

Financialisation and Derivatives: Constructing an Artifice of Indifference

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This paper accords derivatives a central role in defining the character and dynamics of financialised accumulation. Under the guise of financial precision and a progressive innovation spiral, financial derivatives have instrumentalised risk so that ownership and property take a novel form. The advent of limited liability and absentee ownership in the second half of the nineteenth century marked the start of this process of transformation. At that stage, ownership became fleeting and its relationship to the underlying technical process uncertain, loose and complex. Risk management through derivatives takes this a stage further. Derivatives imply that ownership can take a form wherein there are no direct ties to a particular asset, and therefore no possibility of a conceptual link between property and stewardship. Instead, ownership proceeds on the basis of disengagement and financialisation proceeds via the construction of indifference to the exigencies of 'real' economic competition.

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Introduction

A dominant dichotomy between functional and dysfunctional has characterised the analysis of derivatives. For the orthodox, the vagaries of circulation have become amenable to precise, private and consequently appropriately incentivised management. Alan Greenspan has been the most prominent advocate of this view: 'Financial innovation will slow as we approach a world in which financial markets are complete in the sense that all financial risks can be efficiently transferred to those most willing to bear them' (Greenspan 2003). In this perspective, derivatives play a functional role efficiently, optimally distributing risk and leading to 'the development of a far more flexible, efficient, and hence resilient financial system than existed just a quarter-century ago' (Greenspan 2004). The notions of complete and perfect markets are critical here. In a universal and open market millions of immediately executed transactions in derivatives serve, according to this theory, to verify and enforce prices in an underlying economy and ensure that risks are held by those most able and willing to bear them. Simply, derivatives afford specified risks, such as the default risk of a corporate bond, to be isolated and traded so that ultimately that risk resides in the optimal location. Further, arbitrageurs impose completion on markets by deconstructing, replicating and co-joining assets to synthesise a world of infinite Arrow and Debreu (1954)

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securities. Product variegation, market depth and flexibility in the over-the-counter (OTC) markets rendered this hitherto theoretical construct an immanent reality.¹

Most recently, the advent of the credit derivatives market in response to a burgeoning global corporate bond market has meant that derivatives now trade, in addition to price or market risks, the probability of default. An American regulator commenting on the attitude of regulators to the then nascent market made the underlying assumption of immanent completion explicit: 'They see the new product as something good, like a new way of exchanging, a way to complete the market in Arrow-Debreu fashion. This is the American way of seeing things and particularly that of Alan Greenspan who has boasted the merits of credit derivatives' (Ranielli & Hualt 2007: 13). Completing markets promise that all possible future contingent states of the world can be encompassed in a contract and actively managed. Contra Knight's (1921) unbridgeable distinction between risk and uncertainty, the alchemic propensities of financial innovation ostensibly turn deleterious uncertainties into fungible globules of risk. The issues here are not minor. If derivatives generate complete markets and unequivocally promote the effective management of the myriad financial uncertainties facing actors in a global economy, the market has escaped the double bind of Polanyi's 'double movement' (1944). The promise of 'pure economics' has been fulfilled (Walras 2003 [1874]). Simply, in this view derivatives have lent the markets an independent and internal coherency and consequently freed finance from the assumed distorting necessity of exogenous regulation and direct political control (Miller 1986; Silber 1983).

In contrast, critical analyses of derivatives have largely focused on a dysfunctional pathology. A notional \$683 trillion (BIS 2008) now rests in financial derivatives markets, more than 13 times the GDP of the entire planet. The sums involved in financial derivatives far outweigh any requirement emanating from the real economy. In this discrepancy is often read anarchy and a measure of the proportions of a global casino. Derivatives have frequently been, and continue to be central to, frauds, market manipulations, rule circumvention and speculative crises. Indeed, they are the 'wild beast of finance' (Steinherr 1998). Repeated crises have shown that the plumbing is running awry and a state-led regulatory overhaul is urgent and necessary (Eatwell & Taylor 2000). Derivatives markets are an unregulated and dysfunctional private casino, 'mad money' (Strange 1998), the operations of which generate systemic risk which might render the Great Crash a mere footnote in history (Toporowski 1999). Leverage, market concentration and counterparty risk in a regulatory void render derivatives 'financial weapons of mass destruction' (Buffett 2002). As derivatives require no upfront payment other than the contract fee, the limits set on risk appropriation by the availability of funds are broken. Further, the ability to synthesise underlying 'primitives' translates into an origination capacity unbridled by anything other than fallible credit ratings (SEC 2008). Certainly, the derivatives trade has extenuated the speculative character of financial markets (Saber 1999). The question arises, however, of how far such a depiction based on the notion of finance as host to a parasitical *rentier* interest opens up the historical reality of a system of derivatives. In this conception derivatives would simply be a means of gaming the system, a perversion that nurtures crises.

Derivatives have a 4000-year history (Swan 2000) and that history is regularly punctuated by speculative excess. The seventeenth-century Dutch tulip mania, disastrous experiments with establishing a national monetary infrastructure in eighteenth-century England and France (the South Sea and Mississippi schemes), fraud and manipulation on the nineteenth-century commodity exchanges and the current 'credit crunch' all testify to

the powerfully destabilising propensities of derivatives. But if this were sufficient, the analysis of derivatives might rightly remain in the realm of the technical and be based on a functional characterisation of finance. Derivatives are then merely the latest catalyst, the current trigger in iterative cycles of manias and panics. In these terms, then, contemporary derivatives are simply more, and more, of the same.

I argue that while these perspectives illuminate pressing and now starkly apparent concerns, they fail to open up the question of the historic proportions of a globe-spanning lattice of derivatives. Financial derivatives have affected a significant shift beyond the perfection or perversion of market forces. The historical substance of these innovations lies in how derivatives modify the socio-political content of a financialised world economy as opposed to their role within finance explored as a closed system. Derivatives instrumentalise risk in such a way as to promote financialised accumulation, which abstracts from any linear relationship to underlying processes of real wealth creation. As such, finance proceeds on a novel footing. Under the guise of risk management, financial innovation has generated a plethora of derivative instruments which seem to simply mirror extant volatility, but in reality render volatility or variance a distinct traded asset. In turn, while justified by their ameliorative impact on uncertainty and role in optimising the capital allocation process, derivatives have profoundly altered a host of financial practices so that the financial sphere sits on top of the world economy attempting to profit despite, and indeed on the basis of, the vagaries of competition within it. Risk-based financial practices have re-cast finance as an artifice of indifference. While this artifice harbours a series of contradictions which render it unstable and incubate liquidity driven crises, this inner logic of indifference and the transformations this makes possible, rather than the crises themselves, define the novelty identified here in a global lattice of financial derivatives.

The paper suggests that the contemporary re-emergence of derivatives markets should be understood not solely through their quantitative role in financialisation, but in their qualitative impact on the character and capacities of a financialised world economy. This impact is elaborated through a brief exploration of modern finance theory, which raised the spectre of volatility as a distinct and isolated traded asset. The second section contributes to the financialisation literature that seeks to meet De Goede's (2004) call to 'repoliticize financial risk'. Theoretical innovation formed the basis of a shift in the logic of mediation from growth to change. As a system of ideas and calculative rationality, risk embodies a project to align the discourse of finance with the subjectivity of liberalism and ring fence the financial system behind a veil of precision (Bernstein 1992, 1996; Ewald 1991; Holzer & Millo 2005; Miller & Rose 1990; O'Malley 2000). Additionally, and crucially here, the 'performativity' of risk (Callon 1998; Mackenzie 2006) generates novel practices of intermediation and a new object of financialised accumulation. In these terms, this argument aspires to contribute to this strand of the financialisation literature by drawing attention to the links between, on one side, risk as a system of ideas and affective discourse and, on the other, concrete transformations in the systemic character of global financial markets. Consequently, a third section argues that derivatives instrumentalise risk as a novel form of ownership, a new object and means of appropriation and control, which rests in circulation and contests finance as a site of accumulation in and of itself. The conception of derivatives on the basis of risk and property situates this argument on the central terrain of the financialisation literature. That is, the question of how best to interpret and characterise post-Fordist accumulation.

Constructing a Theory of Financial Precision

Modern finance theory is the basis upon which risk as a system of ideas has been instrumentalised in derivatives as a form of property. Innovations in finance theory embody a substantive financial novelty, rather than incremental advance. Essentially this novelty lies in the capacity to isolate various ‘attributes of assets’ (Das 2005) on the principle that finance concerns variance not quantity. A series of innovations have incrementally transformed the object of global finance. Where finance has always to some extent concerned the valorisation of change in, for instance, attempting to exploit differences in the relative value of currencies, finance theory has simultaneously refined the capacity to isolate variation and generated an array of securities which are distinct from underlying credit instruments, or historic primitives. This process of innovation propels risk to the very centre of global financial activity so that global finance increasingly rests in an artifice of indifference legitimated under a mantra of precision. ‘Mantra’ is employed advisedly here. The current financialised depression was catalysed by a hubristic faith that, for instance, the risk of an institution defaulting on its debt obligations could be successfully isolated from the wider market and macroeconomic processes that might lead to sudden bouts of illiquidity and counterparty credit risk.²

The narrative of modern finance theory stretches back to 1654 and the beginnings of probability theory. Chevalier de Méré challenged Blaise Pascal to resolve the puzzle of how to divide the stakes between two players in an unfinished and uneven game of chance.³ The solution that Pascal arrived at with the help of Pierre de Fermat founded the theory of probability and led to a gradual process through which the arbitrary and often cruel hand of nature would be replaced with a mathematically exacting science of the future. Jacob Bernoulli’s Law of Large Numbers, Abraham De Moivre’s Law of Averages and the independence of random events,⁴ discovered in the early eighteenth century, implied that events naturally re-occur and revolve in a predictable manner around an average. These fundamental principles are the basis upon which modern finance theory, a theory of a calculable future, has developed (Bernstein 1996: 2–6; Hacking 1975). The early breakthroughs in probability theory mark the onset of the modern institution of risk which replaces fate and a providential conception of an unfolding future with hard science and a mathematical myth of control. It is sufficient to focus on recent contributions to elucidate both the political character of probability theory and its centrality in generating the specificities of the institution of property in the guise of derivatives.

Until financial markets and mathematised finance theory walked hand-in-hand, finance could easily be derided as a casino, rather than a market proper in the neoclassical sense. Finance theory promises financial precision. In turn, a promise of precision naturalises financial activities as functional and optimal. Just as marginal preferences in subjective value theory isolate the market as a politically inert machine, subservient to a ‘real economy’, options pricing isolates financial markets behind a pretence to a natural science of the future. This highly persuasive façade masks both the real deleterious consequences of financial innovation, financial inflation and volatility, and the global political economy this innovation generates, financialised indifference.

Collectively, the literature on modern finance theory expurgates its antithesis, the Keynesian (1936) idea of finance as a casino in promising the complete market of Arrow and Debreu (1954) where rational and fully informed participants trade as risk all future uncertainty. ‘The possibility of writing option contracts opens up new spanning

opportunities. Although there are only a finite number of marketed capital assets, shares of stock, bonds, or as we shall call them “primitives,” there is a virtual infinity of options or “derivative” assets that the primitives may generate’ (Ross 1976: 76). Arrow’s work represents the intellectual forbear of the driving idea within options pricing theory that it may be possible and efficient to substitute a revised portfolio of existing securities for securities not in the market, but necessary for its iterative completion (Rubinstein 2003). Notably, it is also Arrow’s anxiety as to the deleterious impact of uncertainty on society and the economy which informs the normative legitimization of contemporary derivatives. In place of uncertainty, market completion through options promises a seamless web bridging times, spaces and numerous variegated particularities. In the history of finance, then, innovation driven fungible prices for all times, places and things could mark a veritable ‘end of history’ (Fukuyama 1989). To the innovators, the breakthrough in theory meant that finance had discovered a mechanism with which to valorise assets with such a degree of precision that it would fulfil its role in pricing and allocating capital with unprecedented efficiency and efficacy. While this has not resulted, the spectre of complete markets and derivatives as the assumed driver of completion has shifted both the character and role of finance in accumulation.

The most prescient origin of this process of expurgation and ostensible completion, along with the concomitant isolation and construction of risk as the foundational unit of global finance is Harry Markowitz’s single period mean-variance ‘portfolio theory’.⁵ This posits that portfolio selection occurs in two stages; first, in arriving at a set of beliefs about the future performance of available securities and, second, on the basis that, ‘the hypothesis (or maxim) that an investor does (or) should maximise discounted return must be rejected’ all assets should be managed in synchronicity (Markowitz 1952: 77).

Since stock price movements are random (Bachelier 1900), it is impossible to beat the market and investors should attempt to hold the equivalent of the entire market to optimise returns against risk.⁶ By diversifying a portfolio’s holdings, all idiosyncratic risk can be eliminated to leave only that of holding the market itself. Crucially, as a result of the capacity to quantify the risk–return trade off for general assets with correlated returns, risk migrates to the heart of the investment decision. This encompasses a partial shift from a situation where an investor values an asset according to its idiosyncratic potential growth, or ‘known’ payment streams, to one where an asset’s value is determined not solely by the potential magnitude of returns, but the variance and co-variance of those returns over time. At this juncture, variance, volatility or change is isolated as a key determinant in the investment process, revolving around identifying an ‘efficient frontier’, on which returns are maximised against preferred levels of uncertainty.

Unfortunately, Markowitz’s (1952) theory involved prohibitive calculative complexity. In order to implement the strategy, the variance of returns of each stock needed to be gauged against that of every stock available in an almost infinite list of co-variances. Sharpe (1964) and Lintner (1965) were to offer a resolution in the Capital Asset Pricing Model (CAPM). The notion in mean-variance theory that only the risk of holding the market itself cannot be diversified away prompted Sharpe to investigate the risk of holding stocks in general in order to define the risk of holding any one stock in relation to the market overall. The measure of this risk is ‘Beta’.⁷ Whereas Markowitz provided the reasoning behind identifying risk at the fulcrum of the investment decision, the CAPM provided the technical mechanism to put a number on it.⁸ By distinguishing the diversifiable risk of a security, idiosyncratic risk, from the non-diversifiable, market risk, the CAPM suggests that the only

basis upon which any security can earn above the risk free rate of return is the degree to which that security's volatility is above that of the market as a whole. Consequently, the payment on a security is identified as a function of variance rather than absolute returns. In other words, the CAPM provides a means to price assets on a gauge where returns are a function of relative performance gauged through volatility rather than absolute growth. This marks the historical specificity of the contemporary global financial system; the magnitude of output or market price is paralleled by that of volatility or variance of returns. Importantly, the theory of finance at this stage posits that an asset's growth is cancelled out by its risk or volatility in determining its value. At the least, this plainly implies that volatility carries equal weight to growth in determining a financialised investment decision.

Closely following the quantification of risk at the centre of the investment decision through the CAPM, was the effective resolution of the long-standing problem of a practical means of valuing an option. Black and Scholes (1973) and Merton (1973) provided a solution, which, 'virtually from the day it was published . . . bought the field to closure on the subject' (Merton 1994: 454). Further, '[A]s a prototypal structure, options serve as the simplest examples of securities with non-linear sharing rules' and the basic building block for a system of variegated derivatives (Merton 1990: 8). Simply, the Black–Scholes model states that the price of a stock option, effectively the price of uncertainty, is given by the price of a continuously adjusted replicating portfolio in the underlying stock, and the government bond market or cash.⁹ If the price of the two were to diverge, investors could arbitrage that difference until convergence reasserted itself. Critical, here, is that this breakthrough in option pricing in effect constituted volatility as a distinct commodity.

In the context of a farmer and commodity options such as pork belly futures, a derivative could be understood to provide a mechanism for taking directional positions to maximise productive and distributive efficiency, and thereby the bearer of a linear relation to the activity of farming. A call embodies a bet that the price of the underlying will rise, a put, that it will fall. The Black–Scholes model delineated and constituted a new financial object, *volatility*, since the model could generate a number to gauge the volatility implied by the option price. Given readily observable inputs for the other parameters of the model, these could be 'read backwards through the model' to produce an implied volatility for the underlying stock. In turn, implied volatility offered a 'common metric' across underlying assets, and a 'simple and economical way of *talking* about options' (Mackenzie & Millo 2001: 34; emphasis in original). Implied volatility therefore homogenises disparate assets in a particular fashion; investing in options becomes investing in volatility. Indeed, the value of an option is largely a function of volatility, since an option with a high strike price, far above that currently in the spot or cash market, is worth more when prices in the underlying spot market swing further and more frequently. Consequently, investing revolves more around acquiring and divesting volatility than identifying and capturing growth in distinctive and socially particular assets. The subsequent development of finance theory largely broadened and honed the applicability of the initial Black–Scholes formula to incorporate multidimensional measures of a security's risk and a dynamic inter-temporal and international context.¹⁰

The critical impact of finance theory on the political economy of contemporary finance lies in the fact that it attempts to reformulate the object of finance to bare essentials in terms of financialised accumulation. The object of ownership becomes refined to fluctuations in isolated aspects of an asset's value in and of themselves. This process of financial refinement casts into doubt any linear conception of the relationship between finance, considered

epiphenomenal, and the economy, considered 'real', which may in consequence require some revision. A system of derivatives holds out the promise of financialised accumulation which relies not so much on a direct distortion of an underlying 'real economy' as on the construction of an alternative arena of accumulation in which the object is risk.

The Productivity of Risk

Against the backdrop of increasing levels of volatility in a financialised world economy, risk management with derivatives rose to prominence. One author has even suggested that we live in an era of the 'risk management of everything' (Power 2004). Increasing levels of profit-seeking within finance called for a mechanism to control the impact of movements in now specifiable financial parameters. Just as limited liability arose partly as a means to provide a more robust and sustainable risk-sharing mechanism in the nineteenth century (Baskin & Miranti 1997; Chandler 1990; Coase 1937), derivatives in the last quarter of the twentieth century constituted a seemingly resilient and efficient means to ameliorate and optimally distribute a broader set of specifically financial risks. Myriad contingent financial contracts contributed a semblance of certainty to an uncertain environment.

On the face of it, derivatives appear as a highly developed form of insurance which arose as a direct reflection of increasing financial volatility and uncertainties. In these terms, derivatives, while technically fascinating, are solely functional. Derivatives correspond to the objective phenomenon of market volatility and consequently should be evaluated in terms of the efficacy of this response. In contrast, this paper contends that risk management with derivatives is historically productive. Risk, rather than an objective link between circulation and wealth production, is a system of ideas upon which rests a marked transformation in the capacities of global finance. A discourse of risk has opened up the opportunity for the codification of new practices of mediation, which, in aggregate, reformulates both the character and object of finance.

In the majority of accounts risk is understood in terms of dangerous uncertainty, and risk management therefore concerns the mitigation of potential threats. For some, and at times, risk management will seek to divert or ameliorate potential dangers. However, in this understanding risk is only danger and management only mitigation, or a sophisticated insurance practice. In this guise, risk could be understood to play a secondary role in processing value emanating in underlying wealth production. However, risk concerns both danger and opportunity and, as such, constructs the full array of uncertain future outcomes or events within a peculiar probabilistic field of vision. The perception of increased uncertainty and danger legitimises risk and risk management practices, but belies a more substantive transformation.

A closer exploration of precisely that to which risk refers opens up the characterisation of derivatives asserted here. There is no clear definition or decisive etymology of 'risk'.¹¹ Two meanings are apparent and historically persistent. First, risk refers to potential danger or threat, the potential for loss or damage. Second, it refers to opportunities in an uncertain future, or adventure and potential gain. The mistake is to separate the two at the expense of an appreciation of the broader scope of risk as a performative rationality. A one-sided definition of risk and known potential harm buttresses the conventional and normative appreciation of derivatives markets in the functional terms of danger mitigation or insurance.

The Greek language contains two words encompassing the interaction of people with an uncertain future, *Kindunos* and *Peirao*. *Kindunos* translates as ‘danger’, ‘hazard’, ‘chance’ and ‘venture’, while *Peirao* translates as ‘to attempt’, ‘to endeavor’, ‘to try one’s fortune’. Both hold in tension two distinct and related meanings; on one side, potential loss or harm, on the other, uncertain opportunity. *Peirao* developed into the Latin, *periculum*, meaning ‘a way through’, ‘a passage’, ‘an experiment’ or ‘attempt’, and ‘a peril’, ‘danger’ or ‘hazard’. Around the fourteenth century the Latin *periculum* developed into the word *risicum*, meaning ‘danger’, ‘venture’ or ‘crisis’. Notably, crisis then referred not to a catastrophic emergency but a decision or unknown outcome.

Modern Italian and French retain this Janus-faced meaning to encompass peril, hazard,¹² chance and adventure. Thomas Blount’s first mono-linguistic English dictionary published in 1661 marks the onset of the reduction of risk to potential loss. His definition as ‘hazard’, ‘danger’, ‘peril’ and ‘chance’ omitted adventure and the emphasis on opportunity. Risk subsequently developed largely in the punitive and prudential environment of the English law courts, where its meaning was successively narrowed to focus primarily on financial loss.¹³ This paper suggests that the older definitions must be resurrected to comprehend the significance of risk management with derivatives. Risk and derivatives create a space incorporating simultaneously both danger and opportunity. If this were not the case, financial derivatives would either be pure insurance contracts or pure leveraged bets. Derivatives commoditise variation, rendering volatility a distinct asset class and contesting finance as a site of accumulation in and of itself.

Derivatives do not focus primarily on potential loss. Indeed, conceptualising derivatives in these terms is extremely problematic. For instance, the orthodox binary of speculation and hedging means little in terms of probability and risk.¹⁴ If a mining company hedges the price of a portion of its silver output by selling it forward, the hedge is equally a speculation that prices will move in a way that justifies the position. Equally, one can think of a speculative position as a hedge under future, now uncertain, circumstances. The treasurer of the mining company is establishing a position in the market, whether it is named a hedge or a bet. Further, a derivative which swaps floating rate into fixed rate interest payments substitutes the danger of rising rates for that of falling rates, or, in other terms, substitutes the opportunity offered by falling rates for that offered by rising rates. Equally significantly, when derivatives are conceived as a system rather than numerous discrete contracts, the system constitutes a coherent lattice which simultaneously embodies danger and opportunity. Risk’s Janus-face is not easily cleaved. Risk embraces danger, peril, opportunity and adventure. To emphasise one or the other is partial and analytically neutering.

Mediation proceeds in consequence squarely on the basis of positioning in the face of uncertainty. The *raison d’être* of finance shifts in consequence from an optimal allocation of resources to those activities deemed likely to generate the highest absolute levels of return, to an optimal allocation of resources given the imperative of maximising returns against a tolerable ‘bandwidth’ of exposure. Risk and return are mutually constitutive here. In consequence, finance now abstracts from any linear relation to the vagaries of competition.

Behind popular and conventional notions of risk management in terms of maximising prudential behaviour is camouflaged a more substantive transformation which calls for an alternative ‘repoliticization of financial risk’ (De Goede 2004). A response to such a call requires derivatives to be understood not as epiphenomena, but as a novel form of ownership. When derivatives are understood as such, as a novel form of property, perhaps

the historic proportions of a system of derivatives can begin to be elucidated. Risk management, here, is not a technology that reacts to some underlying real process, although in part of course it does. Contemporary derivatives, for instance, would not have a significant role to play if it were not for the substitution of global finance for the ostensible ‘financial repression’ of the Bretton Woods era.

However, perhaps there is more to a system of derivatives than such an understanding would infer. Risk management is productive. The transformation that occurs in consequence goes to the heart of extant conventional conceptions of finance as either distorting or perfecting. Risk ascribes finance with a logic of indifference. This indifference can never be absolute since finance cannot unequivocally decouple from a real economy. However, when a logic of indifference permeates financial mediation, finance internalises the vagaries of performance or competition in a manner that contests finance itself as a site of accumulation. When derivatives are conceived as a new form of ownership, rather than solely as a new mechanism of mediation, this historic role can be attributed to them. The issue of ownership immediately imputes derivatives with a substantive character beyond any prior epiphenomenal conception.

Ownership and Derivatives

The institutional organisation and form of property is crucial to understanding changes to the nature of control through direct appropriation. When risk and property are married in derivatives, the object of appropriation lies in a new arena and takes a new form. Under industrial capitalism, property and production were intrinsically entwined. In contrast, derivatives appropriate aspects of circulation and afford the control over those dimensions of assets that are valorised and constituted by circulation. As such the equation of property with derivatives transcends a prior conception of property as direct claims on the material world. Veblen’s (1924) notion of ‘absentee ownership’ in the limited liability company, marked the opening up of an historical process wherein ownership progressively abstracts from the physical materials underlying it. In so doing, circulation garners a competitive logic determined in part internally as owners trade shares to maximise their position. Here, I argue that derivatives push this process a stage further with the effect of pushing competition in circulation further away from its ‘natural’ origins in production.

The evolution of modern property forms is now passing through a third stage.¹⁵ Commonly, ownership is understood to take two forms. First, that of direct private ownership, where the worker is separated from owning the means of production and there is no separation between proprietor and manager (Kay 1982). In this, labour as a commodity is alienated from its product and the means of production and the owner-manager’s interests are firmly tied to the owned entity. The owner is on site overseeing the productive process, and therefore the contest between owners for shares of the social product is conducted through productive competition. Capitalist owner-managers have but one means to compete and the liquidation of the owner-manager’s relationship to the entity is difficult and expensive. When a private company loses a dominant competitive position, the owner must sell the entire capital of the enterprise to re-invest in another activity. The flexibility of ownership here is considerably encumbered by a very real physicality.

This contrasts starkly with the second stage of ownership – ownership through equity in the public form of the joint stock company, which Veblen termed ‘absentee ownership’

(1924), involves the transfer of ownership on the stock market between numerous and dispersed owners one step removed from the underlying productive process. Through shares, ownership is separated from capital, which, in the form of the corporation, is given the legal form of a person, *persona res*. Marx, in the third volume of *Das Kapital*, reasons that the ‘formation of stock companies’ not only expanded the scale of production and level of centralisation, but also drove ‘the abolition of capital as private property within the boundaries of capitalist production itself’, and the ‘transformation of the actually functioning capitalist into a mere manager, an administrator of other people’s capital, and the owner of capital into mere owners, mere money-capitalists’ (1906: 516–517). While, for Marx this process accelerated an inevitable disintegration of the mode of production (ibid: 522), in the evolutionary institutionalist conception of path dependent but crucially open-ended historical change (Commons 1934; Hodgson 1999), capitalist competition gravitated from the production process to processes of circulation, or processes of circulation began to define the competitive outcome of ownership in tandem with the productive process.

This transformation was a function of property disengaging from production so that, ‘the visible relation between the owner and the works shifted from a personal footing of workmanship to an impersonal footing of absentee ownership resting on the investment of funds’ (Veblen 1924: 59). Through shareholding investors obtained a fungible and immanently fleeting form of property. Veblen, noting the functions of risk-sharing and economies of scale, identifies in wide-scale share ownership not an economic efficiency but a pecuniary dynamic with economic efficiency as its victim. The interest of the capitalist manager is firmly tied to the fortunes of the owned entity. However, where ownership is embodied in shares and fluctuating share prices, the transaction costs involved in the liquidation and acquisition of incorporeal assets are minimal. The capitalist investor can easily compare the returns on an investment against the returns on all other similar forms of investment and can adjust a portfolio rapidly to beat the average. ‘[T]here is no place in Big Business for considerations of a more material sort or of a more sentimental sort than net gain within the law. It moves on that plane of make-believe on which the net gain is a more convincing reality than productive work or human livelihood’ (Veblen 1924: 217). In this constellation, the differential advantage of capitalist managers (mere ‘money capitalists’) ‘took precedence over the economic advantage for the community; or rather the differential advantage of ownership is alone regarded in the conduct of industry under this system’ (Veblen 1908: 107).

Derivatives as potentially a third form of ownership take a distinctly different form. Through a derivative the rights and obligations associated with the first two forms of ownership are not apparent. Instead, as a second level of abstraction from the underlying, derivatives embody the ownership solely of synthesised aspects of asset performance or ‘attributes of assets’ (Bryan & Rafferty 2006: 44; Das 2002: 5). Now, asset ownership is disconnected from any direct ownership of tangible or incorporeal assets. Indeed, this is the very essence of a derivative; ownership takes a form whereby a leveraged exposure to an asset is not predicated on, or limited by, the direct ownership of that asset. The value of a derivative is determined by movements in the value of the underlying share, bond, currency or index while bestowing no rights or obligations in regard to the underlying entities. While the ownership of firms through public equity bridged a division between production and circulation, derivatives render that binary itself problematic in certain terms. The ownership afforded by derivatives rests in circulation and, as an integrated lattice of differentiated

exposures commensurated on the basis of risk, a system of derivatives raises the spectre of an internal coherency to circulation which negates the prerequisite of a conception of accumulation which arises from production up through circulation.

Each stage in the evolution of property marks the progressive development of the liquidity and fungibility of ownership (Bryan & Rafferty 2006: 68–101). In the first stage, ownership (and labour) escapes the straitjacket of feudal rights and obligations to be embodied in firms. This is a necessary precondition of liquid ownership and market competition. Ownership must function solely in terms of profit seeking, rather than any alternate value such as kinship or status in feudal hierarchy. In this form, ownership is liquid in that firms are compelled to compete or fold. In the form of the joint stock company, equity ownership is separate from control over production. Through shareholding, investors obtained a fungible and immanently fleeting form of property. In this context, ownership revolves around a share in a company's performance. That performance is gauged against a market average and shares are bought and sold on secondary markets as the owner attempts to 'beat the average'. Ownership now sits between two poles, at one end of which is a particular relation to a company and, at the other, a more generic relation to accumulation in terms of a claim in the secondary stock market. Here, the owner's legal position bestows upon her no material claim on company property.

In the third stage, ownership reaches perhaps its highest stage. In an equity derivative the owner has no claim on the company whatsoever, legal or material, but owns solely abstracted aspects of company performance, valorised on variation rather than growth. Ownership in consequence becomes unencumbered by any linear relationship to specific underlying productive or commercial activity. Derivatives render property eminently fungible. First, derivatives afford an inexpensive and inherently leveraged exposure to asset performance. Second, as a further abstraction from the underlying entity derivative markets, under conditions of normal business, are deep and liquid, while underlying markets may be subject to regulatory and political frictions or suffer from the absence of completion.¹⁶ Third, since the value of a derivative is first and foremost a function of volatility or variance, any specific derivative contract can be commensurated with another that references a legally quite distinct asset, on this basis.

Derivatives not only heighten what has been a historically increasingly exacting competition between companies, between labour and between labour and capital through constant monitoring and commensuration (Bryan & Rafferty 2006), but also crucially isolate different aspects of the corporation or capital, and valorise through risk the performance of these. In so doing, derivatives propel the further abstraction of ownership from its 'real economic' basis and lend ownership a truly universal character. To be clear, derivatives may be eviscerating the necessary centrality of prior universal objects of ownership, whether ultimately the social relations of production or, in orthodox terms, productive wealth measured on a hedonic gauge. The new object of ownership generated in a system of derivatives is both a product of circulation and rests in circulation and its universal character is best understood to be risk.

Conclusion

Once ownership takes the form of isolated exposures to specified risks, the ownership of 'attributes of assets' (Das 2002: 5), conventional notions of the relation between property

and an underlying physical economy are rendered uncertain. First, property is no longer encumbered by the restrictions of a necessary physical connection. Second, and in turn, the limits of this prior necessity are broken. As an abstract and synthetic exposure to performance as risk, financial production is not limited by the quantitative dimensions of underlying physical activity. Third, in isolating risk as an object of ownership, financial mediation proceeds on the basis of a capacity to construct an almost infinite series of moments of indifference to the vagaries of competitive outcomes in the real economy. The ownership of risk in derivatives produces systemic mediation which, rather than severed from underlying activities, is rearticulated with them in such a way as to effect the neutering of any linear relationship between negative or positive performance and financialised profits. Derivatives represent a novel means and way of finance appropriating the social world so that finance profits by change and is not necessarily encumbered by the direct imperatives of industrial capitalism and competition through production.

It is perhaps on this basis that an understanding of the current systemic implosion may be fruitfully enriched. Rather than seeking this understanding in perverse practices in the sub-prime mortgage market, the contradictions generated by the increasing institutionalisation of this new property form may illuminate how and why a system-wide long position on credit emerged and was sustained. In brief, the capacity to synthesise assets and trade variation broke the limits of financial production and gave market participants a fatal pride in their ability to construct, calculate and control risk. In turn, solvency and systemic stability came to be defined through liquidity rather than capital. However, that despite what now seems an epochal crisis the derivatives markets have continued on their inexorable path of expansion, suggests that the institutionalisation of an artifice of indifference may be a more consistent feature of contemporary financialisation than its quantitative dimensions.

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Notes

- 1 In contrast to exchange-traded contracts, OTC derivatives are privately negotiated and tailor-made. As such, OTC derivatives can be designed to the specific requirements of parties to the contract and take myriad and 'exotic' forms. OTC markets can fabricate any underlying reference, index, maturity and pay-off structure, and therefore promote a semblance of market completion. Commercial banks who had left the investment banking business after the 1933 Glass-Steagall Act, re-established investment banking businesses in London to issue offshore eurodollar loans and bonds. Spotting that borrowers paid higher amounts for loans in foreign markets, the banks began to arrange parallel loans between markets. To avoid taxation on the foreign currency loans, the deals were moved 'off balance sheet' and the cross-currency swap was invented. The first major transaction was in 1981, when IBM and the World Bank entered a cross-currency swap between the dollar and the Swiss franc and German deutschmark (Abken 1991: 13). Subsequently, the same mechanism was applied to the volatile interest rate market

- to provide banks suffering from low fixed rate assets (loans) and high floating rate liabilities (deposits) with a mechanism to reduce their losses (Dunbar 2000: 73–78). This is now the largest financial market in the world.
- 2 As Montgomerie argues, ‘Financialisation is not a cohesive system, instead actors and markets attempt to find social coherence, but often fail’ (2008: 234). Although aspirations and theories do not mirror reality, they are powerfully affective.
 - 3 For illustration, Pascal needs six heads to win and Fermat six tails. When the game is interrupted, Pascal has five heads and Fermat three tails. The question is how a pot of winnings should be divided. Fermat needs three tails in a row, Pascal one head. There are six different possibilities. The first coin could be heads or tails, the second heads or tails, and the third heads or tails. One out of the six possibilities will give Fermat a win, five out of six will give Pascal a win. Therefore, Pascal should receive five-sixths of the pot and Fermat one-sixth.
 - 4 The law of large numbers asserts that, given a sample of independent and random variables with a finite expected value, the average observed outcome will be proximate to this expected value. The law of averages asserts that the outcome of random events will even out over the short term. However, even though if four heads have been thrown in row and intuitively we may expect a tails, the outcome of each throw is independent of past throws, so in fact there is an equal probability of throwing either heads or tails. The coin has no memory. Robert Merton, the leading advocate of financial market rationality, argues that this process of mathematisation is both a critical and defining feature of contemporary finance, ‘In summary, in the vast bulk of the past, mathematical models have had a limited and ancillary impact on finance practice. But, during the last two decades, these models have become central to practitioners in financial institutions and markets across the world. In the future, mathematical models are likely to have an indispensable role in the functioning of the global financial system including regulatory and accounting activities. . . . finance was almost entirely a descriptive discipline. Finance theory was little more than a collection of anecdotes, rules of thumb, and shufflings of accounting data’ (Merton 1994: 400, 452).
 - 5 At the time of the publication of his seminal work, Markowitz was an unknown graduate student at Chicago University doing operations research (Bernstein 1996: 248–252).
 - 6 Burton Malkiel outlines the implications of this starkly: ‘Common sense attests that some people can and do beat the market. It’s not all chance. Many academics agree; but the method of beating the market, they say, is not to exercise superior clairvoyance but rather to assume greater risk. Risk, and risk alone, determines the degree to which returns will be above or below average, and thus decides the valuation of any stock relative to the market’ (Malkiel 1999 [1973]: 200).
 - 7 Market ‘Beta’ is set at 1.00; risky assets will have a Beta higher than one, for example 1.06, and safer assets below 1.00.
 - 8 Ross (1976) in his Arbitrage Pricing Theory (APT) developed the CAPM to extend the single risk measure, Beta, of the Sharpe–Lintner proposal to multidimensional measures of a security’s risk such as growth and inflation.
 - 9 In this, the value of an option depends on four elements: time (long duration options are worth more than short); strike price (the difference or spread between the current spot price of the underlying stock and that of the option); interest rate (interest foregone by committing funds to the option over its duration or gained by the seller in holding the underlying stock); and volatility (the relationship between the mean price and its variance).
 - 10 The substitution of a continuous time model in a ‘super perfect market paradigm’ where selections are periodically adjusted for the single period of Markowitz, ‘produces optimal portfolio rules that are identical in form with those prescribed by the mean variance model and the CAPM’ (Merton 1990: 15, xiv). Solnik (1974) pioneered work in the application of a continuous-time model in an international setting.
 - 11 ‘Many of you here remember that when our Society for Risk Analysis was brand new, one of the first things it did was to establish a committee to define the word “risk”. This committee labored

- for 4 years and then gave up, saying in its final report, that maybe it's better not to define risk. Let each author define it in his own way, only please each should explain clearly what that way is. Moreover, the discipline of risk analysis, as you know, is heavily entwined in the subject of Probability. In that discipline the semantic confusion is legendary. It has often been called a Tower of Babel' (Kaplan 1997: 407).
- 12 Indeed, even the term hazard is ambiguous. Originating in the Arabic, *al-zahr*, hazard refers to dice and games of chance. Thus, in contemporary English usage, hazard can mean a fallen tree in the road or an uncertain offering, as in 'hazard an opinion'.
 - 13 This etymological reading is primarily drawn from Cline (2004).
 - 14 Gordon (1991: 20) similarly emphasises that probability constitutes a peculiar field of vision: 'It deals in a series of possible and probable events; it evaluates through calculations of comparative cost; it prescribes not by absolute binary demarcation between the permitted and the forbidden, but by the specification of an optimal mean, within a tolerable bandwidth of variation.'
 - 15 Bryan and Rafferty (2006) deploy this three-stage analysis of property in elaborating their thesis that derivatives generate an accelerated process of valorisation which increases a direct pressure on labour in adjusting values in the commensuration of disparate production processes.
 - 16 For instance, a position on an index of bonds can be engineered to suit any particular investor appetite, while attempts to construct an idiosyncratic position by buying a portfolio of bonds may be hampered by the absence of extant bonds carrying the peculiar profile required.

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