial and temporal discontinuities in direct labour times. Unless 'value' can embrace these factors, the theory of value is ignoring the largest form of capitalist transaction that has ever existed. Simply classifying derivatives as a form of speculation (and even attaching to that the more dignified function of hedging) shuts down an inquiry into the way in which money is being currently transformed within capitalism.

The paper develops the proposition that Marx's conception of money offers an important analytical device. That conception was both advanced and constrained by the Gold Standard within which it was conceived. It was advanced by recognition that money must have a commodity basis if it is to be an integral component of capital accumulation and not just a numeraire. A clear problem of current conventional economic analyses of floating exchange rates and financial derivatives is that they can only set the problem of explaining relative prices; not the money system itself. Commodity money is a credible way round the problem of simply explaining relative prices.

But Marx's conception was also constrained by the then widely held belief that one commodity, gold, could act as a universal equivalent form of value. Marx was aware of, but never really transcended, the limitations of such a conception. The proposition developed below is that there are too many discontinuities in the global monetary system to be mediated by one single commodity.

The term 'discontinuities' is used through the analysis to signal something deeper than a 'disequilibrium' in the market that will disappear with arbitrage or increasing volumes of trade. 'Discontinuities' suggest an on-going need for commensuration of, for example, present and future values and values denominated in different currencies. In both cases the one commodity has multiple prices (representations of value). Moreover, different individual capitals are differentially integrated into accumulation both spatially and in turnover times, so that the discontinuities are also integral to capitalist competition. Hence the need for commensuration is being continually reproduced, and so is not subject to market rectification.

Any single unit of measure can represent only a balance of multiple processes of commensuration, and thereby actually reconcile perhaps none at all. Derivatives, on the other hand, are literally thousands of types of commodities whose specific characteristics are designed to secure commensurability between one or more of the vast range of different sorts and denominations of 'money' in the world.

As such, derivatives are re-establishing a commodity basis to the global money system, but unencumbered by all the symbolic and scarcity characteristics that imbued gold with special standing as the ultimate and singular unit of value.

2. The growth of derivatives

Money and finance at the beginning of the twenty first century is different from Marx's money – but perhaps not as different as might appear. The twenty first century sees the dominance of 'credit money', and a comprehensive process of global circulation, with funds raised and currencies traded extensively outside

2 The notional value of all global derivative contracts in March 1995 was roughly equivalent to the reported aggregate market value of all bonds, equity and bank assets in North America, Japan and the 15 EU countries at year end 1995 (IMF 1998).

their country of origin. Marx identified the growth of bonds and securities, including on an international scale, and the rise of the stock market (Marx 1894: esp. Chs.31-33); and we know that futures and options markets go back many centuries, especially in markets for agricultural products. But the growth of financial derivatives as we now see them were not imagined even in the 1970s, let alone the 1870s.

Tables 1 and 2 show two measures of the growth of financial derivatives. That different data sources show different measures is some indication of the difficulty verifying activities in derivatives markets. Nonetheless, the trends are broadly consistent. Table 1 shows the growth of interest rate and currency swaps from 1985. From a total of $US400 million in 1985 currency and interest rate swaps have grown to $US 53 trillion in 1999, with virtually all growth in interest rate swaps. The Bank for International Settlements (1999:132-33) calculates the outstanding value of all derivatives contracts at the end of 1998 to be equal to $US 64 trillion (see Table 2). While organised exchanges account for only 25% of derivatives contracts, the value of financial derivatives traded in those exchanges in 1998 was $US 388 trillion – three quarters of it trade in various interest rate futures. Broadly, an annual turnover in all derivatives markets could be conjectured at around $US 1,000 trillion per anum. This figure compares with $US 0.44 trillion dollars of international direct investment and $6.5 trillion in global exports in 1998 (UNCTAD 1998: 2)

Table 1 Notional Size of Global Interest Rate and Currency Swap Markets

($US trillions), 1985 – 1999, as at December 31

	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Interest rate swaps	0.3	0.7	1.2	1.9	2.9	4.4	5.9	7.4	9.7	14.0	18.4	24.0	30.2	47.0	49.6
Currency swaps	0.1	0.2	0.3	0.4	0.6	0.8	1.2	1.3	1.5	1.7	2.0	2.4	2.6	3.2	3.4
Total OTC Derivatives								24.6	29.9	39.3	45.6	56.6	67.6	90.2	94.6

Source: Swaps Monitor 2000

Table 2 Markets for selected financial derivative instruments

Notional amounts outstanding at year-end, in billions of US dollars

	1993	1994	1995	1996	1997	1998
Exchange-trade instruments	**7,771.2**	**8,862.9**	**9,188.6**	**9,879.6**	**12,202.2**	**13,549.2**
Interest rate futures	4,958.8	5,777.6	5,863.4	5,931.2	7,489.2	7,702.2
Interest rate options	2,362.4	2,623.6	2,741.8	3,277.8	3,639.9	4,602.8
Currency futures	34.7	40.1	38.3	50.3	51.9	38.1
Currency options	75.6	55.6	43.5	46.5	33.2	18.7
Stock market index futures	110.0	127.7	172.4	195.9	211.5	321.0
Stock market index options	229.7	238.4	329.3	378.0	776.5	866.5
OTC instruments [1]	**8,474.6**	**11,303.2**	**17,712.6**	**25,453.1**	**29,035.0**	**50,997.0**
Interest rate swaps	6,177.3	8,815.6	12,810.7	19,170.9	22,291.3	..
Currency swaps[2]	899.6	914.8	1,197.4	1,559.6	1,823.6	..
Interest rate options[3]	1,397.6	1,572.8	3,704.5	4,722.6	4,920.1	..

[1]Data collected by ISDA.
[2]Adjusted for reporting of both currencies; including cross-currency interest rate swaps.
[3]Caps, collars, floors and swaptions.
Sources: Futures Industry Association; ISDA; various futures and options exchanges; BIS calculations.

Source: BIS 1999:13

A simple factor is at the centre of financial derivative growth: finance is global but money is national. Finance circulates on a global scale as nationally-secured currency [3] - US dollars, Japanese Yen, etc. Combined, these national currencies and financial assets denominated in those currencies form a global financial system. There is no financial unit other than those conferred with official standing by nation states. Nonetheless, these currencies have, for many purposes, transcended their national insignia – they circulate extensively beyond their nation-of-origin and indeed are used in transactions unrelated to their nation of origin (see for instance Cohen 1999, Bryan and Rafferty 1999 ch.7). It is this transcendence that makes money global rather than simply inter-national.

Yet the transcendence is not comprehensive. The values of the US dollar, the Yen, etc. are still profoundly influenced by nation-specific determinants, especially central bank initiatives. The same is true of interest rates - credit circulates globally, but interest rates in different currencies are profoundly affected by nation-specific determinants. The combined effect of these global functions coinciding with national determinants is discontinuities in the global financial system. The various nationally-secured currencies and various nation-driven interest rate regimes that make up the global financial system do not generate a seamless global financial market.

Three factors therefore follow in explaining the growth of financial derivatives. First, derivatives provide a means to hedge against exposure to the discontinuities that arise from the fact that money capital exists in many forms, places and time horizons. Moreover, facilities for hedging automatically provide a forum for speculators. Hence the focus in the radical literature on speculation - the companion of the conventional literature's focus on portfolio management. Nonetheless, throughout this paper we will use the terms hedging and speculation in combination, on the basis that there is no substantive way of differentiating the two, other than by the dubious criterion of the motivation of the trader. [4]

Second, there is a further aspect of derivatives markets that is not reducible to hedging and speculation. In any standard theory of markets there is an expectation that the market is 'complete' (participants can trade whatever they wish to), and that hedging and speculation will speedily arbitrage away the possibility for mutual gain for parties to a derivatives contract. We can, however, observe that arbitrage opportunities remain, and this despite a scale of trading that seems far in excess of that need to carry out 'hedging' functions [5] Evidence shows that swaps contracts enable both parties to the contract to reduce their costs of borrowing (see for instance, Smith et al. 1993, Hempel and Simonson 1999), and this explains why interest rate swaps have so dominated derivatives markets. This possibility of mutually beneficial swaps would seem an anomaly. This growth remains difficult to explain, particularly within a pure theory of exchange that underlies the orthodox explanation of swaps. [6] It remains an issue for further investigation. The point to be emphasised in the current context that this capacity for mutual gain is a clear signal of the limitations of purely arbitrage models and of the importance of treating derivatives as commodities.

Third, the growth of derivatives suggests the self-perpetuation of their growth, as new derivative products come to hedge between different existing derivative products. Derivatives are thereby breaking down spatial, temporal and form differences in capital assets That self-perpetuating growth challenges both a widely-held conception of money as a passive or equilibrating measure within a circuit of capital [7] and the distinction between debt and equity. Their

3 The Euro is of course a notable exception – except that, for the purposes of this argument, Europe can be treated as a single political entity.

4 The distinction between hedging and speculation undoubtedly has moral overtones. Yet speculators hedge and hedging involves some speculation, for no-one is immune from the impacts of market volatility. Our concern with the radical literature is that there is no serious engagement with the process being identified under the label of hedging as integral to capitalist accumulation. However, for a discussion of the status of the speculative-hedging distinction in the context of derivatives, see Kwast (1986).

5 Odean (1999) for instance has observed that trading volumes are too high, but '…while this level of trade may seem disproportionate to investor's re-balancing and hedging needs, we lack economic models that predict what trading volumes in these market (sic) should be'. It is instructive here that recognition of the monetary role of derivatives has been most advanced not in theoretical work, but in studies on monetary policy. See for instance Akthar, M. (1984) and Perlod (1995).

6 This difficulty is directly reflected in the conventional finance literature. Scholes (1998), in his Nobel Prize essay, has specifically cited arbitrage and the notion of substitutes as one of three key strands of financial economics that set the tone for derivatives research. He suggested that together they provided the basis of mathematical models of finance in a general equilibrium framework. Little wonder perhaps then that within this approach derivatives are seen as 'redundant securities'. Harrison (1997) argues that arbitrage was the theoretical force behind each of the major economic innovations in finance (including the Black-Scholes options pricing formula).

7 The expectation that money must be neutralised within international accumulation is pervasive. Kindleberger (1989) has posed the need as follows:

4. Marx on money and international finance

Marx (1939: 160-61) recognised that the need for hedging would increase with the global extension of accumulation:

> The autonomization of the world market (in which the activity of each individual is included) increases with the development of monetary relations (exchange value) and vice versa . . . . [T]ogether with the development of this alienation, and on the same basis, efforts are made to overcome it: institutions emerge in which each individual can acquire information about the activity of all others, and attempt to adjust his own accordingly, e.g. lists of current prices, rates of exchange, interconnections between those active in commerce through the mails, telegraphs etc. (the means of communication of course grow at the same time).

But it is the theorisation of the role of money in relation to international finance that is critical for Marxist analysis of derivatives.

Money enters Marx's theory of value as a commodity: gold. The value of money is therefore always bound up in a tension between the socially necessary labour time involved in the production of gold and the general level of prices associated with the ratio of commodity gold to all other commodities. That tension is difficult for value theory to absorb, and Marx spent considerable time in the *Grundrisse* and in Volume III of *Capital* trying to resolve an effective technical formulation. No one claims that he succeeded, and the global scale proved the most difficult part.

With gold as international currency (the spatially universal equivalent), but produced under specific, nationally-delineated costs of production, there was always a tension between the value determination on a national and global scale, and how cross-national transfers of gold 'equilibrate' the value system. There was no basis on which the value of gold as produced commodity and the value represented by gold as the equivalent form of value would be systematically commensurable. Indeed, the problem is not specific to gold; it applies to all commodities and hence doubly to gold.

Within a *Capital* Volume I framework (a conception of the international economy as multiple national capitalisms, and values not yet transformed by the process of competition), [8] Marx (1867:702) concluded that:

> [T]he different quantities of commodities of the same kind, produced in different countries in the same working time, have, therefore, unequal international values, which are expressed in different prices.

Marx then argued that this difference will be 'rectified' by changes in the value of money: the relative value of money will be more in the more developed nation, reducing the difference in the real wage between the two countries. Marx appears here directly reliant on exchange rates to close the system. – the rate that equalises values (and profit rates) across national boundaries – and the exchange rate is thereby simply a price-rate of currency conversion. This is the equivalent of a purchasing power parity conception of exchange rates. Hence the value of gold as a produced commodity (whose value itself needs to be reconciled on a global scale) and the role required of gold as a rate of currency conversion impose impossible demands on gold as a global equivalent form of value.

It was posed above that Marx's dilemma in reconciling national and global money was in a *Capital* Volume 1 framework. In the context of a global process of accumulation, this 'reversion' to the price sphere to compare value formation in one country with value formation in another would seem to be a spatial transformation problem!

In this context we have caught Marx posing a rather Ricardian problem and looking for the equilibrium (or disequilibrium) logic of the international system. This is not Marx the critic of capital, looking to identify how the international payment system plays out the class relations of capitalism.

It is to Marx' earlier writings, particularly on alienation, that we look for conceptual propositions about the nature of money and finance. [9] For example, reviewing James Mill's *Elements of Political Economy*, Marx (1844) emphasises the importance of contingency in relation to 'laws' about money and the essential

8 The notion of a Volume 1 framework picks up on Bryan's (1995) distinction between the different conceptions of internationalisation of capital found in each volume of *Capital.*

9 Marx's writing at this time, being strongly influenced by Feuerbach, is drawing on parallels between money and religion and both as alienated forms of social relations.

role of money as a mediating process. Both contingency and mediation, we shall see shortly, are central for understanding derivatives. Marx goes on to explain the basic characteristics of capitalist money:

> The personal mode of existence of money as money -- and not only as the inner, implicit, hidden social relationship or class relationship between commodities -- this mode of existence corresponds the more to the essence of money, the more abstract it is, the less it has a natural relationship to the other commodities, the more it appears as the product and yet as the non-product of man, the less primitive its sphere of existence, the more it is created by man or, in economic terms, the greater the inverse relationship of its value as money to the exchange value or money value of the material in which it exists.
>
> Hence paper money and the whole number of paper representatives of money (such as bills of exchange, mandates, promissory notes, etc.) are the more perfect mode of existence of money as money and a necessary factor in the progressive development of the money system. In the credit system, of which banking is the perfect expression, it appears as if the power of the alien, material force were broken, the relationship of self-estrangement abolished and man had once more human relations to man.

Gold is, in this regard, an extremely primitive form of capitalist money: indeed, we know it historically as pre-capitalist money. But Marx had no attachment to gold: its preeminent status is based, he contended, in superstition. The important point is that the more money is 'lifted above' direct commodity relations by 'losing' the characteristics of other commodities, the more "perfect its mode of existence" because the social relations of capital, expressed in commodity production, are not being distracted by the particularities of the chosen money commodity.[10] Financial derivatives, in this conception, appear as a highly advanced form of money.

5. Derivatives as commodity money

Financial derivatives are commodities. They are produced (as contracts) and offered on the market as products of the labour of financial market operatives who stitch up the deals. That they may be re-traded at variable prices and for speculative purposes is a secondary matter and true of most physical commodities, anyway. Indeed, the fact that over-the-counter derivatives (an agreement between two pre-determined parties usually made over the telephone and not mediated through an official exchange) now far exceed the number and value of (arms-length) exchange-traded derivative contracts is some testimony to this primary function. [11]

Undoubtedly, the simple proposition that derivatives are commodities is one of the highly contestable aspects of this analysis. The extensive and established debates about productive and unproductive labour are sidestepped, and there is no doubt that the following argument rests entirely on the acceptability of a proposition that derivatives are capitalist commodities. In clarifying this perspective, two propositions warrant explanation.

First, the proposition is not that the full value of a derivative contract is the product of the labour of financial intermediation. They are commodities whose sole function is the commensuration of other commodities. The labour value is undoubtedly miniscule compared with the monetary quantum of the derivative contract itself. Indeed, that balance is precisely what is required of commodity money. The more the face value of money represents the value of the money unit itself as a commodity (for example, the value of gold representing the labour time required to produce gold) the more its value in exchange is a representation of itself rather than of the commodities whose values it is supposed to mediate: in Marx's term, the less 'perfect' it is and the lesser its value as *money*.

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10 Notice also that Marx could contemplate an association of 'perfect money' with something as basic as the credit system and paper representations of money.

11 Measured by notional amounts outstanding at year-end, Table 2 shows, for 1998, $US 51 trillion in OTC derivatives compared with $14 trillion in exchange-traded derivatives.

Herein lies the importance of derivatives as commodified finance, providing a system of universal equivalence, but not, as with gold, a commodity contingent upon the limited universality of one particular commodity.

Second, a derivative's exchange value is determined by actions of trading informed by calculations about actual and likely movements in price levels, interest rates and exchange rates. In derivatives markets exchange values appear as a purely monetary phenomenon - a commodified version of the room of mirrors that is the money market. Technology has simply permitted enough time for the lightwaves around the room of mirrors to be converted into commodities in between reflections - each reflection can be traded before it hits another mirror, permitting the conception of an M-C-M circuit within derivatives markets. But to dismiss this as 'unproductive' (simply as a market for speculation) fails to recognise the central role of derivatives markets in mediating the discontinuities in the international financial system, and giving global continuity to accumulation. A futures contract, for example, 'converts' price (and value) in the future to price (and value) in the present, and so brings an inter-temporal notion of value.

Following Kay (2000) we find it useful to draw a distinction between simple commodities (wheat, iron, cars, etc) and meta-commodities. The former, being prior and the products of labour, are 'productive' and our standard conception of a commodity. Meta commodities come historically later, with the initial purpose of hedging the conditions of production and circulation of simple commodities.[12] They provide commensuration across time and space between diverse simple commodities. Their essential characteristic as commodities is that they are products of circulation, not of labour, and accordingly their use value is defined in exchange and not in consumption. These meta-commodities are therefore always 'capital', for they never 'leave' a circuit of capital so as to be consumed. In that sense, they are more intensively capitalist commodities than simple commodities, for the latter are merely *produced within* capitalist relations, while meta-commodities are *products of* capitalist relations. In a basic way these commodities meet Marx's conception of "the more perfect mode of existence of money as money". Whether one is 'productive' and the other 'unproductive' then seems to be an issue outside the objective of understanding the role of these commodities within capitalist accumulation.

12 See for instance, Kohn (1999).

Having identified the distinctive nature of derivatives as commodities their capacity as commodity money becomes apparent in the context of the discontinuities in the global financial system identified above.

6. Derivatives as the mediation of financial discontinuities

The raison d'être for financial derivatives is to secure commensurability across different kinds of financial assets and at different dates and in different monetary units. We have already contended that this need for commensuration is not to be understood as a process of arbitrage, moving financial markets towards an equilibrium. These markets have structured discontinuities that derive from nationally-secured currencies operating as both a domestic currency (with a domestic interest rate and subject to a domestic central bank) and a component of global finance. The 'national question' continually inserts ruptures into the continuity of global finance.

The discontinuities in currency values and interest rate regimes can be seen as a *spatial/temporal transformation problem* - there needs to be a formalised 'conversion' from one regime to another, though the rate of conversion is forever changing. Where money is simply a means of exchange, arbitrage is sufficient to eradicate discontinuities. Where arbitrage is not eradicating discontinuities, money must take the commodity form so as to broker these discontinuities. Swaps markets provide the practical, 'on the ground' solution to the spatial/temporal transformation problem.

We here also move towards some explanation as to why the possibility for arbitrage in interest rate swaps markets (mutual gain from swaps contracts) continues despite the enormous volumes of trade on those markets: there are national-currency-derived discontinuities within the global financial system that are being reproduced irrespective of the presence of arbitrage.

Essentially, these discontinuities are not fundamentally different from those with which Marx grappled - that there exists a global money system, but there are inconsistencies or barriers within that system, especially associated with the national form of money and nationally-driven interest rate regimes. In Marx's time, the expectation was that one particular commodity (gold) could traverse and reconcile all these inconsistencies and Marx himself, while

ambivalent about the role of gold as money,[13] eventually worked within this expectation.

Nonetheless, the requirement for global monetary continuity is precisely as Marx conceived of it in the abstract - a role for commodities that are both part of other commodities, but also discrete commodities - but gold is a single (or at best dual) dimensional commodity. [14] There are too many types of discontinuities in the global financial system to be reconciled by a single commodity in the role of money. The multiple forms of risk-exposure, reflecting the range of possible inter-temporal, inter-spatial, inter-financial instrument price relativities requires intermediation in a form that is itself flexible and able to reflect the range of possibilities in these relativities.

7. Conclusion

Derivatives markets trade in risk by providing a vast array of hedging/speculation facilities. Financial derivatives simply convert one form of financial asset into another, with a preferred risk profile. Their prolific growth in global financial markets is to be understood in part as a result of mounting and sustained financial volatility (and hence more, and more diverse risk) - the opposite financial condition from the Gold Standard. The critical point of financial derivatives is: a) that they are large, dominating international finance, and even dictating prices in spot markets,[15] and b) that they are finance packaged as commodities – contracts to be bought and sold and, indeed, re-traded.

This recognition identifies the role of derivatives as only monetarist money. It is nonetheless important. It shows the impossibility of advancing an explanation of derivatives any further while carrying the notions of money as either neutral arbiter (the neoclassical search for an adjustment mechanism) or that the role of financial markets is one of arbitrage. Competition and accumulation more generally are dynamic and indeed destabilising processes.

On the other hand, derivatives as class money show that there are indeed commodified links that bind the financial system and that these links are imbued with a class characteristic. Derivatives are now commensurating not just simple commodities but forms of money capital. They are therefore now a pivotal aspect of competition between capitals. The centrality of money capital to the whole accumulation process sees derivatives disciplining the terms on which (and the locations in which) money capital is transformed into productive capital and the terms on which the output of production is transformed to back to money capital. The connection to class relations in production is both direct and global. The competitive discipline in the sphere of money capital asserts direct pressures in the labour process. Derivatives articulate a form of money that is more adequate to the sense of global accumulation and global class relations that Marx sketched out in the *Manifesto.*

Financial derivatives draw the two monies in Marx - monetarist money and class money - back together. A derivative is a commodity that binds accumulation on a global scale (class money), but its exchange value is determined, at least in the first instance, in the realm of monetarist money.

Conventional theories of money see exchange rates expressing the rate of conversion of one national money system with another. Movements in the exchange rate were the mechanism of national adjustment (the equivalent of a purchasing power parity conception of the exchange rate). Our analysis suggests that this is a basic misconception of the international financial system, so it is not at all surprising that purchasing power parity (and its Marxist equivalent) are not being realised.

Derivatives are more than just a novel form of global money: they provide a particular perspective on the contradictions of the global financial system. Global finance is in fact a system of interacting national currencies - currencies that have certain national determinants (especially national monetary policy) but that now circulate so extensively outside their territory-of-origin that the national determination, while present, is highly attenuated. The result is a

13 Marx himself was somewhat inconsistent is his treatment of gold. He affirmed economists who had supported a money system not based around bullion, but his treatment of this remained at the level of critique. But by Volume 3 of *Capital* his analysis accepted the Gold Standard.

14 The duality relates to Marx's emphasis that gold never traded at its costs of production.

15 There is sustained evidence of derivative markets operating as the primary market for price discovery rather than the price of the so-called underlying asset leading derivative prices. As early as the mid 1970s it was found in certain commodities futures that price leadership had shifted to the futures market. See, for example; Garabade and Silber (1983) and Kwast (1986). On more recent evidence, see Vrolijk (1997). Our conception of derivatives suggests that this role is not accidental; commensuration is at the heart of derivatives.

financial system that is both integrated globally (via huge turnover in financial markets that trade these currencies) and inherently discontinuous (due to the on-going national determinants of national currency values).

Derivatives, and especially swaps, markets are absorbing the discontinuities in the international financial system, both providing global continuity to international finance and at the same time reflecting inter-national discontinuity.

Derivatives are critical to both historical and formal theoretical analysis. Their form matters: they cannot be seen simply as a novelty within 'the money system'. In attempting to understand derivatives within Marxist value theory, it may well be that this analysis has asserted some bold positions in important debates. But the analysis should be taken as a challenge: to explain derivatives in a way that doesn't marginalise them, for to marginalise them will prove to be a profound historical error.

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