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Discourse ethics for debt markets

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Abstract

This article develops a pragmatic theory of finance in which markets are considered to be centres of communicative action in the face of uncertainty. This contrasts with the conventional approach that portrays markets as centres of strategic action in the face of scarcity. The argument follows Habermas and entails that a financial market must address the truthfulness, truth, and rightness of the statements made by its participants (i.e., the prices quoted). I claim that these discursive norms have been implicit in historical financial markets as expressed in the norms of sincerity, reciprocity, and charity. I conclude by proposing that 'trust' in commerce is a synthesis of the three discursive norms. The motivation of the article is to address the crisis of legitimacy that the financial system is experiencing, particularly in the United Kingdom (UK) and the United States (US).

Keywords

Communicative action, markets, ethics, credit, trust, financialisation

Introduction

There is a crisis of legitimacy in finance reflected in the findings of the US Government's Financial Crisis Inquiry Commission (FCIC) and the UK's Parliamentary Commission on Banking Standards (PCBS). The aim of this article is to address this crisis, based on the presumption that this can only be done by changing the attitudes of financial practitioners. Both of the above reports argue that the crisis of legitimacy in finance is born out of a degradation of ethics. This argument, combined with the observation that most financial practitioners are trained in empirical sciences, where little attention is paid to morality, implies that a cognitivist approach to ethics is best suited to addressing the problem. Hence, I adopt a pragmatic framework that accommodates the normative position advanced here.

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More specifically, I investigate what Habermas' ideas on discourse ethics can offer to the restoration of legitimacy in finance. My argument is based on the following premises. Firstly, that there is a 'transformation of the public sphere' at the start of the nineteenth century that ends the doux-commerce thesis. This transformation sets the foundation for the current crisis, with the implication that the best response is encapsulated in Habermas' (1985) *Theory of Communicative Action* (TCA). Relatedly, I assume that there are universal, invariant moral norms that are intrinsic to financial practice, and that these, if nurtured, can resolve the legitimisation problem of finance.

The argument is abductive in that it starts with an observation, which is deemed interesting, and investigates an idea that could explain this observation (Peirce, 1957: 236-37). I am interested here in two observations. The primary observation is that the norm of reciprocity is deeply embedded in the mathematics of financial economics (Johnson, 2015). Associated with this technical observation is a secondary, historical observation: that monetisation pre-empts the development of democratic and scientific thinking in Europe (Hadden, 1994; Kaye, 1998; Seaford, 2004). This article proposes 'reciprocity' as an idea that connects these two observations. Specifically, I argue that reciprocity is manifested in markets because it is the norm through which the objective truth of a price is justified in the context of TCA. Utilising Habermas can explain the relationship between monetisation, science and democracy. However, employing Habermas implies that as well as truth validity claims, we must also identify truthfulness and rightness validity claims in market practice. In order to address this requirement, I examine how subjective truthfulness claims are governed by the norm of sincerity, while social rightness claims are determined by the norm of charity. The proposition of this article is that the discursive norms developed in TCA – when manifested as sincerity, reciprocity, and charity – are universal moral values essential to legitimate market practice. This leads to the hypothesis that markets should be considered as centres of communicative action in the face of uncertainty (which is not the same as saying that they actually are).

Habermas' *Theory of Communicative Action* has been criticised for presenting an idealised model for language that offers no account of how it is to be implemented, gives no empirical evidence for the theory, and does not confront the fundamental issue of power in social relations (see Flyvbjerg, 1998; Fraser, 1990; Susen, 2013). With regard to the second criticism, I provide evidence to support the theory of communicative action by identifying how subjective rationality (sincerity), objective rationality (reciprocity) and social rationality (charity) have been expressed in financial markets where the aim is to arrive at mutual understanding of the price of an asset.

Outhwaite (2013: 248) acknowledges that Habermas ignores the context of communication, and this indicates that we must address the problem of power in markets. I do this in the first section by focusing on the role of 'market-maker' – i.e. those required to provide prices at which they will both buy and sell an asset, without knowing the intentions of their counter-party. Compared to Johnson (2015), this represents a significant innovation in the formulation of the central concept (Swedberg, 2012: 22). Specifically, I split the concept of 'the market' into 'broker-mediated markets', which are associated with economics, and 'jobber-mediated markets', which are associated with finance and are the subject of our discussion. This is significant because Habermas believed economic discourse would always be strategic. The present article therefore offers a nuanced argument in the context of finance that distinguishes it from those made by Bjerg (2014) and Roffe (2015), while coming close to that of Sotiropoulos et al. (2013).

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My argument is that the observed phenomenon of dual-quoting debilitates the market-maker and imposes sincerity on them: they are obliged to act in accordance with their utterances. In standard economic theory, markets are considered to be founded on brokers acting as agents for property owners who can benefit from monopolistic power and information asymmetries in ways market-makers cannot. The general public encounter market-makers in the debt markets where banks traditionally make money by lending to and borrowing from customers at different rates. On this basis, I argue that the creation of new markets – through globalisation or innovation – leads to economic uncertainty, which is addressed by market-makers abstracting value into price and engaging in speculative price-discovery: financialisation.[1] This is a cooperative process. Neo-liberalism emphasises competition, and so does not help illuminate where the problems of contemporary finance might lie. For Habermas (1990: 86) discourse relies on everyone in a community being able to participate and to make their own assertions as well as challenge the assertions of others. Note that Fraser (1990) argues for a multiplicity of publics to be engaged in discourse. With this in mind, I explain that prohibitions on speculation and gambling prevent the plurality of wider public financial speculation in the face of uncertainty. It is argued that issues around Collateralised Debt Obligations (CDOs), Credit Default Swaps (CDSs) and 'order stuffing' in high-frequency trading can be addressed by considering them in terms of sincerity and that the 'Volcker Rule' supports market sincerity.

The second section focuses on the norm reciprocity. It begins by clarifying the distinction between usury, charging for the use of money, and interest, which was legitimate in the face of uncertainty. The myriad of financial instruments that emerged to manage the uncertainty of European medieval finance are discussed in the context of the monetisation and subsequent mathematisation of European culture. I present this catalogue in order to highlight a similarity between medieval and contemporary financial instruments. There is a summary of the main explanation for the charging of interest in contemporary economics, which is focused on scarcity. This approach is then contrasted with a mathematical explanation based on reciprocity in the presence of uncertainty.

Habermas highlights the difference between the cognitive and the social world and argues that rationality orientated towards reaching understanding needs to be norm-conformative. In this respect, I argue that the norm of charity directs the rightness of market participants' claims. While it is possible to point to sincerity being manifested in the statutory status of market-makers and reciprocity being embedded in mathematical theory, it is harder to identify clear evidence for the rightness validity claim in markets. I shall argue that charity is the social norm dominating exchange by examining the role of *agape* (spiritual love) as personified in Antonio of Shakespeare's *The Merchant of Venice*. I then suggest that Shakespeare is reminding merchants that the law – ruling the cognitive world – needs to be tempered with mercy and benevolence – ruling the social world.

The article concludes with a discussion of how the three norms are synthesised into trust, describing the success of Quaker financial institutions over the course of the British Agricultural and Industrial Revolutions. This section can be regarded as deductive: having formulated the central hypothesis that markets should be seen as centres of communicative action, I move on to investigate evidence for the consequences of the hypothesis. This discussion exposes a fundamental problem facing society: how are the three norms to be implemented?

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Sincerity and subjective rationality

Making markets

Central to the argument presented here is the claim that financial markets should be perceived as centres of communicative, as opposed to strategic, action. This claim rests on recognising a distinction between markets based on market-makers (in England, 'jobbers') and those based on brokers. A broker, whether an individual or a firm, makes a living from the commission they charge for bringing buyers and sellers together; brokers facilitate the strategic action of those who own property.

Market-makers, sometimes known as 'dealers' in the US,[2] will quote bid prices, at which they will buy an asset, and offer prices, at which they will sell an asset, without knowing if the counter-party is seeking to buy or sell the asset (though the quantity will affect the quoted prices). The market-maker derives an income from the bid-ask spread and benefits when investors are ill-informed and/or when prices change frequently (Bagehot, 1971: 13; Carruthers and Stinchcombe, 1999: 381, n. 14; Millo, 2003: 89), leaving them open to the accusation that they promote uncertainty.[3]

Stock-jobbing had a dubious reputation as the English financial markets emerged in the late seventeenth century. In 1719, Daniel Defoe described stock-jobbing as:

> … a trade founded in fraud, born of deceit, and nourished by trick, cheat, wheedle, forgeries, falsehoods, and all sorts of delusions; coining false news, this way good, this way bad; whispering imaginary terrors, frights hopes, expectations, and then preying upon the weakness of those whose imaginations they have wrought upon. (Quoted in Poitras, 2000: 290)

An observation mentioned by Defoe but more explicitly stated by Thomas Mortimer in 1761 concerned the type of person involved in stock-jobbing. Mortimer makes the point that there are different types of stock-jobber: foreigners; gentry, merchants and tradesmen; but "by far the greatest number" are people:

> … with very little, and often, no property at all in the funds, who job in them on credit, and transact more business in several government securities in one hour, without having a shilling of property in any of them, than the real proprietors of thousands transact in several years. (Quoted in Poitras, 2000: 291)

The jobbers did not only trade in vanilla products such as stocks or bonds. Murphy (2009: 24-30) estimates that around 40% of the trades between 1692 and 1695 were in stock options that were being used to manage the risks of stock trading. Evidence of the widespread use of options comes in Colley Cibber's 1720 play *The Refusal* (the term for an option at the time), which describes the action in Exchange Alley:

> There you'll see a duke dangling after a director; here a peer and 'prentice haggling for an eighth; there a Jew and a parson making up the differences; there a young woman of quality buying bears of a Quaker; and there an old one selling refusals to a lieutenant of grenadiers. (Quoted in Ackroyd, 2001: 308)

The role of stock-jobbers in the UK markets became normalised and an accepted part of the financial system from the late eighteenth century until 1986, when they lost their distinctive status with the 'Big Bang' reforms. Attard (2000: 12) reports that at the end of the nineteenth century the number of jobbers and brokers on the London Stock Exchange were approximately equal, though the proportion of jobbers increased at times when new markets emerged. Through the twentieth century the proportion of jobbers declined: in 1908, at the

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height of the market before the collapse of Bretton Woods, there were some 3,300 jobbers to 1,700 brokers; in 1938 there were 1,433 jobbers to 2,491 brokers; in 1961, 697 jobbers to 2,694 brokers. The majority of jobbers worked in small partnerships of one or two members, but most of the business passed through a few large firms such as Akroyd & Smithers, who 'made' the market in British government debt.

A comprehensive account of the culture at the Chicago Board of Trade (CBOT) in the twenty-first century is given by Millo (2003: 88-132), who reveals that the majority of market-making activity is conducted by designated market-makers risking their own capital as 'traders', rather than acting on behalf of brokers or agents outside of the market. Mackenzie and Millo (2001: 19-22) present the market-makers of the Chicago exchanges as outsiders with limited resources, similar to Mortimer's eighteenth-century jobbers. MacKenzie (2008: 142) also describes how the Chicago market-makers were idle in the late 1960s, reflecting a similar situation as in London at the time.

We can describe a market made by market-makers as a discursive arena. A market-maker will assert the price of an asset by giving the market a bid and offer price. If other traders agree with the bid-offer, they let it pass and do nothing. If, however, another trader feels the market-maker has mispriced the asset, they will act – challenging the assertion – by executing a trade. Note that the specification of a bid-offer pair by a market-maker is critical: offering to sell air for £1,000/kg would not demonstrate anything; offering to buy air at £999.95/kg would be challenged as a mispricing. It is through this process, whereby one market-maker claims a true price and is then challenged, that the market seeks to reach an understanding as to the price of an asset. In the process traders are continually taking yes-no positions to validity claims given by quotes (for an account of how the Scholastics considered this see Kaye, 1998: 119-27). Central to this process is that a market-maker's or dealer's "manifest intention is *meant* as it is expressed" (Habermas, 1985: 99) with the evidence being that they are required to act on their utterances.

In what follows I shall use the term 'jobber', as distinct from 'broker', to refer to an agent acting as a market-market, trader, or arbitrageur[4] – that is, if they are concerned with asset pricing as distinct from asset valuation, which is the aim of investors. In a market mediated by jobbers, recorded prices represent not an implicit agreement in the price quoted by the market-maker but an explicit disagreement with the market-maker's price. Jobbers are enacting the pragmatic theory that true propositions are un-improvable opinions and that the assertion as to the true price is always being challenged. This procedural approach to truth was used by Ramsey (1931: 182), where a subjective view of probability (equivalent to price) is provided on the grounds that, "[h]aving any definite degree of belief implies a certain measure of consistency", or sincerity.

The statement that market prices indicate disagreement appears incoherent with standard economic theory, which argues the market price is the true price (see Bjerg, 2014: 24; Muniesa, 2007: 380-82). Economic theory focuses on broker-mediated markets and in this case it is reasonable to believe that two parties can come to some agreement as to where the equivalence between commodities should rest, albeit one susceptible to power imbalances. We can make sense of the apparent incoherence of jobber-mediated markets delivering prices that are disputed by noting that, unlike investors, jobbers have no commitment to the assets they trade. In fact, it can be detrimental to the profitability of jobbers to believe in an objective value of the asset they are trading. Market-makers should focus on the relative volume of buy and sell orders, and traders make a subjective assessment regarding the veracity of the prices given by market-makers. This is captured by Beunza and Stark (2012: 394), who describe how terms like 'buy' and 'sell' suggest a commitment to assets that traders see as un-professional.

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Financialisation, neoliberalism and globalisation

Financialisation is often presented as a recent phenomenon, alongside neo-liberalism and globalisation, emerging after the collapse of the Bretton Woods system of fixed exchange rates in 1971 (see Krippner, 2005). However, finance has eclipsed economic exchange at a number of times in the history of Europe. Money appears in pre-Socratic Greece (Seaford, 2004), dominates trade in the fourteenth century (Hadden, 1994; Kaye, 1998), and is a significant feature of seventeenth century England and the Netherlands. These episodes of financialisation are also associated with the democratisation of politics and the development of science.

An example of seventeenth century financialisation, closely linked to globalisation at the time, is given by Poitras (2000: 274-77) who describes the emergence of stock trading in Amsterdam. During this time the trade of ducaton shares was reported in de la Vega's *Confusion de Confusiones* (1688).[5] Ducaton shares had a nominal value of one-tenth a Dutch East India Company (VOC) share but there was no expectation that holding ten ducatons would entitle someone to a VOC share. Ducaton shares appeared because it was impossible for the general public to participate in speculation on VOC shares, which were held exclusively by the Dutch elite, and their trading incurred significant transaction costs. Ducaton trading enabled the public to challenge the VOC owners' assessment of the value of the firm. De Goede (2005: 47-86) discusses the similar phenomenon of 'bucket shops', which appeared in the US in the 1870s and enabled the American working class to speculate on commodity prices without having to incur the cost of trading through CBOT.

For most of the twentieth century up to the collapse of Bretton Woods, some form of 'gold standard' defined money as a commodity and as a fixed yardstick of value. After the collapse of Bretton Woods, governments adjusted central bank lending rates in order to control the value of their currency, changing the length of the yardstick. In the 26 years between 1945 and 1971, the Bank of England changed its lending rate 41 times, with 30% of these changes occurring between 1966 and 1971. In the 26 years after 1971, it changed them 216 times. In 1908 and 2008, jobbers dominated markets because their role in 'price-discovery' was necessary in an uncertain world.

Gamblers bet on an outcome taking odds that have been agreed on by society in a discursive manner, as in sporting bets, or based on stable statistics, as in roulette. Speculators bet on a miscalculation of the odds quoted by society. Speculation is regarded as socially questionable because its success rests on taking positions that are explicitly at odds with the consensus (see Beunza and Stark, 2012: 394). Gambling is widely regarded today as socially destructive but this was not always the case. Greek, Hindu, and Old Testament myths refer to key episodes dominated by games of chance, while gambling is associated with sacrificial practices generally known as potlatch (Graeber, 2011: 56; Keynes, 1936: 17-19).

There have been numerous studies devoted to the role of gambling in archaic societies. Altman (1985), for example, studied an Australian aboriginal group that had access to social security payments and often had a surplus left over after essentials had been bought. However, some individuals were excluded from social security payments by the government, meaning there was "inter-household variability in access to cash" (Altman, 1985: 56). The community regarded this variability as a subjective discrimination by the Australian government and gambling "acted effectively to both redistribute cash … [and] provided a means for people with no access to income to gain cash" (Altman, 1985: 60-61). This was important in non-hierarchical communities because it meant that one arbitrary bestowal of money was not corrected by another subjective distribution, such as redistribution by a chief.

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Mitchell (1988) considered the role that gambling plays in disrupting hierarchical social structures, such as the Indian caste system, by studying the Wape, a Sepik community in New Guinea. He concluded that the non-hierarchical society of the Wape was maintained through gambling. The pervasive nature of gambling in archaic communities can be explained as an objective and "fair" mechanism for the redistribution of wealth (Sahlins, 2003: 27). It should be noted that this process remains valid only so long as no single entity accumulates enough wealth that it can bankrupt all the others.

Brenner et al. (2008: 98-104) argue that the de-legitimisation of lotteries and gambling in general comes about because during the seventeenth and eighteenth centuries there was significant social and economic change. While gambling and speculation provided the labouring classes with a means of acquiring property, they were a necessary tool of public finance (Nash, 2000). However, by the start of the nineteenth century, finance had developed to such an extent that governments could tax more effectively, notably the incomes of the middle classes, or borrow from the middle and upper classes. In 1808, the British Parliament set up a committee to investigate how the perceived ills of lotteries had been addressed by legislation. The parliamentarians concluded that, despite the fact that the British government was still raising money through lotteries, no regulation could divest the lottery system of its evils, and in 1823 they were outlawed (Brenner and Brenner, 1990: 12).

The prohibitions on gambling had an important impact on the development of finance. In 1851, following a dispute between two counterparties in a forward contract, English law established that there needed to be 'intent to deliver' for a derivative to avoid being classed as an illegitimate gamble (Swan, 1999: 211-13). While English courts generally avoided becoming involved in the derivative markets, US courts were much more active in prosecuting "idlers who made profit even while they slept" (Fabian, 1999: 159) by speculating in bucketshops, rather than the "competent men" of CBOT engaged in "the self-adjustment of society to the probable", as the US Supreme Court ruled in 1908 (de Goede, 2005: 71). These judgements by the Supreme Court at the start of the twentieth century were part of a broader move by US corporations to alienate the public from financial risk management (Levy, 2012: 231-307). While I take a broadly Habermasian perspective, this account acknowledges Fraser's (1990) argument in favour of a multiplicity of publics that the prohibition of bucketshops effectively prevented.

The strict prohibitions on gambling persisted into the late twentieth century. In 1968, CBOT consulted lawyers about offering an index future but were told it would probably be ruled illegal. While commodities, including stocks and bonds, could be delivered, the "index" could not (MacKenzie, 2008: 145). The publication of the Black-Scholes equation, where all the variables were 'known', removed uncertainty in pricing options and meant derivatives trading was not gambling; it was, like insurance, 'scientific'.

In similar circumstances, the International Swaps and Derivatives Association (ISDA) sought advice in 1997 as to the regulatory status of Credit Default Swaps (CDSs), resulting in the 'Potts opinion'. The issue was twofold: if CDSs were insurance contracts, strict insurance law would regulate them; If they were wagers they would be subject to gambling legislation. A CDS is a contract whereby a protection buyer pays a regular premium to a protection seller over a fixed period. If the contract underlying the CDS defaults, then the protection seller pays an amount to the protection buyer and the contract ceases. This resembles an insurance contract. Potts argued that because the amount the protection buyer receives is independent of the loss they incur, and since protection buyers do not need to have an interest in the underlying, the CDS is not an insurance contract. The CDS is not a 'wager' on the grounds that the protection buyer and seller do not hold opposite views regarding default of the underlying.

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In essence, the Potts opinion can be regarded as justifying sincerity in CDS pricing, rather than justifying the technology of CDS. The opinion means that 'informed traders' are able to engage in discourse about the likelihood of credit defaults in the future rather than limit the discussion to investors with vested interests. Kimball-Stanley (2009: 253-61) gives a number of reasons for re-classifying CDSs but none of them are convincing,[6] and all overlook the negative impact insurance companies and ratings agencies had in the credit crisis of 2007-2009. With regard to the credit crisis more broadly, MacKenzie (2011: 1811) makes the point that the financial instruments at the heart of the crisis, Collateralised Debt Obligations (CDOs), were not priced using the jobber-mediated "canonical-mechanism market". Valuations were based on ratings provided by agencies paid by the producer of the financial instruments (a 'broker-mediated model') and mathematical models using parameters based on unrelated markets. Because these parameters meant the models pointed to arbitrage profits, many investment houses, with only a few exceptions (Tett, 2009: 148-51), bought the CDOs.

The example of pricing CDOs leads us to distinguish two cases of financialisation. The first was discussed in the previous section, where jobbers price in a discursive manner and apply subjective judgement. The second involves 'quants' employing algorithms and data, or what might be described as objective judgement, in a strategic manner. This form of abstraction failed, as most experienced traders believed it would (Duhon, 2012; Haug and Taleb, 2011; Tett, 2009; Triana, 2009). From a mathematical point of view, the failure of the models was based in their instrumental use. The legitimate use of mathematical models is to develop a clearer understanding of what can be inferred about market sentiment from jobber-mediated market prices so that investment decisions can be taken (Beunza and Stark, 2012: 384-85; Duhon, 2012: 265-77; Johnson, 2011).

The cases of CDS and CDO pricing point highlight the need for price discovery in uncertain environments. This task is undertaken by speculative, though sincere, jobbers. In addition, the above cases suggest that regulatory policy should create a clear distinction between firms undertaking brokerage and those involved in 'jobbing', making explicit which institutions are 'speculating' and which are 'investing'. This implies support of the 'Volcker Rule' in the US and reversing some of the regulatory changes associated with the UK's 'Big Bang' reforms of 1986. This would address one of the issues that Kimball-Stanley (2009: 257-58) identifies: while one part of Goldman Sachs was manufacturing Mortgage Backed Securities (MBS), another part was using the CDS market to speculate on the MBS bonds defaulting. The speculators were right and were able to signal their beliefs by trading in CDSs. Yet rather than criticise the process of manufacturing MBSs, Kimball-Stanley (2009) seeks to silence speculators by banning CDSs. In the context of our pragmatic theory, we can argue that Goldman Sachs was mis-selling[7] MBSs to customers because, as an institution, it did not believe the products had the value they were marketing them at: it was being in-sincere.

Reciprocity and objective rationality

Usury and interest

Seaford (2004) points out that the Greek gods lived on nectar and ambrosia, and this meant that sacrifices honoured the gods; they did not feed the gods. This is contrasted with contemporary practices elsewhere, where gods (or kings) were fed offerings by a priestly caste. The religious practices mediated by priests resulted in a centralised distributive system. The population delivered the produce of their labour to the temple, and the priests would re-distribute the aggregate production according to their own rules, taking a cut for their own use.

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On the basis of this distinction in religious practices, Seaford argues that a unique culture emerged in Greece between 800 and 300 BCE as a consequence of its particular use of money, which originated in the fair distribution of sacrificial meat within the community and contributed to social cohesion. Greek approaches to democracy, science, and theatre were based on money and a commitment to equality in exchange was reinforced (regarding the Scholastics, see Kaye, 1998: 152-62).

Greek coins were identified by symbols, just as Egyptian and Mesopotamian seals were. However, a seal was a personification of an individual's power (iconic) and so imbued with magical properties. In contrast, money was impersonal and alienated from the individual: "Monetisation makes for the self-containment (and so discovery) of the individual self" (Seaford, 2004: 294). The impersonality of money is also related to the blindness of justice (p. 91). Money is universal and becomes the yardstick of everything (for Buridan's conception of price as universal, see Kaye, 1998: 151). While money promoted the autonomy of the individual, it enabled inequality, something that the re-distributive societies avoided.

Seaford identifies three types of reciprocity. There is reciprocal gift giving, as discussed by Malinowski and Mauss, where the personality of the giver is inalienable from the gift. There is reciprocity in redistribution – distributive justice – a topic of politics from Aristotle through to Marx and Rawls, in which there is usually some weighting of an individual in determining their share of a common pot. I will focus here on the type of reciprocity that alienates the individual from the exchange.

In Book V of *Nicomachean Ethics*, Aristotle argues that justice in exchange is required to ensure social cohesion – it "keeps the city together" (Broadie and Rowe, 2011: 1132b, 34). Furthermore, justice in exchange relies on equality – fairness (Judson, 1997: 147-48) – and thus: "everything that is exchanged must be somehow comparable. This is the role that is fulfilled by currency" (Broadie and Rowe, 2011: 1133a, 19-20).

Aristotelian philosophy became absorbed into Catholic doctrine in the eleventh century, during a period of economic expansion and the monetisation of society (Mols, 1974: 36, Table 1; Nicholas, 2006: 72). Two features of medieval European society hindered economic development. Firstly, across Europe individual lords minted their own money. In Italy alone 28 cities issued their own currency at one time or another (Goetzmann, 2004). Crosby (1997: 201) describes how a Pisan merchant processing wool into cloth in the fourteenth century engaged in transactions involving five currencies. Coinage was frequently debased and so medieval merchants:

> … operated in a world of complete relativism. With no central government, no dominant currency, and even competing faiths and heresies, value is expressed quite abstractly only in a set of relative relations to other items. (Goetzmann, 2004: 21)

From about the twelfth century, the Catholic Church began to monitor commercial activities as it became concerned with the issue of usury. 'Usury' derives from the Latin *usus* meaning 'use', and referred to the charging of a fee for the use of money. 'Interest' comes from the Latin *interesse*, and originated in the Roman legal codes as the compensation paid an individual who suffered a loss as a result of a broken contract (Homer and Sylla, 1996: 73). The Greeks used the word *tokos* to describe both interest and (sexual) reproduction. Aristotle objected to usury because he saw money as sterile and so unable to 'produce' anything (Perlman, 1997; Rothbard, 1996: 15). As a result, money can have no intrinsic value other than its use to facilitate exchange (Kaye, 1998: 86; Poitras, 2000: 87; Rothbard, 1996: 55).

Interest, unlike usury, was permissible in Canon Law. Consider the case of a farmer who lends a cow for a year. In the normal course of events, the borrower would benefit from the

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cow's milk, and the cow would give birth to a calf. At the end of the loan, the farmer could expect the cow *and* the calf to be returned. The interest rate is 100%, but it is an interest since the farmer, if they had not lent the cow out, would have expected to end the year with a cow and a calf.

Shortly after 1200, the theologian Peter the Chanter argued that "a buyer or seller may be excused from usury if he exposes himself to the risk of receiving more or less" (quoted in Franklin, 2001: 263-64). Some 40 years later, Alanus Anglicus, determined that *turpe lucrum*, the 'shameful gain' of "asking for more than what was given", did not exist if the future price of the good was uncertain in the mind of the merchant (quoted in Rothbard, 1996: 41). These theories became established in the medieval legal system between 1246 CE and 1253 CE by Pope Innocent IV. The 'just price' of a good was based on labour and materials, but a merchant could charge a premium, taking into account the risk they bore in an aleatory contract.

Various financial instruments emerged to facilitate credit markets without incurring accusations of usury. The most basic was the *poena*: a penalty for late payment under the terms of a contract. A 'legitimate' loan contract was entered into with the implicit understanding that the borrower would delay payment by an agreed period, incurring the *poena*, which could be justified as a licit interest payment (Poitras, 2000: 87).

A *census* originated in the feudal societies as an "obligation to pay an annual return from fruitful property" (Homer and Sylla, 1996: 75; Poitras, 2000: 91). The buyer of the *census* would give a sum of money to a landowner in exchange for the future production from their land over a period of time. As economic life in Europe became monetised, *censii* lost the link to specific yields, and the buyer of the *census* would accept regular cash payment in place of physical goods. This was legitimate in the eyes of the Canon lawyers as long as the cash paid by the seller of the *census* 'equated' with the value of the 'fruitful property' being produced by the buyer. Essentially, *censii* were 'asset-backed securities'.

Around the twelfth century the Italian city-states of Venice, Genoa and Florence began to forcefully sell temporary *rentes* – *censii* backed by future tax (Poitras, 2006: 82). By the mid-thirteenth century, the different issues of *rentes* were consolidated into a *mons*, and everyone who had been made to buy a *rente* was given a share, proportionate to their contribution, in the *mons*. Venice created its *mons*, the *monte vecchio*, in 1262. The shares, known as *prestiti*, entitled the holder to be paid 5% a year. A market for prestiti emerged as investors looked to transform a lump sum into a steady stream of income, or vice versa. The Church lawyers debated the legitimacy of the *prestiti*. In their defence, the coupons could be seen as compensation for the forced nature of the original loan. However, if *prestiti* were sold for 22% of their face value, as they were in 1465 during a war with the Ottomans, the buyer would be receiving interest at a rate not of 5% but rather 23%. A payment of 23% in these circumstances seemed to be usurious, though the purchasers were hazarding that Venice would survive to pay the coupons.

A *societas* was a partnership contract and was clearly legitimate. The agreement was usually created by a close-knit group, which made it difficult for outsiders to join a *societas*. To get around this, the 'triple' or 'German' contract was created (Decock, 2012). At the heart of the triple contract was a *societas* between the entrepreneur and some investors. This was the first contract. The second contract was an insurance contract taken out by the entrepreneur to insure against loss of the investor's capital. The third contract was another 'insurance' contract given to the investor by the entrepreneur, whereby the investor surrendered his rights to a share of the uncertain profit in exchange for a fixed payment from the entrepreneur – a payment guaranteed by the second contract. Despite arguments that the triple contract

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supported the credit system by financing entrepreneurs who did not have established reputations, it was declared illicit as an artificial instrument used to avoid usury prohibitions by Sixtus V in 1586 (Decock, 2012: 33). In modern terms, the triple contract looks like a contemporary securitised product: the *societas* is a 'Special Purpose Vehicle', the second contract is credit enhancement (a CDS), while the third is a cash flow transformation (an asset swap). This overview of medieval financial technologies reveals that instruments associated with modern finance are not, in fact, innovative. This observation justifies our consideration of approaches to finance before 1650 to explain current crises. In particular, I claim that the explicitly moral context of medieval finance is not redundant today.

Monetisation and mathematisation

Crosby (1997), Hadden (1994), and Kaye (1998) have all argued that the monetisation of medieval Europe, the heterogeneity of money, and the financial instruments that emerged in response to usury restrictions led to the emergence of a distinctive, mathematicised, western science. This argument, combined with the observation that the genesis of mathematical probability theory is in commercial ethics, forms the basis of the claim that the norm of reciprocity is deeply embedded in contemporary financial economics (Johnson, 2015). This is exemplified in Black and Scholes (1973: 637), which opens with the statement that "it should not be possible to make sure profits". Elsewhere I argue that the Fundamental Theorem of Asset Pricing can be interpreted as saying: if the market is free from arbitrage and there are no opportunities to make a risk-less profit – *turpe lucrum* – then an equality between what is given and what is received in aleatory contracts can be established mathematically, and is related to Euclid's first axiom (Johnson, 2015).

The analysis of debt contracts in this context has had a profound effect on mathematics. James Bernoulli first identified the significance of the number *e* in 1683 by considering how a bank account grew as the time between interest payments became infinitesimally small. This result was significant in the development of mathematics in that it is the first example of analysing a dynamical system (i.e. one whose growth rate is proportional to its size). Bernoulli's result is now a fundamental feature of modern finance: if a bank charges a continuously compounded rate of interest r on a deposit/loan of L, then after time t the deposit will be worth Le^{rt}. Similarly, if one were to receive an amount L at a point t in the future, it should be 'discounted' and evaluated as being worth Le^{-rt} today. This account suggests money is productive, growing at a rate of r, and conflicts with Aristotle's account of money as unproductive, which lays the foundation for the illegitimacy of usury.

In *On Interest*, Hume (2007: 303-15) observes that the rate of interest is high when there is "[a] great demand for borrowing; little riches to supply that demand; and great profits arising from commerce" (Hume, 2007: 2.IV.6). He dismisses the common view at the time that interest rates rise when there is a scarcity of money, meaning specie. Hume is separating money from credit and, given that a non-usurious contract will yield profit in the presence of uncertainty, this implies high interest rates occur at times of high uncertainty (Knight, 2006). Adam Smith (1986: 457-58) supported usury laws as only people willing to pay high-rates of interest would be "prodigals and projectors", who should be discouraged (Jadlow, 1977: 1195).

Unlike Hume, Keynes (1936) employs a scarcity argument. Because capital is scarce it yields a rent to its owner in the form of interest. This is excused usury on the basis of the 'liquidity preference' theory that a capitalist wants to hold cash for daily or for unexpected transactions, and interest is compensation for relinquishing this flexibility. At times of

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economic uncertainty there is a preference for holding cash, hence a rise in interest rates. This explanation was rooted in addressing the macro-economic problem of national employment, and Keynes saw interest rates, ultimately set by a central bank specifying a minimum lending rate, as a lever for controlling the economy. Keynes' 'liquidity preference' argument is subjective: the capitalist takes a view on whether he prefers to hold money that could be used in the future or to lend it, forgoing the prospect of future opportunities. In what follows, I interpret reciprocity as objective rationality in debt markets and justify interest in the spirit of Hume and Smith using a well-known mathematical argument.

At the heart of Poisson (1837) is a single chapter on determining the probability of someone being falsely convicted in a court by a majority of twelve jurors, each of whom "is subject to a given probability of not being wrong" and taking into account the police's assessment of the accused's guilt (Schneider, 1987: 196). Poisson started with the Binomial Model that Pascal and Fermat had introduced to solve the problem of pricing a fair game (the canonical genesis of mathematical probability), today's Cox-Ross-Rubinstein option pricing model, and provided De Moivre with the basis of 'Normal' or 'Gaussian' distribution. Poisson considered what would happen if, as the number of steps in the Binomial model increased, the chance of a success simultaneously decreased.

On this basis, Poisson worked out that if the small probability of a rare event's occurrence was ρ per round, then the chance of there being k rare events in n rounds is given by the 'Poisson distribution':

$$\mathrm{P}(k \text{ events in } n \text{ rounds}) = \left(\frac{(\rho n)^k e^{-\rho n}}{k!} \times L\right)$$

To see how this resolves the issue of interest or usury, consider a banker lending a sum of money, L. The banker is concerned that the borrower defaults, which is hopefully a rare event. Say the banker assesses that the borrower will default at a rate of ρ defaults a day, and the loan will last t days. The banker might also assume that he will get all his money back, providing the borrower makes no defaults in the t days, and nothing if the borrower makes one or more defaults. On this basis, the banker's mathematical (objective) expectation of the value of the loan is:

$$\mathbf{E}\ [\text{value of loan}] = (\text{Probability of no defaults x } L) + (\text{Probability of at least one default x } 0)$$

Using the Law of Rare Events to give the probability of no defaults, when $k = 0$, yields:

$$\left(\frac{(\rho t)^0 e^{-\rho t}}{0!} \times L\right) + (\text{Probability of at least one default x } 0)$$

We can ignore the second expression, since it is zero, and for the first, we have that $(\rho t)^0=1$ and $0! = 1$, leaving us with:

$$\mathbf{E}\ [\text{value of loan}] = Le^{-\rho t}$$

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The banker is handing over L with the expectation of only getting $Le^{-\rho t} < L$ back. To make the initial loan amount equal the expected repayment, the banker needs to inflate the expected repayment by $e^{\rho t}$:

$$\mathbf{E}\left[Le^{\rho t} \right] = \left(Le^{\rho t} \right) e^{-\rho t} = L$$

Recalling James Bernoulli's identification of e, this explains why the banker charges interest at a rate of ρ a day. The banker is not charging for the use of money, as Keynes argues, but is equating what he lends with what he expects in return, just as the Aristotelian-inspired Scholastics advocated.

Modern economic theory, which argues that an interest rate accounts for the scarcity of money, has widespread ramifications. Consider Pindyck (2013), who argues that economic cases for taking actions today to mitigate the long term consequences of climate change rest on taking a very low discount rate, and so are difficult to justify using mainstream financial theory (where the rate of interest is based on the 'cost of capital'). This problem is resolved if the risk-less rate is used for discounting, and is justified by rejecting profit seeking market rates in favour of the principle of inter-generational reciprocity. It is difficult, as Stern (2008: 12-17) demonstrates, to do this persuasively using conventional economic argumentation.

Charity and social rationality

Reciprocity is a norm embedded in financial economics that permits high rates of interest to poorer, higher risk borrowers. This means that phenomena such as debt-bondage can become prevalent (von Lilienfeld-Toal and Mookherjee, 2010). Debt bondage results in inequality that has a detrimental effect on discourse (Outhwaite, 2013: 248). Therefore, relying exclusively on sincerity and reciprocity cannot justify regarding markets as centres of communicative action: there needs to be a social dimension to rationality. Shakespeare's *The Merchant of Venice* can be interpreted as presenting the case for charity as a norm-governing social rationality in markets.

The Merchant of Venice

Shakespeare's play is thought to have been written between 1596 and 1598, and was performed by the King's Men at James's VI & I court in February 1605 (Wilson, 1994: 707). Context relevant to this argument is that English merchants had sailed to the Arabian Sea in 1591 and then petitioned Elizabeth I to support ventures in the East Indies, with the East India Company being granted a Royal Charter on the last day of 1600. In 1598 Gresham College, the precedent for the Royal Society, had been established from a bequest by Thomas Gresham who, between 1560 and 1572, worked to secure Elizabeth's crown by manipulating the Antwerp market to ensure that Elizabeth could borrow cheaply (Burgon, 2004: 9-12; Johnson, 1940: 594-600). Gresham acted strategically not for his own gain but for the good of his community. When James VI & I succeeded Elizabeth I, he authorised a new translation of the Bible that would satisfy the Puritan faction without undermining Anglican authority. When *The Merchant of Venice* was being created, the London merchant class was growing in influence and was associated with the Puritans, who were well versed in scripture (Brenner, 2003: 240-315).

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While a popular play, *The Merchant* is often regarded as problematic (Midgley, 1960: 119). There are a number of themes that for many contemporary readers seem incoherent, and the last Act of the play, coming after the drama of the trial scene, is sometimes deemed redundant. The analysis I will undertake is rooted in Gollancz (1931) and Coghill (1950), who approach the play with regard to medieval allegory. However, I interpret the plau the context of Renaissance humanism, synthesising classical philosophy and Biblical allusion. In taking this path, the play will be presented as coherent and justified on the basis that "Biblical allusion and imagery is so precise and pervasive as to be patently deliberate" (Lewalski, 1962: 328).

The Merchant can be read as a study of the four types of classical love: *storge* – familial love; *philia* – friendship; *eros* – physical love; and *agape* – spiritual love. Antonio, the eponymous merchant of Venice, personifies agape, the highest form of love, and is a Christ-like figure (Coolidge, 1976: 256; Hamlin, 2013: 71; Lewalski, 1962: 327; Sisk, 1969: 219). *Agape* animates the central story of the flesh-bond Antonio makes with Shylock – "Greater love hath no man than this, that a man lay down his life for his friends" (John 15:13) – and provides context for Bassanio's capture of Portia by solving the casket riddle (Lewalski, 1962: 335).

In contrast, Shylock personifies the devil and is devoid of all love. Shylock's only friendship, with Tubal, is business oriented, and contrasts with the amicable relationships of all other characters in the play. Shylock's daughter Jessica absconds with his wealth, and in so doing raises the question of whether he loves his daughter or his ducats more (Mowatt and Werstine, n.d.: II.viii.15), pointing to the absence of *storge*. Jessica trades Shylock's ring, a gift from his dead wife, for a monkey, thus severing his connection to *eros*.

Portia, resident of the heavenly Belmont, represents Mercy or God's Grace, while Bassanio, inhabiting worldly Venice with Antonio, represents 'Everyman'. Portia's obedience to her dead father in submitting to the casket test emphasises the absence of *storge* in Shylock's relationship with Jessica. Antonio's willingness to sacrifice himself for Bassanio so that the young man can come into union with Portia parallels Christ's sacrifice for mankind, which was central to the Augustinian doctrine underpinning Puritanism ratified by the Council of Trent in 1547.[8]

Auden (2013: 218-37) highlighted the problematic nature of *The Merchant* in his essay 'Brothers and Others', where the play is presented as focusing on a homoerotic relationship between Antonio and Bassanio. These interpretations sometimes begin by focusing on the melancholy hanging over Antonio at the start of the play and Salerio's comment that "I think he loves the world only for him" (II.vii.50). Auden recognises the Christian basis of *The Merchant* (Kirsch, 2008: 94-96), but misses the significance of Antonio's Christ-like persona, and this oversight generates interpretations such as Ferber's (1990) and Berger's (2010), which see the play as unpleasant. Without Antonio's *agape* and Portia's Grace, all of the play's characters become distasteful to some degree. If Antonio is Christ-like, then his opposition to Shylock is based on Shylock's personification of the 'Old Law' rather than to his Jewishness: "For the law was given by Moses, but grace and truth came by Jesus Christ" (John 1:17). Augustinian doctrine centres on the idea that everyone is born into a state of 'Original Sin'. Left to their own devices, people are incapable of being anything other than selfish. Even a 'good' non-Christian acts only in self-interest. In this context, Antonio's melancholy in the opening scene can be compared to Christ's loneliness in the wilderness and immediately before the Passion (Matt 26:38).[9]

Antonio's past treatment of Shylock appears 'un-Christian' (I.iii.116-38), and Shylock seems to be presenting the other cheek. However, we know from Jessica that from the start her father was plotting against Antonio (III.ii.296-300). Also, Shylock's reference to Antonio as

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a "fawning publican" (I.iii.41) alludes to a parable (Luke 18: 9-13) where a Pharisee – the pious adherer to the law – is compared to a publican, who recognises his faults and begs for God's mercy (Lewalski, 1962: 331). Antonio's past behaviour has a dramatic purpose in that it inhibits the audience from seeing Shylock as completely unjustified, and theologically it points to the humanity of Antonio/Christ (Heb 2:17-18; Phill 2:7).

The relevance of these observations to debt markets is in that exchange pervades *The Merchant*. Sharp (1986: 261) lists eleven major exchanges in the play. With respect to the ten types of transactions that Seaford (2004: 23-26) offers, we can add another exchange: the prize of Portia and her inheritance that her father bestows on Bassanio for solving the casket puzzle (Type 2). In addition, there is the exchange of things for the sake of things – Jessica's exchange of her mothers ring for a monkey (Type 10); a bride-price (Type 8) that Bassanio receives by marrying Portia; and the money Jessica steals from her father and gives to Lorenzo (Type 1). Shylock is forced to give property to Jessica and Lorenzo on his conversion, which falls into re-distribution to create solidarity within groups (Type 4), and the Duke's confiscation of his property is a ransom (Type 7).

In addition, three rings are bestowed as gifts between individuals (Type 3): the ring Shylock's wife gave him, the ring Portia's lady-in-waiting gives to Gratiano and, most significantly, the ring Portia gives Bassanio symbolising her wealth (III.ii.175; Newman, 1987). Bassanio swears not to part with the ring (III.ii.187-89), but gives it to the lawyer Balthasar – Portia in disguise (IV.ii.11) – as payment for saving Antonio. In the final scene, Bassanio reveals to Portia that he has passed the ring onto the 'lawyer', and she vows never to share her bed with Bassanio until he recovers it (V.i.198-249). Portia, of course, is able to give the ring to Antonio (V.i.273), who pledges surety for Bassanio's good behaviour in the future, and the ring is returned to Bassanio. Sharp (1986: 254-57) gives a clear account of how there is no malice, directed at the possibility of an erotic relationship between Bassanio and Antonio, in the trick Portia plays on Bassanio. Rather, the ring as a gift binds Portia, Bassanio, and Antonio together, suggesting the bond of Grace, Everyman, and Christ in Christian doctrine.

The key financial exchange is initiated by the loan Antonio secures from Shylock. Acknowledging previous insults directed at Shylock and anticipating future ones, Antonio highlights the lack of friendship between the merchant and the Jew:

> If thou wilt lend this money, lend it not
> As to thy friends; for when did friendship take
> A breed for barren metal of his friend? (I.iii.142-44)

This alludes to Deuteronomy 23:20: "Unto a stranger thou mayest lend upon usury; but unto thy brother thou shalt not lend upon usury: that the Lord thy God may bless thee in all that thou settest thine hand to in the land whither thou goest to possess it." Antonio is willing to pay usury for the loan but out of 'kindness' Shylock declines the offer, imposing a more legitimate *poena* on the loan: the flesh bond. In essence, Shylock believes he is purchasing Antonio's life, as Jessica will later explain (III.ii.296-300).

This contract ends in the trial presented in Act 4, where Antonio accepts in all his statements that by not repaying the loan he must submit to Shylock's penalty, just as Christ willingly accepted his fate (John 10:11-18; see IV.i.9-11; IV.i.84; IV.i.116-17; IV.i.187; IV.i.253; IV.i.292-93). However, Portia/Grace employs the principle that it is usurious to take *turpe lucrum*:

> Tarry a little. There is something else.
> This bond doth give thee here no jot of blood.

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> The words expressly are 'a pound of flesh.'
> Take then thy bond, take thou thy pound of flesh,
> But in the cutting it, if thou dost shed
> One drop of Christian blood, thy lands and goods
> Are by the laws of Venice confiscate. (IV.i.318-24)

The release of Antonio from the flesh-bond is where secular interpretations of the play believe the story should end. However, the essential exchange is between Antonio and Portia. Antonio lends Bassanio the money so that he can marry Portia, and she becomes indebted to Antonio. Portia repays this debt in the final action featuring Antonio, when she informs him that his ships are not lost (V.ii.294-98). As Sharp (1986: 263) explains, the letter carrying the news is presented to Antonio sealed, yet Portia knows of its contents. The interpretation is that she wrote the letter and has repaid the debt – money for money – highlighting the essential connection through which Antonio/Christ brings Bassanio/Everyman to Portia/Grace. Herein rests the key justification for this interpretation: it accounts for the whole play.

The relevance of *The Merchant* to the argument of this article is the message that the play delivers concerning the relationship between Justice and Mercy. Shylock stands for the law (IV.i.104; IV.i.144) while Portia represents mercy (Bradbrook, 1969; Coghill, 1950; Gollancz, 1931; Lewalski, 1962). Coolidge (1976: 256) argues that in *The Merchant*, Shakespeare presents the essence of Christianity, in contrast to Judaism, by judging not simply on the basis of 'the Law' but also on the basis of mercy: "the manner in which the complex relation between Gospel and Law can function as a paradigm for relating Christianity to all the values of humanity". Coolidge (1976: 246) begins with a discussion of usury, explaining, "[i]f justice is the principle according to which the people of God are to deal with one another, usury is forbidden among them". Furthermore, the Law on its own will alienate members of a community, whereas mercy brings them together. Coolidge (1976: 246) refers to William Tyndale, who "explains in the introduction to his translation of the New Testament [that] the Law, 'through teaching every man his duty, doth utter our corrupt nature'" and "'only love and mercifulness understandeth the Law, and else nothing'". Shakespeare takes a consistent line on this in *Measure for Measure* (Dickinson, 1962; Wilson, 1994).

Shakespeare may have personified Christ and *agape* in the form of Antonio because merchants were perceived as being particularly virtuous (the *doux-commerce* thesis). It could also be because Shakespeare recognised that merchants were exposed to a particular peril of focusing on the cardinal virtues of justice and prudence at the expense of charity – what McCloskey (1998) describes as *P* virtues at the expense of *S* virtues – or emphasising deontological and consequentialist ethics over character ethics. By presenting the merchant as the personification of the highest Christian virtue, Shakespeare may have attempted to engage the Puritan sympathies of the emerging merchant class in order to remind them of their moral responsibilities.

The significance of mercy in commerce is not a redundant message (Rainbolt, 1990). *The Merchant of Venice* eloquently stands against the dominance in finance of both consequentialist ethics, which transform economics into a 'cyborg science' (Mirowski, 1998; Davis, 2008: 357), and deontological ethics, which is over-bureaucratic and rigid (van Staveren, 2007: 23-26) as well as susceptible to 'gaming' (Watts, 2012). All of which is exemplified in the growing automation of bank lending decisions.

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Synthesising the norms: Trust

'Trust' is defined in the *Oxford English Dictionary* as "a firm belief in the reliability, truth or ability of someone". Accounts of how trust is developed vary. However, they involve terms connected to sincerity – such as honesty, integrity, credibility, predictability, dependability and reliability; terms connected to reciprocity – such as judgement and fairness; and terms related to charity – such as benevolence, goodwill, and responsibility (see Seppänen et al., 2007: 255). Essentially, the synthesis of the norms sincerity, reciprocity and charity can be seen as the basis of trust in commerce. This argument reduces down to the assertion that finance relies on trust, which is built on the three norms. This might be regarded as naïve, and trust may appear a nebulous concept. However, the Quaker connection to banking and accountancy – represented in the names Barclays, Lloyds, Cooper, Waterhouse, and Peat – offers testament to its concrete practicality.

Quaker bankers

The Quakers emerged as a non-conformist Christian sect during the English Civil War of 1642-1651 and became an important expression of independent (i.e. non-Episcopalian or Presbyterian) faith during the Commonwealth. The sect was 'comfortably bourgeois' in character and egalitarian, promoting the rights of women and paving the way for the Abolitionist movement in the nineteenth century. Following the Restoration of Charles II in 1660 the Quakers were suppressed. During their period of persecution, they became the dominant independent church, accounting for around 1% (60,000) of the English population in 1680.

The growth of Quakerism, while other independent sects founded on charismatic leaders disappeared, can be explained by how the sect was organised. Quakerism distinguished itself from Anglicanism and Presbyterianism by rejecting priesthoods (whether appointed or elected) as well as the particular authority of the Bible. To fill the void of dogma, a system emerged whereby the central 'Meeting House' issued *Queries* to individual Meetings on a regular basis, enquiring about 'the state of the society' and posing specific questions to the congregations. The replies were reviewed and *Advices* issued that defined Quaker doctrine, which held the community together. This doctrine was developed in a discursive manner that was able to react quickly to events (Walvin, 1998: 24-26).

The 'Quaker success story' in finance was built on this basis (Prior and Kirby, 2006; Roberts, 2003). It could be that the financial prominence of the Quakers was a consequence of their 'Protestant work ethic' and frugality, which delivered unconsumed surpluses that were then available for reinvestment. However, other Protestant sects were equally frugal but did not maintain the disproportionate influence on finance that the Quakers enjoyed.

Being a Quaker meant adhering to the regulations collected in the *Advices*. In return, Quaker businessmen could rely on the support of the whole community. Quakers were required to account for themselves and to monitor each other. This led them to rely on written records documenting individual conformity to the *Advices*, and helped develop networks of communities based on letters and libraries (Prior and Kirby, 2006: 117-21; Walvin, 1998: 46-47). In business, Quakers were expected to consult with more experienced 'mentors' before engaging in activity that required borrowing. Moreover, they were scrupulous, like Antonio, in repaying debts during a time characterised by high levels of default (Prior and Kirby, 2006: 121-29; Walvin, 1998: 55-57).

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The Quaker commitment to the repayment of debts highlights their commitment to reciprocity. Sincerity was a consequence of their doctrine of simplicity. This ranged from simplicity in appearance, which inhibited consumerism, to simplicity – i.e. honesty – in speech. Quakers "detested that which is common, to ask for more goods than the market price, or what they may be afforded for; but usually set the price at one word" (Walvin, 1998: 32). Quakers were also renowned for their charity (Cookson, 2003; Walvin, 1998: 81-90), and the expression of the norms sincerity, reciprocity, and charity is reflected in their approach to lending, encapsulated by the following proverb:

> 'Well, Friend', said the Quaker Banker, 'Tell me the answers to these questions so that I may help you in your projects, for you have opportunities: Firstly, how much do you seek to borrow? For how long? And how will you repay the loan plus its interest?' These are the issues all good bankers must explore. (Apocryphal)

The Quaker experience suggests that the culture of sincerity (commitment to truthfulness), reciprocity (commitment to fair pricing and repaying debts), and genuine care for others generated a robust financial network that was able to fund the growth of the British economy between 1700 and 1850. Quaker influence waned towards the end of the Industrial Revolution in the mid-nineteenth century. The 1844 Bank Charter Act undermined the network of 'country' banks that served local businesses and led to the merger and centralisation of the provincial Quaker institutions. In the aftermath of this centralisation, a number of Quakers became associated with financial malfeasance. The most famous example is the failure of Overend, Gurney & Company in 1866. The firm was connected to the Quaker Gurney banking dynasty. For the first half of the nineteenth century, it dominated the discounting of Bills and was able to underwrite other banks during the crisis of 1825. Its failure was a result of speculative investing in the 1850s, exposed by the Panic of 1866, and the refusal of the Bank of England to underwrite it. In the distributed financial network before 1844, the stability of the system rested on inter-personal relationships and trust. Quaker doctrine nurtured trust and produced financial success. After 1844, this stability rested on the centralised decision making of the 'lender of last resort'.

In the pursuit of efficiency, both retail and commercial banks have replaced personal relationships with clients with automated systems in the loan approval process. A retail bank will employ dozens of models to convert data on a customer into a loan decision (only a dozen or so models are used in commercial lending). This has seen the emergence of a 'credit risk modelling' profession, which develops, maintains and interprets the algorithms.

While many models appear to use the same data to make similar decisions, they often deliver contradictory results. Lending managers confronted with a diversity of results tend to focus on a single model to deliver an 'objective truth' without investigating why others deliver different answers. Founded on algorithms, the process cannot be sincere (it can only be objective/reciprocal), and as a consequence the borrower and lender are alienated. The bank's task is to optimise the 'harvesting' of loans and is devoid of charity.

Financial institutions understand that using data from social media (so-called 'Big Data') will enhance the algorithms, but are prevented from doing so by European Union and US legislation. However, 'the gods punish us by giving what we pray for' and, in the event that such data could be used, it is difficult to see how existing banks would survive in competition with social media platforms that have started to offer loans. This suggests that the survival of existing retail banks does not depend on their ability to implement new technologies, but their ability to communicate meaningfully with their clients.[10]

This account leaves open the problem facing contemporary finance: how do we support a financial culture that nurtures trust in a pluralistic society not centred on Quaker doctrine?

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Conclusion

This article began with two observations: that reciprocity is deeply embedded in financial mathematics, and that the monetisation of society is central to the development of western ideas of science and democracy. In order to connect these observations I have drawn on Habermas' account of discursive norms in his *Theory of Communicative Action*, suggesting that the norms of sincerity, reciprocity, and charity are universal moral values essential to legitimate market practice. This yielded the hypothesis that markets are centres of communicative action in the face of uncertainty. Evidence was provided in support of this hypothesis in the effects of the Quakers on financial practices. However, the pragmatic theory of markets developed here remains incomplete. In particular, I have not developed the links between markets being centres of communicative action and the development of western ideas of science and democracy. This is a task for future studies.

Notes

1. Here I use the definition where "profits accrue primarily through financial channels rather than through trade and commodity production" (Krippner, 2005: 174). I do not claim that financialisation is justified without there being economic exchange. Note how Sahlins' (2003: 282) description of the Siassi suggests there is legitimacy in profiting from trade rather than production.
2. The New York Stock Exchange employs the 'specialist' system that combines the role of broker and dealer. This role has become widespread in the aftermath of the 'Big Bang' reforms of the London markets in the 1980s. It is characterised by the following process. An agent who needs to transact in an asset but does not have direct access to the market (such as a retail bank wishing to enter a swap) contacts a specialist. The specialist will know the agent and have a good idea of the position they will take and quotes a price that they believe will deliver a profit based on their knowledge of the market, their own position, and the agent's position. Having executed this transaction with the ill-informed agent, the specialist will act as a market-maker within the market, seeking to cancel the position they opened by transacting with the agent (if they sold to the agent they will buy in the market). The bid-ask spread offered to the market by the specialist will be very narrow if the specialist wishes to execute the trade, but might be quite wide when the specialist does not have a position initiated by an external agent. From our perspective, this is a degradation of the market-maker's particular role for the benefit of the monopolistic specialists who we would suggest are acting more like brokers.
3. W. Bagehot was a pseudonym for Jack Treynor.
4. Arbitrageurs aim to ensure that prices of many assets in the market are consistent. Fibonacci described this practice eight hundred years ago (Fibonacci and Sigler, 2003: 180).
5. While 'confusion' has long meant 'disordered', in metallurgy (a branch of finance in the seventeenth century), it was used to refer to the point at which metals, such as gold and silver, mix as molten liquids: '*com-fundere*' = 'with pouring' (*Oxford English Dictionary*, the etymology of confusion is from confound). *Confusion de Confusiones* may be a pun implying a disordered mixing.
6. In *A*, the hedge funds had an insurable interest; *B*, ratings agencies had a bigger influence on pricing mortgage default than CDS; *C*, banks win and lose with CDS (that is the point of market-making); and *D*, disassociating pay-out from loss creates moral hazard if there is an insured interest (standardising pay-out enables price discovery).
7. In January 2016, Goldman Sachs reached a $5.1bn settlement with the US government and other agencies for mis-selling mortgage-backed securities in the run-up to the financial crisis.

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8. See The Council of Trent's *Decree on Justification*, Chapter III (Waterworth, 1848: 31-32).
9. See, for example, the *Catechism of the Catholic Church*, paragraph 538. Available at: <http://www.vatican.va/archive/ENG0015/__P1L.HTM/>. Accessed 21 July 2016.
10. Banks cannot employ 'machine learning' because they need to justify their lending decisions. Because a machine learning algorithm evolves independent of human interaction, it cannot provide a justification.

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