

The Economic Effects of Innovation, Regulation, and Reputation on Derivatives Trading: Some Historical Analysis of Early 18th Century Stock Markets

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This Draft: February 2003

* I thank Dan Covitz, Neil De Marchi, Craufurd Goodwin, Roy Weintraub, and seminar participants at Duke University for helpful comments. Naturally, the views expressed here are the author's and not those of the Federal Reserve or the Board of Governors or its staff.

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Abstract

The use of financial derivatives dates back to the early 1600s and the beginning of an active trade in joint-stock shares. However, as the fledgling stock exchanges of Amsterdam and London burgeoned at the end of the 17th century thanks to a number of new corporate entities issuing shares and the boom in England's issuance of traded debt related to its ongoing war efforts, the trade in derivatives came to dominate the market. The shifting balance of stock exchange activity in the early 18th century towards speculative participation by an ever growing investing class raised the ire of many social critics. Derivative trades, in particular, came under increasing scorn for breaking the link between investment fundamentals and market price and a steady stream of regulation resulted seeking to curb their usage. Using the substantial pamphlet press in London focused on the stock exchange during the early 18th century this paper analyzes some of the economic explanations for the existence of financial derivatives, emphasizing their ability to generate liquidity and participation via reduced transactions costs. I document the regulatory response intending to shut down the derivative trade, noting how such efforts only gained traction during market downturns. Finally, the paper examines the repeated ineffectualness of derivatives regulation and identifies how reputation effects may have supported derivative transactions even when they were unenforceable and/or illegal.

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2. Financial Innovation on Early Stock Markets:

The stock exchange has not been a static institution. During the early 1700s (but also prior to) a variety of innovations in market structure took hold. Many of these innovations appear to have explicit roots in the desire of market participants to reduce transactions costs. The most obvious innovation is perhaps the development of centralized trading at the coffeehouse trading sites of “exchange alley” and the eventual focus on Jonathan's and evolution into a more formal stock exchange. Centralized trading had the clear effect of reducing information and “shoe leather” costs. In addition, as I will argue later, it may have helped foster the formation of reputations and therefore of “reputation effects.”

Other innovations made it easier – that is less costly – for investors to trade by facilitating transactions without the trouble of actually transferring property rights. For instance, most trades were done for the “difference,” so that possession of the shares need not be exchanged. Trading for the difference was an important development accomplished either by “keeping” fictitious holdings properly accounted for in a broker’s account or, most likely, by purchasing a forward contract to be settled at a future date. These innovations greatly simplified trading because for most securities it was a laborious process to be the official “holder of record” of the share. Ownership typically required being entered into the company’s books at their offices (Dickson, 1967). Of course the initial capital required to support a trade for the difference as opposed to an outright purchase was also much less. Another common innovation allowed trades in fictitious partial shares, to make the denomination more affordable to non-high-income individuals. In addition, brokers facilitated client’s trading by allowing them to trade on credit or margin.

Also, the stock exchange developed a clearing-house mechanism between the brokers and eventually instituted regular quarterly settlement dates as existed in Holland (Dickson, 1967). At the settlement date, a given trader might have made both purchases and sales. Instead of having to settle each individual trade, the “rescountre” allowed for trades to be systematically settled on a net balance basis (De La Vega, 1688, Mortimer, 1801), thereby simplifying settlement and again reducing transactions costs, in this case for brokers. At the settlement date, rather than settling, investors could extend the contract for an additional premium.

Not only did forward transactions allow traders to avoid possessing shares and to trade with less capital, but they similarly made it possible for speculators to easily – that is with reduced cost – take the short position in the stock. Put and call options also traded frequently and for similar reasons. Taken together, derivative contracts, by all accounts, almost certainly outstripped cash/spot trades (see Harrison, 1999, Banner, 1998, and Dickson, 1967).

Not much is known about the exact form of the contract used for derivative trades. Dickson (p. 491) discusses a typical option contract (apparently in use for much of the early 1700s) which

specified the parties, the shares, the position, the price, and the date (which were “on or before” dates) and a premium. But traders also used simple covenants and indentures to record trades. Dickson examines the trades of Sir Stephen Evance and finds that Evance recorded a series of apparent forward trades “undertaking to deliver stock in six months’ time at a given price; when the premium is stated it amounted to roughly 20 percent.” This 20 percent premium for a forward contract is assumed to be the margin requirement, since forwards were typically for the difference, but it could be that even these trades “to deliver” were of the option variety. It is possible that not much distinction was made between an option and a forward. Market critics certainly lumped them together when assailing trading practices. Derivative trades were often called “time trades” or “time bargains” or “jobbing” trades and were criticized as mere gambling or imaginary trading “in the air.” However, a close reading Sir John Barnard’s Act – the 1734 act outlawing derivative trading – suggests that the two types of derivatives were distinct and Banner’s (1998, p.28) reading of Houghton’s 1694 market primer suggests that forwards were distinct from options at that time too.

Sir John Barnard’s Act, which was the major piece of securities legislation of the 18th century, condemns stock-jobbing as pernicious and attempts to prevent the trade in futures and options:

That all contracts after June 1, 1734, upon which any premium or consideration in the nature of a premium shall be given or paid for liberty to putt upon, or to deliver, receive, accept or refuse any publick or joint stock, or other publick securities whatsoever, or any part share or interest therein, and also all wagers and contracts in the nature of wagers, and all contracts in the nature of putts and refusals, relating to the then present or future price of any such securities, as aforesaid, shall be null and void to all intents and purposes whatsoever.

The Act goes on to decree stiff penalties for trading in these contracts. Options were clearly named specifically: “putts” were put options, giving the buyer of the option the right to sell stock at some future date; “refusals” were call options, given the buyer of the option the right to buy

stock (or, to refuse to buy stock) at some future date. Forward trades are referred to in two ways: by contracts to “deliver” or “receive” and also by “wagers and contracts in the nature of wagers”. Forward trades were considered to be wagers because they were typically transacted for the “difference.” Forward trades, thus, appear clearly to be illegal, and Barnard himself (Cobbet, p. 57, Debate in the Commons, 1733) even describes how someone can choose to sell now and put their money in the bank, instead of making a contract for a forward sale. We will return later to the causes and effects of securities regulation and of Sir John Barnard’s Act in particular.

3. Economic Rationale for Derivatives: Reduced Transaction Costs, Increased Liquidity, and Provided Hedges:

The pamphlet literature of the early 1700s offers many insights into the economic advantages of these derivative contracts and their use by investors. Foremost, as already stated, it is clear that they reduced trading costs via lower capital requirements and reduced transactions costs associated with the transfer of property rights. Moreover, the trade in shares swelled and largely occurred through these contracts. Dickson reports that the number and activity of dealers declined – dealers dealt in the cash trade as they handled the actual transfer of securities – as time-bargains became more common during the early 18th century. At the same time the activity of and number of brokers and jobbers, who facilitated time trades, increased.

Derivative trades were also argued to enhance market liquidity, where liquidity is explicitly linked to the ability to find a market price and counter-party. For instance, it was argued that a free trade in securities was necessary for market liquidity and for the government’s ability to raise funds (Cobbet, p. 514, Debate in the House of Lords, 1734):

“That the credit of our funds depended very much upon the ready access that people had at all times to their money, and that this ready access was chiefly owing to the practice of stock-jobbing; by this practice it was, that every man was always sure of finding a purchaser for his stock whenever he had a mind to sell, and by this only it was, that there was always a certain and fixed market-price upon every one of our public funds; whereas, should this practice be entirely destroyed, it might soon become as difficult to find a purchaser for stock, or to ascertain the price

of it, as it is now with respect to land; and the concluding of a bargain might become as tedious in the one case as it is now in the other.”

Options are also defended on the economic grounds that they can provide a form of insurance: “in all other branches of trade, there was a free liberty allowed to every person that had a mind to insure his stock in trade: That the selling of stock for time, and the giving of money for the put of stock was nothing else but a way of insuring the principal money which a man had in the publick funds; and the preventing a man from taking that method of securing his property in the funds, would be a very great hardship upon all the creditors of the public.” This was not a new argument. One early author argues that traders take options to “save themselves from too great a loss.” So that if you must take a loss, an option is a way of “being insured that they should not lose above a certain rate.” The author also suggests hedging, “Many Persons have lent Money to the Government on Tallies, which they would not have done, if they could not by this means have Insured themselves.” As Houghton suggested in 1694 (quoted in Banner, 1998, p.28), by put options “many are encouraged to come into new Stocks, the success whereof is very uncertain.”

Hedging and the benefits of portfolio diversification were already common practice at this time and marine insurance against the uncertain risk of a voyage was well understood. Many investors formed sophisticated well-diversified portfolios and hedged their exposures (see, for instance, Samuel, 1982). Securities valuation was sophisticated and investors used fundamentals and discounted cash flows and P/E ratios as in modern Dividend Discount Models (see Harrison, 2001). The role of “risk” was also well understood and the incorporation of risk and liquidity discounts into market prices was already common practice in land prices (see Locke, 1691), trade in paper notes, lottery tickets, and tallies (see Powell, 1915), merchant trading (see Barbon, 1690), and securities prices (see Clerke, 1725, and Hayes, 1726).

Of course derivative contracts were not unique to shares and another frequent argument against limiting these types of trades is that they were common practice in other areas of commerce. For instance, forward contracts were common in all types of commercial and agricultural ventures,

including sales of grain before the harvest and sales of fish before they were caught. Even the name for short-sellers as bears comes from the unadvisable practice of selling the bearskin before killing the bear. An early 17th century Amsterdam pamphlet (*Request van eenige actiehandelaren* 1610, in Van Dillen 1930, as translated in De Marchi and Harrison, 1994) in defense of the use of these practices in shares notes that there had been no regulation of “forward purchases or sales of commodities, nor of shares ... [even] forward ... provided both parties enter into the contract with good will and freely ... just as herring, before they are caught, and grain and other commodities, before they are harvested or in hand, are sold ‘on delivery’.”

Glanville (Cobbet, p. 51) notes in 1733 that “merchants may sell goods to be delivered at any time the contractors shall agree on: I know that in the Russian trade it is usual for the merchants concerned in that trade, to enter into contracts to deliver hemp at a certain price, at a certain future time, though, perhaps, at the time of making the contract, the hemp is not so much as purchased or contracted for in Russia: This is a privilege which is enjoyed by all merchants with respect to the goods they deal in, and I can see no reason why the proprietors of our public funds should not enjoy the same privilege.” He goes to trouble to point out that not only is the trade for a future date, but that it occurs before the goods are possessed – thus rebutting one of the key concerns of the critics that derivatives encourage trade without ownership. Other defenders of derivatives at this time (Cobbet p. 50) note that it is quite natural to want to make a contract for some future time – it is a convenience. Trades for future delivery, even before the goods are possessed, eliminated uncertainty and made it easier to transact. “Convenience,” in this sense was often interchangeable with liquidity in that it reflected the ease of selling. It was argued that there was no reason for the securities trade not to have the same “convenience” as other types of trade.

4. Market Regulation of Derivatives:

The derivative trade, as already alluded to, was a major focal point for critics of securities trading. It was widely believed that buying a share and holding onto it was a smart investment, but speculating and trading without any desire to own the security was difficult for many

commentators to accept. As the stock trade became a larger phenomenon in London and as the trade for “time” rather than for cash accelerated, pamphlets critical of the share trade multiplied. These critics took many different angles but generally lobbied to proscribe the time trade (see Harrison, 1996, and 1999). They argued that time trades caused unnatural price fluctuations not related to fundamentals, were merely a form of unproductive gambling that did nothing for the economy, and were a means for jobbers to manipulate share prices. During market declines, such as in the aftermath of the South Sea Bubble, these claims gained legislative traction. Thus, the history of stock market regulation highlights the obvious, but often neglected, point that market regulation is neither unchanging nor exogenous (see also Banner, 1998). Rather, regulation depends significantly on the behavior of market prices and the *perceived* behavior of market participants.

The introduction and passing of Sir John Barnard’s Act in 1734 exhibits a pattern similar to other proposed legislation to curb wayward stock market activity. Namely, each proposal is associated with some crisis in the traded securities and/or a sharp decline in share prices which engenders a public outcry. Ironically, Barnard’s Act was motivated by the South Sea Bubble crash in 1720, but it was twice defeated in the House of Lords in the immediate bubble aftermath before finally passing years later. Eventual passage of the Bill in 1734, after it was introduced and dropped in 1733, was no doubt helped along by a new decline in share prices due to the prospects of war in Europe. A series of corporate scandals that depressed share prices in 1733 led to the reintroduction of the bill in that year.

This is a common pattern. For instance, at various times throughout the 1600s short-selling was banned in Amsterdam following market declines (see De Marchi and Harrison) and, following the Tulip bubble crisis in the 1630’s, the Dutch government took the stance that time bargains were unenforceable by law. The earliest regulatory action in England appeared in 1697, which was near the end of a long decline in the price of government securities. In that year the Bank of England insisted that all exchanges of its stock must be registered within seven days and exchange hands within fourteen days. Their goal was to prevent forward trades – especially

short-sales – which they thought were depressing their stock in advance of an important new subscription (see Dickson, 1967). Later that year Parliament enacted a Bill to limit the number of stockbrokers to 100. These brokers eventually became known as “sworn brokers.” The Bill also attempted to limit trade in government funds and to outlaw time-trades in stock. Similar Bills had been previously defeated in both 1693 and 1696 – both years of declining stock prices. In 1708 the provisions in the 1697 Bill were renewed, Dickson (1967, p. 517) says as a “sop to public opinion,” but the regulation of brokers was delegated to the City of London. While this did codify two distinct classes of brokers – the “sworn brokers” and the “jobbers” – the legislation had no impact on time-trades and little impact on the trading practices of either class of broker. For instance, sworn brokers were not supposed to trade on their own account – but they frequently did.

No new legislation appeared until the aftermath of the South Sea Bubble. However, further Bills to regulate the trade in shares appeared in 1746, after shares had plummeted on concerns about the military success of a rebellion at home and about French support for the rebels. Security prices eventually rallied after military victory and the Bill was dropped. However, similar bills were again introduced and defeated in 1756 and 1771 – both years of declining share prices.

But, the market forces acting on regulation were not all one sided. Despite the desire of many critics to end all trade in shares, it was impractical for stock market regulation to go beyond the proposed curbs on time bargains. For instance, part of Sir John Barnard’s original proposal, which was not passed, would have involved tighter restraints on all share trading. Thomas Mortimer (1801), a popular critic who produced 13 editions of his book, *Every Man His Own Broker*, between 1761 and 1801, describes the possibility of strict exchange regulations (p.xv): “The just apprehension that such regulations would lay too great a restraint on the business of buying and selling, impede the free circulation, or shut the present open market for the funds, will always be an insurmountable objection to them.” All else aside, the stock exchange was too important to the British government's ability to raise capital for them to enact regulations that would risk shutting down the exchange (see Harrison, 1997, and Brewer, 1998). Thus, as already

discussed, many of the opponents to Sir John Barnard's Act argued in Parliament that passing the act would hurt market liquidity and make it more difficult for the government to raise funds (see Harrison, 1999).

5. Regulation Does Not Necessarily Effect the Market:

But all of the regulations were ineffective at eliminating the time trades and had little effect on the behavior of market participants. Derivative trades in England and Amsterdam for the second half of the seventeenth century and the first half of the eighteenth century (before Barnard's Act) were already viewed as gambling contracts under the law and thus were unenforceable in court. Shirkers (renegers) could not be sued for failing to uphold their end of the contract. Yet the derivative trade flourished and subsequent critics repeatedly called for the regulation of stock-jobbers and the elimination of time bargains, especially in the early eighteenth century after options became widely used and, as we have seen, after the South Sea Bubble. For example, a typical critic ("An examination ...," 1720, 19) lamented, "I should think it a great Happiness to the Nation, that buying without Money, or selling without Stock, could be prevented, which is a practice worse than wagering."

The clearest evidence that the regulations did not have their intended effect is the repeated calls for new regulation. Short-selling bans in Amsterdam were repeated every few years. Despite the failure of the Acts of 1697 and 1708 to curb stock jobbing, and the difficulty in even getting the Bill passed, there is some evidence that contemporaries thought that Sir John Barnard's Act would be effective. However, in the event, it seems clear that the Act was generally ineffective at preventing the trade for time, because in 1746 and again in 1756 and again in 1771 similar Bills were introduced to repeatedly curb time trades. The 1746 and 1756 bills were entitled (emphasis added): "A bill *more effectually* to prevent the infamous practice of stock-jobbing." Given the continued use of time trades in earlier Amsterdam and London when they already held no legal standing, it is probably not surprising that the explicit prohibition did not eliminate them either. Banner (1998, p.106) notes the same phenomenon and cites a number of later sources, but also one from the 1740s, as pointing to the ongoing use of derivative contracts despite their being

illegal. Mortimer (1801) similarly notes continued use of derivatives trades in the middle 1700s and calls Barnard's Act "ineffectual."

Similarly, restrictions on gaming and gambling, which like the early derivative contracts were legally unenforceable, were also continuously repeated over this time period. Notably, in 1708 "An act to prevent the laying of wagers relating to the publick" and again in 1710 "An Act for the better preventing of excessive and deceitful gaming." Here too the moral message is muddled by the government's need to raise funds. In fact, new war loans in the 1740s brought with them new public lotteries and sales of shares of tickets (down to a sixteenth) and the subsequent stock-jobbing of lottery tickets. The stock-jobbers, similar to their practices for trading stocks, sold lottery numbers without owning actual tickets. This was called the "hiring" of tickets, and Parliament outlawed it in 1743 and (of course, it had to be repeated) again in 1744, since the government wanted to monopolize the revenue from issuing tickets. After hiring was outlawed, the jobbers took to offering a similar service under the guise of ticket "insurance".

Some commentators questioned the ability of regulation to change human behavior at all. One commentator ("A view ...," p. 97-8) writes:

Whenever it shall be seriously intended to prevent or restrain this practice [stock-jobbing], I believe it will appear, that whatever contrivances may be provided for prohibiting the contracts in exchange-alley in the manner they are now made, or altering the manner of conveying our interest in stocks from one person to another, while they increase the difficulty of the most innocent and necessary transactions in the publick funds, will have little further effect on this practice, than to force it into some other channel, and perhaps increase the profit and employment of the banker only, by making his credit or assistance further necessary; and that the most reasonable method of preventing it, will be removing the encouragement and temptation to it.

In the debate in Parliament over Sir John Barnard's Act (Cobbet, p. 59), one member argues similarly that trading is "a sort of gaming, but it of such a sort as cannot be entirely prevented, even by the Bill now before us."

6. Reputation Enforced Financial Trades Even if Courts Would Not:

It is an interesting reoccurring feature of government regulation of time bargains during this time period that it was essentially ineffectual. The market's own self-enforcement mechanisms apparently enabled unregulated – and even illegal – trading to flourish. The obvious implication of this is that the benefits from trading outweighed the potential costs of default and/or legal action. But what mechanism prevented the market from disintegrating at the hands of cheaters?

The economics literature has identified numerous examples of trade outside the realm of legal contract enforcement. Two mechanisms have been prominent in the literature: reputation and coalitions. The role of reputation, for instance, has been argued to be important in a variety of financial contracting (for instance, Diamond, 1989, and Boot, Greenbaum, and Thakor, 1993, among others). In Grief (1993) long-distance traders formed coalitions to act collectively to overcome the principal-agent problem, while in Grief, Milgrom, and Weingast (1994) a merchant guild acts collectively to overcome commitment problems.

Unlike later self-regulating exchanges which enforced themselves via membership to the exchange and the use of collective punishment, the stock market in the early 1700s had no similar formal membership enforcement function. Rather, the written evidence by market observers indicates that the formation of reputation was necessary for a broker/trader and that the maintenance of reputation was a primary concern. Reputation effects kept broker/traders "honest."

There was a large role for reputation effects since most trades were executed on the "honour" of the two parties – sometimes without a contract at all, but even with a contract the trade was

typically not legally binding. To breach the contract was to have one's "honour" and "credit" ruined -- a fate much worse than paying a one-time loss.

To support and maintain a Man's Private Credit, 'tis absolutely necessary that the World have a fixt Opinion of the Honesty and Integrity, as well as Ability of a Person ... indeed a Readiness and Willingness to perform ones Engagements is such a fundamental of Credit, that all the Affluence of Money, and the most immense Riches are of no Consequence, if there be ground for the least suspicion of Disingenuity. (Sykes, 1717)

Adam Smith (*Lectures on Jurisprudence*, page 538) makes similar observations on the role of reputation in undermining the government's prohibition of time trades: "There is no natural reason why 1000 pound in the stocks should not be delivered or the delivery of it enforced, as well as 1000 pound worth of goods. But after the South Sea scheme this was thought upon as an expedient to prevent such practices, tho' it proved ineffectual. In the same manner all laws against gaming never hinder it, and tho' there is no redress for a sum above 5 pound, yet all the great sums that are lost are punctually paid. Persons who game must keep their credit, else no body will deal with them. It is quite the same in stock-jobbing."

7. Economic Determinants for Reputation Formation:

On early stock markets, self-enforcement via reputation appears to have been a reality, perhaps a textbook application of the standard "folk theorem" game theory results. In order to trade tomorrow, brokers were willing to play by the rules today. We know that the market did not break down and derivative trading continued – to all appearances uninhibitedly. Unfortunately, we can only speak somewhat vaguely about the relative importance of the mechanisms that supported reputation effects.

To begin with, we know that cheating, or renegeing, must have been rare. That the incentive to do so existed, was clear, and the push to repeal Sir John Barnard's Act in the 1800s included appeals

to Parliament to ensure that the market would not be populated only by rogues (see Banner, p.107). However, the pamphlets during the 1700s do not mention any cases of cheating, and had there been any prominent examples it is probable that the hostile press would have publicized them widely as further evidence of the disgraceful character of Exchange Alley.¹ To the contrary, a later critic (“The system ...”) who notes that to not pay one’s obligation on the London Stock Market was to be a “lame duck” describes cases of investors who borrow from friends and family just to pay off their broker and concludes, perhaps with some hyperbole, that: “... it is notorious that a Jobber was never known to waddle (to be a lame duck) since the Stock Exchange was established.” Similarly, Dickson (page 501) describes a broker willing to pay the difference to his client, where he did not have to, in order to preserve his reputation. Traders, thus, appear to have gone to great lengths to preserve reputational capital. This is consistent with their desire to trade in the future and with a significant value being attached to reputation. Besides individual reputations, Dickson (page 502) notes that brokers had developed genuine “rules of conduct” by the early 1700s to help gain the trust of the public.

In order for reputation to prevent cheating, the punishment for renegeing on one’s obligation must be substantial. The commentary above suggests that a good reputation was a requirement for trading shares and for obtaining credit. Thus a trading breach carried with it serious negative consequences for the reneger, threatening his entire financial well being besides only his trading ability. As a later observer (The system ... , 1816) noted: “As neither party can be compelled by law to complete bargains of this kind, their sense of honour, and the disgrace and loss of future credit, which attend a breach of contract, are the principles by which the business is supported.” Adding in the nonfinancial costs to renegeing furthers the potential enforcement mechanism. Not only was there the potential for disgrace within the community, but that disgrace could very well be attached to other family members and passed down to your children. The possibility that

¹ There were, apparently, at least two well known *frauds* in the early nineteenth century that appear in Sraffa’s biography of Ricardo (in Sraffa, 1973, 69, as well as in “The system of stock-jobbing explained ... ,” 1816): “both of them based on the dissemination of false news about the war, that of 5 May 1803 and the Cochrane Hoax of 1814.”

reputation and credit could be passed down may have mitigated the potential for opportunistic behavior by short-term participants. The moral, religious, and cultural value placed on keeping one's obligations, for instance, were probably much stronger in the 1700s than now.

In addition, to deter cheating, the other market participants must be informed of the renegers. Due to the centralized trading location, it was easy for traders to keep informed of market events. In addition, the number of traders was still small enough that it certainly was not anonymous (Dickson). Also, there was likely significant ethnic grouping suggesting that brokers may have been more likely to trade with other brokers from the same ethnic group and to act as agents for investors from the same group. These links would have furthered the non-anonymity of trading. Even so, the desire to not trade with a cheater did not have to reflect a coordinated agreement among all traders acting together as in a coalition. Individuals had significant self interest not to trade with a reneger since they might incur the next loss and because the reneger may have revealed that they are headed to bankruptcy since this was the most likely source of breach (as in Fafchamps, 1998). Finally, that such information would be shared is supported by later accounts (Carey, 1821) that the stock exchange allegedly publicized a list of names of those who had defaulted up on the wall, "exhibited in the hall of the Stock Exchange, where they dare not appear afterwards."

However, as Grief, Milgrom, and Weingast argue (1994, p. 746), "Indeed, the effectiveness of institutions for punishing contract violations is sometimes best judged like that of peacetime armies: by how little they must be used. Thus, when one reads the historical record to determine whether a major role of merchant institutions was to ensure contract compliance, the number of instances of enforcement is not a useful indicator. Instead, one must ask, What were the things that threatened, and on occasion thwarted, efficient trading?" Excessive cheating and fraud would have crippled the market, and certainly this did not occur. The one exception may be the crash of the South Sea Bubble which left spot prices well below forward prices and left most open time trades in question. Because of the alleged fraud by South Sea directors, some of these contracts must have defaulted. Nonetheless, the market was soon back to normal operations. In

general, however, reputation effects may well have been enhanced by other aspects of the trading agreements which mitigated the incentive to renege.

For one, to facilitate enforcement cheating must be verifiable. Contracts probably facilitated verification – in conjunction with publicly observable prices. The market price on any given day was generally known and reported publicly in at least a number of well known price lists (see Neal, 1990), such as those by London brokers Castaing, Houghton, and Freke; including Castaing's *The Course of the Exchange*. Even an informal contract, such as an entry in a brokers book, would enhance the credibility of a claim of default. Boot, Greenbaum, and Thakor (1992) argue that discretionary contracts, even without legal enforcement, are preferable to no contract because the observability of the contract helps to establish the reputation mechanism.

The incentive to renege, of course, is also increasing in the size of the loss and in the short-termness of the investor. The combination of reputation and margin requirements should have mitigated these effects. Margin effectively limited the leverage an investor could take, so that investors could not take arbitrarily large positions. There is not good information on how margin varied across different investors, but it is reasonable to suspect variation based on the reputation (“credit”) and financial capital of the individual. For some clients, where the wager was small, no margin might be required. Since “credit” and “reputation” extended beyond the stock exchange, the idea of a short-term participant may not have been as meaningful.

8. Conclusion:

The stock exchange is an evolving institution. After all, this paper has documented significant changes in financial instruments and market regulations just over the early 1700s. Furthermore, the popular understanding of institutions and their economic role is often important for how they evolve. Nonetheless, the stock market as an institution is extremely robust and its fundamental interactions appear to be governed by basic economic forces that can even trump certain types of institutional development and efforts at market regulation. Neal (1990) and Harrison (1998) have shown that early stock markets appear to have been informationally efficient. This paper

suggests that derivative contracts and securities trading seem to be driven by economic fundamentals strong enough to overcome a lack of legal structure and even the threat of substantial penalties. The self-enforcement mechanism of securities trading is robust and, at least for early stock trade, appears to be not so much a function of a formal exchange-based self-regulating structure but rather of standard economic reputation effects.

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