

# Accounting for liquidity: The constitution and the demise of the options market maker

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This draft 15.1.10

## ***Abstract***

The facilitation of trading in financial exchanges, a process commonly known as supply of market liquidity, is a core activity of organised exchanges and has a critical impact on the shape and behaviour of financial markets. In spite of this importance, little attention is given to the organisational aspects of liquidity supply. The case traces the evolution of the liquidity supply system in a pioneering stock options' exchange, the Chicago Board Options Exchange (CBOE) in the late 1960s and early 1970s. Using primary documents and interviews with leading figures involved in the events, the paper analyses liquidity supply as a responsibility centre and traces the dynamics leading to the establishment of a liquidity supply responsibility centre – market making – in an option's exchange. The analysis shows how the discrepancy between responsibility and controllability, inherent to market making, along with the need of the responsibility centre to operate in multiple arenas played a critical role in shaping the organisational nature of liquidity supply. In particular, the analysis shows that the vulnerability of liquidity supply mechanisms can be understood through analysing their underpinning responsibility centres.

**Acknowledgements:** I thank David Cooper, Mathew Hall, Donald MacKenzie, Andrea Mennicken, Peter Miller, Mike Power, Keith Robson, Rita Samiolo and participants of seminars in Cardiff Business School and Manchester Business School for commenting on earlier drafts. Special thanks go to Ted O'Leary and Wim Van der Stede.

## ***Introduction***

This paper analyses the emergence of a crucial organisational function in financial exchanges, the facilitation of trades through the provision of counterparty to orders, or, as it is commonly known, the supply of market liquidity through market making. By tracing the evolution of market making the paper reveals the inherent connection between market liquidity and responsibility centres and in so doing, it aims to enrich our understanding of market liquidity and to offer a new conceptual framework for the analysis of financial markets, their emergence and their behaviour.

Market liquidity is defined commonly with reference to the ease at which an asset can be sold. According to this definition, the quicker an asset is sold and the less impact that transaction has on the prices at which similar assets are sold, the more liquid that asset would be. Liquidity, then, is dependent on the existence of buyers and sellers who are willing to transact at a given price. This schematic description, whilst accurate from a transactional perspective, discounts the pivotal importance that the exchange as an organisation plays in the supply of liquidity.<sup>1</sup>

Financial exchanges, following this schematic representation, are clusters of institutionalised practices and roles that enable the meeting of potential buyers and sellers. This analysis, however, is partial, as the same institutionalisation process that plays a part in the emergence of exchanges also takes part in the creating and assigning organisational motivations to the exchange (Beckert, 2009). In other words, as a financial exchange evolves, it develops traits of an organisational agency, such as increasing differentiation of functions and gradual crystallisation of organisational goals. Among these goals, creating and maintaining a mechanism for the supply of

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<sup>1</sup> The concept of liquidity as an organisational topic has received little attention in the accounting literature. A study by sociologists Carruthers and Stinchcombe (1999) traces the concept of liquidity to its epistemological roots. Nevertheless, even this groundbreaking paper does not examine the main arenas where liquidity is crucial – financial exchanges.

liquidity, as the evidence in the paper indicates, emerged a pivotally important one. In many financial exchanges,<sup>2</sup> market making is performed by exchange traders (market makers) who are given the responsibility to serve as counterparties to orders arriving at the exchange. When a 'buy' order, for instance, for a certain asset arrives at an exchange, but is not matched fully by 'sell' orders then it is the market maker's responsibility to intervene and trade so that the discrepancy between the orders is covered. Also, since market makers, typically, buy and sell 'against the market' (i.e. sell when there is an excess of 'sell' orders and buy when there is an excess of 'buy' orders), to meet these orders they need, respectively, to maintain an inventory of assets and sufficient working capital. Market makers trade for their own accounts and thus are not compensated directly by the exchange for fulfilling their role. Using the inventory and funds, market makers trade at high frequency with the aim of exploiting minute changes in prices to make profits. This mode of operation entails that as part of their responsibility towards the exchange market makers take upon themselves the risk of depleting their inventories due to adverse market conditions.

This set of practices, which makes up the role of the market maker, is behind the motivation to examine the relation between the supply of liquidity and the concept of responsibility centres. The organisational goal of maintaining a good supply of liquidity motivated exchanges to set up sub-units charged with the responsibility to act as counterparts to transactions arriving at the exchange. In parallel, when examined from a 'textbook' perspective, these sub-units, the market makers, are expected to operate so that a congruence is created between their goals (to maximise profits to their own accounts) and between the goals of the exchange as a whole (to

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<sup>2</sup> The exchanges described here and use the analysed mechanisms of market liquidity, the New York Stock Exchange and the Chicago Board Options Exchange, are among the world's leading financial institutions, both in terms of volumes traded and in terms of introducing influential financial products and trading practices.

maintain a receptive market for the investing public). The analysis in this paper aims to show that understanding liquidity supply through the concept of responsibility centres enables us to address questions about financial markets that hitherto remained virtually unexamined. In particular, the paper reveals that the organisational structure of liquidity supply and the dynamics through which it came about affect the long-term strength and stability of these exchanges and, as such, it is a source of potential vulnerability in financial markets. The study of responsibility centres in the setting of financial exchanges also challenges the existing concept of responsibility centres and offers potential ways to enrich it. As the case shows, market makers do not operate as a profit centre, nor are they a cost centre, in spite of the fact that their practices revolve around the creation of profits. Instead, the practice of market making straddles several realms of practice and significance. Market makers' actions provide liquidity to the exchange, but at the same time, they also embody values of competitiveness and transparency to an external financial regulator. The case also challenges the notion of accountability as it is portrayed in much of the accounting literature. Unlike many responsibility centres, the accountability of market makers is aimed to be achieved not through institutional practices of reporting, but through the operation of an internal market-like mechanism. In turn, this attempt to attribute accountability to market makers exacerbated the tension between exchange benefiting and between self-serving actions and led, eventually, to the demise of the competitive market maker responsibility centre.

Additional motivation for the research follows the inter-disciplinary nature of organisational analysis of markets. A recent special section in *Accounting, Organizations and Society* was dedicated to the emerging field of the Social Studies of Finance (SSF). The introductory essay to this section (Vollmer et al., 2009), criticises the relative lack of historical and broad political analysis in the SSF

literature and points out that this deficiency prevents, in many cases, an effective alignment between the research agendas of management accounting and SSF. The analysis in this paper corresponds directly with these concerns. Using a detailed historical case study – that of the first American organised options exchange – the paper traces the political circumstances that motivated the initial presentation of a responsibility centre in an options exchange and analyses the organisational difficulties related to its operation. That said, the approach in this paper aims to go beyond the initial motivations of SSF – to highlight and analyze the organisational and techno-social aspects of financial markets – and to introduce to management accounting an area of research that has not been examined until now, that of the organisational architecture and managerial practices in financial exchanges.

The case at the centre of the paper examines the formative period (1968-1978) in the development of an innovative and influential organised stock options' exchange, the Chicago Board Options Exchange (CBOE). During this period, CBOE developed and began operating a new type of market making. The research traces the multiple arenas where the development of the responsibility centre unfolded, the Securities and Exchange Commission (SEC), the New York Stock Exchange (NYSE) and the Federal Reserve Board (FRB).

### ***Theoretical Framework***

The supply of liquidity - ensuring that trading orders are executed - is one of the core organisational activities of the modern financial exchange. The reputation of the exchange as a viable market, as well as its long-term stability and, in aggregate, the resilience of the entire financial market, depend on setting up and maintaining reliable mechanisms for the supply of liquidity. Responsibility centres are one of the arenas

where management accounting and organisations at large interact. As an ideal type, the creation and operation of responsibility centres comprises of breaking down the organisational goals to more specific areas of practice, which then can be aligned with the expertise and goal of managers (Anthony & Govindarajan, 2001). Referring to market making as a responsibility centre makes a novel use of the concept, as responsibility centres are identified and analyzed, in much of the management accounting literature, in manufacturing organisations and less so in financial organisations. In the light of the centrality of liquidity supply in an exchange's set of goals, it is important to ask what factors affect the efficacy and strength of the market making responsibility centres.

Here, the research regarding responsibility centres provides useful analytical tools for understanding market making. One of the core issues discussed in the literature about responsibility centres is the tension between responsibility and controllability (Berry et. al., 2009). Since market makers face daily the risk of adverse price movements that may hinder them from fulfilling their organisational function, market making is a responsibility centre where there is an inherent and a significant gap between the responsibilities assigned to the organisational actors and between the controllability over the task. Market making is also related to an intra-organisational uncertainty about the attribution of responsibility. Several current works relate discrepancies between controllability and responsibility to a recent tendency towards flattening hierarchical structures and to an increasing connectivity among organisations. More specifically, these research works analyse situations where functional and/or operational boundaries within the organisation overlap (Rowe et. al., 2008; van der Meer-Kooistra and Scapens, 2008). In this context, the fundamental cause for incompatibility between the control that the managers can exert and between their areas of responsibility is uncertainty about how to delineate the different

function-holders involved in the operation of the responsibility centre.

Exchanges face a similar delineation challenge with regard to market makers. The financial exchanges discussed in this paper (like many other exchanges until recently) are not corporations, but members-owned organisations and the market makers, who are members, are not employed by the exchange and are not compensated directly for their market making services. Therefore, market makers can (and do) trade profitably for their own accounts while, at the same time, providing liquidity to the exchange. That said, market makers can also trade in ways that would not necessarily help other orders to be executed, but would still be profitable for the market maker. However, as the case in this paper indicates, distinguishing between market makers' behaviours that benefit the organisation and between ones that may only serve the market makers is very difficult. Because of the 'distinguishability' problem, it is challenging for exchanges to produce evidence about the organisational-wide benefits coming from the operation of the market makers.

The particular practices that market makers perform and the dynamics through which the options' market makers evolved also reveal a second dimension of potential ties between responsibility centres and the supply of market liquidity. Market makers, being a sub-unit within financial exchanges, are subject to rigorous regulatory demands that have a strong constitutive effect on the dynamic shaping of the organisation. Regulatory demands, for example, played crucial roles in the establishment and shaping of exchange-based financial risk-management practices (Millo & MacKenzie, 2009) and in the creation of financial derivatives contracts (Millo, 2007). Given this degree and intensity of involvement, market makers, who fill a pivotal function in the exchange, are called upon to operate not only in a demanding internal environment, but also to comply with demands derived from an external regulatory worldview. This description corresponds with the claim, central to

the contingency theory of management accounting, according to which an organisation's established managerial practices are affected by constellations of interests and forces that surround the organisation (Otley, 1980; Langfield-Smith, 1997; Chenhall, 2003; Malmi and Brown, 2008). This conceptual framework can help in understanding the general process through market makers come about, but it leaves little space for an analysis of the interactive nature of this process. The traditional setting to which the contingency theory refers follows a typical linear path: the organisation is set and then, as it develops, a need arises for more elaborate managerial practices, which are then established, while being affected by the organisation's environment. In contrast, the influence of multiple arenas where the responsibility centres are shaped and with which they are required to comply calls for a conceptual framework that allows for a less consequential and a more co-constitutive process of establishment of responsibility centres (Fullerton and McWatters, 2002; Ittner and Larcker, 1998). This approach sets an analytical framework that allows for the possibility, as the case in the paper illustrates, that the creation and shaping of responsibility centres is co-constitutive. That is, the shaping of the responsibility centre is not an outcome of a larger organisational development, but instead plays a role in constituting the organisation itself.

This historical and organisational dynamic whereby market making evolves also highlights the multiplicity of rules in responsibility centres. The demands to comply with discursive and practical regimes of different arenas (e.g. commercial, regulatory) also imply that responsibility centres fill a variety of functions. While ostensibly, within the organisation, these sub-units may perform one function, such as trading; to constituents outside the organisation they may serve, for example, as signifiers of legitimate procedural action that the organisation performs. That is, part of the role that responsibility centres are expected to play in an environment

characterised by multiplicity of arenas is to signal to outside bodies about future strategic trajectories of the organisation or to communicate meaningfully across different orders of worth (Boltansky and Thevenot, 1999; Thevenot, 2001). For example, public organisations adopted profit-related measures or developed inter-organisational practices and standards of professionalization (Lapsley, 1999; Bogt, 2003; Cooper and Robson, 2006); for-profit organisation developed performance measurement schemes or improved existing ones to instil trust in inter-organisational collaborations (Das and Tang, 2001; Mouritsen et al., 2001; Langfield-Smith and Smith, 2003).

Modern financial exchanges interact constantly with regulatory demands that carry significant constitutive powers. That is, exchanges evolve as organisations while being affected by the regulators' agendas and worldviews. Neil Fligstein (1996) shows how governments take part in shaping markets and, in particular, how principals and values are presented, translated and mobilized as part of this process. Fligstein's analysis places governmental regulation at the heart of the economic-political interface, a position that allows the wielding of significant, yet indirect influence over the practices and norms of market actors. Thus, concepts such as objectivity, prudence, or competitiveness utilized by institutions as these implement 'control at a distance' (Beaulieu and Gabbard 2005: 6-7; Miller and Rose 2008): recruit established practices, theories and technologies to construct a seemingly taken-for-granted reality. Similar analysis is offered by Ingram and Rao (2004), who focus on a particular set of legislative actions. This approach adds another layer to our understanding of the dynamic nature of the responsibility centres as it ties together the inter-organisational level, where rules and regulations are designed with the intra-organisational arenas where these rules are interpreted and practices are developed. The tensions between these two domains of activity and constitution play a crucial

role in the formation of market making in financial exchanges.

In summary, the proposed analytical framework suggests that the evolution and functioning of market making should be understood as a responsibility centre. By using this concept, elements important to the development of this organisational function, which otherwise might be overlooked, can be identified and assigned a suitable interpretative significance. Within this general concept, a promising analytical framework is the discrepancy between controllability and responsibility. Market makers' practices are exposed inherently to market risk and to endemic uncertainty regarding distinguishing between selfish and organisationally beneficial actions. These factors, which are familiar to the literature about responsibility centres are compounded by the multiplicity of arenas where exchange market makers are required to operate, both discursively (e.g. representing 'objectivity') and practically (performing trades). The interaction of these factors, as it evolves dynamically through the shaping of market makers can help to draw a more comprehensive picture than the one currently available about the strengths and weaknesses of exchanges as organisations.

The empirical material in this paper is based on interviews the author conducted in 2000-2002 and on analysis of primary documents. Thirty-five interviews were conducted with leading figures that played central roles in the events the paper analyses (1968-1977). Interviews were conducted with members and staff of from the Chicago Board Options Exchange at the time and staff and commissioners of the Securities and Exchange Commission (SEC). All interviews were recorded and transcribed in full. Extensive archival research complemented the interview material. The archives used were those of the SEC, the Federal Reserve Board in Washington, DC and private collections of documents in Baltimore, New York and Chicago.

The paper continues as follows: the following section analyses the conditions

that led to the presentation of the market makers responsibility centre, examines the importance of this organisational sub-unit to gaining regulatory approval for the exchange. The third section traces the difficulties that emerged from the setting where the options' market makers were called upon to comply both with the regulatory worldview as well as with the intra-organisational demands of the exchange. These difficulties, expressed in the inability to distinguish effectively between self-serving actions of the market makers and behaviour directed at fulfilling their designated organisational task led, eventually, to the demise of the responsibility centre in its form. The fourth section discusses the findings and concludes the paper.

### ***The responsibility centre in the political arena: the presentation of the competitive market maker***

To understand the events that led to the presentation of the options' market making responsibility centre, it is necessary to trace the historical narrative of the market making. Of particular importance among in this historical path is the New York Stock Exchange (NYSE). The NYSE developed a market making function that became a crucial reference point for many other exchanges. The importance of the NYSE' responsibility centre of liquidity supply, both organisationally and politically, were results, largely, of the practices that evolved for the role. The NYSE's market making sub-unit and the agents given the responsibility to facilitate trading, (known as 'specialists') were first introduced in 1872. Aiming to elicit more trading orders from the investing public, the NYSE replaced its then system of set call auctions – whereby execution of trade orders was done at set times during the trading day – with a system of continuous auction, where orders from the public were presented for trading immediately as they arrived at the exchange (Kent, 1990). The specialists function

complemented the continuous auction system by creating an exchange-provided source of orders with which the orders coming from the public could transact.

The specialists, as their name implies, were traders who specialised in trading in a particular stock or group of stocks and given the responsibility over matching incoming orders with the counterparty ones. The specialists were given, effectively, monopoly rights over the designated stocks and thus any trade orders that were not executed fully due to imbalance in order size, were directed to the specialists (Seligman 1982).<sup>3</sup> As part of their function, the specialists were given access to the exchange's order book, which contained trade orders from the public, information that the specialists used to determine (or to 'quote') buy and sell prices. The dual informational advantage that was embedded in the role of supplying liquidity – access to the order book and control over the exchange's quoted prices – contributed to the specialists' powerful positions among the traders. For other market participants, such as floor brokers, for instance, who executed orders for the public, maintaining good relationships with the specialists was critical, as the latter held valuable information about identities of interested buyers and sellers and the optimal timing of trading. Moreover, the centrality of the NYSE among exchanges turned the specialists to influential function-holders not only within the exchange, but also, in effect, in the American and global financial markets. For example, the specialist who set up the opening price for stocks such as General Motors affected by his/her decision many institutional and private investors. That is, liquidity supply, although being an internal responsibility centre in the exchange, had implications that reached far beyond the single organisation.

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<sup>3</sup> In earlier decades of the 20<sup>th</sup> century there existed competition among NYSE specialists, but the number of competing specialists dropped from 466 to 37 between 1933 and 1963, in spite of a dramatic rise in the number of stocks issued during that period (SEC, 1963), and by the late 1960s, the period analysed in the paper, competitive specialists virtually did not exist at the NYSE.

The fact that the NYSE was a member-owned organisation also contributed to the specialists' strength. In particular, the distributive ownership, in combination with the NYSE central position in among American securities exchange, limited the degree to which the specialists could be held accountable for their actions. Specialists, like all other NYSE members, traded for their own accounts. Thus, in spite of the critical importance of liquidity supply to the exchange, the NYSE did not compensate the specialists directly for their services. Instead, profits from the specialists' trading activity, as well as the working capital they used, belonged to the specialists. NYSE did not employ the specialists or funded their working capital and so a crucial organisational infrastructure that many other commercial organisations use to assess the performance of individuals in responsibility centres was lacking in that case. Nevertheless, the NYSE did develop and employ organisational mechanisms that regulated many aspects of the specialists' behaviour. Most relevant to this analysis was a rule (NYSE Rule 104.10) that required the specialists to maintain 'acceptable price changes' in the stocks at which they supplied liquidity and, in effect, demanded from the specialists to intervene when imbalances between the buy and sell orders were likely to cause a sudden and significant prices change. The level of 'acceptable price changes' was based on daily reports from the specialists and was calculated in reference to the overall volume of trading in the stock and the overall market volatility (Schwartz and Francioni, 2004). In addition, this rule defined a set of disciplinary actions that were to be carried out against specialist who did not meet the requirements. The rule was designed as an effective accountability-inducing organisational device, but, in practice, the NYSE's leading position among financial exchanges and its governance structure undermined the efficacy of such devices.

The NYSE's seniority in the securities markets field in terms of trading volume, prestige, and expertise were undeniable. For decades, the exchange, the

oldest and best-established financial exchange in the US traded more than 90% of all exchange-listed securities during the mid to late 1960s (Kent, 1990). This position of dominance, in itself, could serve as a disincentive for the NYSE to impose strict measures on its responsibility centres, and among them, the specialists. In addition, as trading volumes in the NYSE grew (from the 1950s onwards), financial firms began to provide specialists with funds needed for the working capital and building up the necessary asset inventory, a factor that contributed to the specialists' power (B interview). Lacking pre-established organisational hierarchy of the type that exists in many commercial organisations, such as corporations, the NYSE developed an informal structure of seniority among the members. In the NYSE, the specialists came typically from among the more established and well-connected traders, as is indicated by the fact that they were selected by internal committees of members. Since NYSE rules were imposed, ultimately, by the members and given the other factors mentioned, it was unlikely that senior and influential members would be held accountable in consistently effective manner by their fellow members. That is, the NYSE specialists were exposed to uncertainty, which followed the fact that their compensation came directly from market-earned profits and contributed to a discrepancy between their responsibility and controllability. In contrast, the organisational architecture of the exchange and, especially, the fact that they held influential positions among the members created a buffer between their practices and the way these were interpreted by the SEC. The demand of the SEC to place the specialists' responsibility centre also within its realm was blocked effectively by the exchange.

The NYSE specialists' dominance was also reflected in the realm of external financial regulation. Many of the SEC's initial rules and regulations regarding exchange trading were almost verbatim copies of NYSE rules (B interview). Thus,

although all American exchanges were put under the regulatory regime of the SEC in 1934, many among SEC staff admitted that even as late as the mid 1960s it was difficult for the SEC to apply regulatory measures at the NYSE to the same extent as these were applied at other exchanges (B interview; M interview). One of the SEC's main concerns regarding the NYSE was the growing suspicion that the specialists, whose responsibility centre occupied a particularly central and powerful position, were not put under a regulatory regime that held them accountable and consequently, were gaining, potentially, an unfair advantage in the inter-exchange competition. M, a senior member of the SEC's division of market regulation at the time explains:

One of the problems was that whenever we [SEC inspectors] would go in [to the NYSE] and have an inspection they would find that some of the specialists had done a lousy job, but because they were members of the exchange and it was a voting system nobody could get these guys removed, nobody could compete with them. They had enough of a voting block so that the exchange could not do anything about it.

(M interview)

Changing the responsibilities of the NYSE specialists was high on the SEC's list of priorities since the beginning of the 1960s. However, amending the NYSE's exchange rules proved difficult because of the organisational structure of the exchange. Decisions at the NYSE, such as the amendment of the trading rules or disciplining of members, were taken using a voting system and the specialists, who were a large and unified group among the members, blocked effectively decision proposals that threatened their position.

By the late 1960s, the influential role that the NYSE specialists played, the ability to affect stock prices across the entire American securities markets system, along with what was regarded by the SEC as lack of accountability, contributed to the fact that many among the SEC's staff regarded the specialists' institution as a constant suspect in anti-competitive practices. Moreover, a monopolistic, unaccountable

liquidity supplier was antithetical to the regulatory worldview promoted by the SEC whose founding Act states demanded the maintenance of fair markets (SEC, 1934). This view, coupled with the SEC's inability to bring about changes in the practices that governed NYSE liquidity supply mechanism motivated the regulator, as discussed below, to become more accepting towards alternative models of market making responsibility centres that would be more accountable and would challenge the specialists system. The issue of liquidity supply and its related responsibility centres, as the interest of the SEC in the matter shows, were not only an internal affair of the exchange. Instead, the responsibility centre, which operated within a commercial organisation, was also called upon (unsuccessfully, in the case of the NYSE) to comply with the values and the rules of the SEC's regulatory arena.

At the same time when the SEC struggled with NYSE specialists, a different exchange was facing difficulties – the Chicago Board of Trade (CBOT). These difficulties were to lead the CBOT and the SEC to cross their paths and to reveal, again, how fundamentally were the market making responsibility centre and the overall structure of the exchange affected by the political and the commercial arena. The CBOT is an exchange trading futures on agricultural commodities.<sup>4</sup> The CBOT, founded in 1848 (Cronon, 1991), faced in the mid-1960s, after several decades of gradual growth and establishment of commodities futures trading, a long period of stable prices in the agricultural commodities for which its futures contracts were traded (Falloon 1998). That stability in prices was driven, partially, by government-imposed minimum prices for the agricultural products on which popular futures were based: corn, wheat, and soybeans (Cowing 1965). Since commodities futures are used mainly for hedging against commodities' price changes or for speculating on these

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<sup>4</sup> Futures are tradable contracts specifying the terms of future transactions.

prices the relative price stagnation saw trading volumes in futures markets declining dramatically. In the CBOT, also a members' owned exchange, the traders, who suffered from reduced profits, began to look for new products on which to base their futures contracts. F, a leading member of the CBOT at the time describes the situation in the market:

This was like 1968... and I think our trading volume at the Board of Trade was at its very low and we were looking for a new product to trade.

(F interview)

The CBOT membership decided to set up a committee, which was instructed to find new products for contracts. The committee was led by Milton Cohen, a famed securities lawyer, who, in the early 1960s, had led a famous study of the securities markets on behalf of the SEC. The thriving securities market of the late 1960s, a sharp contrast to the dormant commodities market of the time, motivated the CBOT to look for a stock-based solution to the problem of the low trading volumes. Consequently, the committee instructed Joseph Sullivan, a newly recruited staff member who was appointed as a research and development vice president, to focus his efforts on the securities markets. Burton Rissman, who was a lawyer at the CBOT's law firm during that time, explains:

There was a lot of interest at the CBOT at trading futures, among the [CBOT] membership. What happened, as I remember, was that Joe [Sullivan] had his research guys wander off, particularly to Wall Street. I think they came back with the clear impression that if the securities community would have to sell something [to customers], they'd prefer to sell options, on the theory that they're less risky. [...] [M]y impression at the time was that the mentality of the securities investors is one-way: you take a view on the market and you want to bet on that view. You don't want to suffer the consequences on the event that you'd be wrong. So, to that extent that you could put a safety net under your investment, so much the better and options gave them the opportunity to do that. In the futures situation, god help you should get locked in a volatile market because you're going to lose your shirt. [T]he guys on Wall Street were telling the

guys in Chicago: 'We can sell your options to the public a lot easier than we could convert them to being futures traders.'

(Burton Rissman, Interview)

Following the advice of the research team, in late 1968, the CBOT's committee adopted Sullivan's recommendations and decided to develop a market for stock options (see appendix 1 for detailed timeline of events). Unlike commodity futures, which were regulated at the time by a division with the American Department of Agriculture, the choice to develop an exchange for stock options placed the CBOT's initiative squarely in the regulatory territory of the SEC. The most significant implication of this step was that the initiative would need to receive the approval of the SEC prior to commencement of trading.

Granting approval to a new national exchange was a major regulatory decision and, as such, the proposal had to go first through a meticulous examination by the SEC's professional staff. The SEC in the mid- to late 1960s, regarded trading in commodity futures as the type of market activities from which the investing public should be guarded. The SEC, as many others involved in securities markets regarded futures markets as 'forums for the professional to fleece unsophisticated or inexperienced investors' (Pashigian 1986: 56). According to L, the director of the SEC's division of trading and markets at the time, creating an exchange for the trading options caused concerns at the SEC:

[B]efore the agency [SEC] was willing to allow it to go [to approve CBOE's proposed plan], it had to recognise the potentials for overreaching and questioning of protection of the individual retail person who was what they were going after. [...] They [the CBOT team] were trying to make this a general commodity for the individual. That was the primary concern.

(L interview)

The options initiative proposed a public and easily accessible way of trading options, which meant taking a financial product that had been traded, until then, in limited numbers and only within a small community of professional traders and bringing it to the general investing public. Many among the SEC's staff felt that it would be irresponsible to approve such a market and that by doing so they would betray the American public. For example, Stanley Sporkin, who was the head of the SEC's enforcement division at the time, recalls arguments among SEC's staff members about the approval of the options proposal in which: "very hard things were said: 'How can you even think to approve such a thing!? You're a disgrace!' Very hard things," (Stanley Sporkin interview). On another occasion L, a senior executive at the SEC's trading and markets division, said that options would be approved 'over his dead body' (C interview). This climate of opinion among the SEC's staff contributed to the fact that the discussions between the SEC and the CBOT members for more than two years without reaching an agreement about regulatory approval for opening the options exchange and having accumulated what Joseph Sullivan described as 'three-foot high pile of documents'.

The analysis so far shows how the SEC, the leading organisational actor in the regulatory realm, affected the development of the exchange. Yet, this description reveals only part of the picture, because the regulatory realm was also affected by the commercial one. In particular, the deeply rooted resistance of the SEC's staff to an organised options exchange has to be understood, not only through the prism of the former's set of regulatory values, but also, in the context of a broader constellation of political interests. The structure of the SEC entailed that the staff made recommendations to the commission, a body of five politically appointed commissioners, headed by a chairperson, which made the final decisions. Given this structure, for an initiative to be approved it was vitally important that to have the

chairperson's support. As the options initiative entered its third year, in April 1971, American president Richard Nixon nominated William Casey to be the chairperson of the SEC. Casey came to the SEC from the securities business, had extensive connections with Wall Street firms, and in general tended to be attentive to the wishes of that sector. Theodore Sonde, a senior member of the SEC's enforcement division mentioned that when joining the SEC:

[B]ill Casey [...] was surrounded by a number of people who had just come from large Wall Street firms.

(Theodore Sonde in SEC's Historical Society, 2002: 26)

Casey's connections in Wall Street were of political significance also outside the SEC. Casey was nominated chairperson of the SEC towards the end of Nixon's first presidential term and a short time after he assumed his position in Washington, the early stages of the 1972 presidential campaign started. As a republican candidate, Nixon was hoping to gain political and monetary support from Wall Street firms. For example, shortly after he took office, Casey presented a plan to restructure several of the SEC's departments. (SEC's Historical Society 2002: 22-3). These plans had implications on the securities markets and thus it was critically important for Casey, who recruited support for Nixon among that sector, to get support for the plans. Gene Finn, the SEC's chief economist at the time, explains:

Casey held industry restructuring hearings [in Washington] [...] just before he went up to New York for fundraising for Nixon. [...] That's why he had those hearings: to get those guys down there, to get them softened up and then he went to New York where he was going to rake all that money.

(Gene Finn, interview)

While the options exchange initiative was not central to the re-structuring plan, the

issue was mentioned by several of the leading Wall Street firms with whom Casey met during that period and no particular resistance was registered. In addition, the early 1970s saw a considerable downturn in securities trading, which motivated many among the members of the securities exchanges, whose profitability was now reduced to look at stock options as a product that may help in returning trading volumes to their markets. H, who was a senior staff member of the SEC during this period, explains:

[Y]ou have also to establish the timeframe here. The securities market has just gone through their worst period in modern times. The period from '71 to '75 was incredibly unprofitable time for securities markets. [...] Options were then sort of the saving grace product in the mid-'70s period. Because in an environment of low IPOs, lousy for investment banking, before the hostile tender offer [period] kicked in, options were the only sales product that was selling and making money.

(H interview)

Casey's personality also affected the nature of decision-making process at the SEC. According to L, who headed the SEC's division of trading and markets, when Casey arrived at the SEC, Casey's management style contributed to the formation of a more influential Commission in the decision-making process of the SEC:

Casey was a very dominant person and probably started what I would think was the control of the chairman over the agenda and really in the policies of the Commission more.

(SEC historical society 2002)

Stanley Sporkin, who worked under Casey as the head of the SEC's enforcement division mentioned that Casey was 'a very demanding boss', especially when the matters concerned making of decisions (Stanley Sporkin, interview).

By mid-1971, following more than two years of discussions, the options initiative was facing an SEC chairperson who understood the political importance of approving such an exchange, but also staff who opposed bitterly the proposal. The team that

developed the proposal felt that it was time to decide whether to pursue the initiative or discard it altogether (Sullivan interview). Milton Cohen, who headed the team, wanted to develop another last idea and present it to the SEC before a final decision about the fate of the exchange is taken. Cohen, who had been a member of the SEC and had first-hand knowledge of how displeased the SEC was with the specialist model of market making, offered an alternative liquidity supply mechanism – one that used competition as a way to introduce accountability to the operation of the responsibility centre. Following Cohen's guidance, the team developed a plan for the new organisational function. Sheldon Rappaport was a senior member of the SEC's Market Regulation Division, which held the discussions about the structure of the proposed market with the CBOE's founding team:

Everybody knew that me and my colleagues believed that competition was a better answer than regulation.[...]. Milton Cohen came up with a bright idea how to get this proposal moving out of the staff up to the Commission. He came in and said: 'we have an idea and that is to have a system of competing specialists'. And he knew what he was doing, he knew that if there was anything that the staff of the SEC was going to love, it was going to be that proposal.

(Rappaport, interview)

The team's alternative to the specialist system was an exchange function that had not existed in securities markets until that point – competitive market makers. The market makers were to be given the responsibility to trade 'against' incoming orders in a specific stock option, but, unlike the NYSE specialists, they were not to be granted *exclusive* trading rights. For each option, there would be several market makers, competing with each other in providing 'buy' and 'sell' prices (bids and asks) and the best bid-ask combination would be quoted by the exchange to the public. Like the NYSE specialists, competitive market makers were expected to 'take the other side of the trade' and risk their own funds. However, unlike the specialists, whose

price setting were not open to scrutiny (as each specialist was the only provider of prices), the competition between market makers was intended to motivate them to provide good prices (low selling prices and high buying prices) as only the best price would be used by the exchange. Additionally, in contrast with the NYSE specialist who traded for their own account and executed trades for others, CBOE's market makers were not allowed to trade from their own account and take orders from the public at the same trading pit on the same day. A further requirement was that at least 50% of the volume of each market maker's daily transactions would be made in his or her designated options. The rule meant, for example, that market makers would not be able to 'find refuge' from unrewarding market conditions in their 'own' pit by spending most of the time in a different one, where they would be able to trade for their accounts (CBOE rules 1975, p. 2123-6). By designing an internal market-like competitive mechanism, the CBOE hoped that the SEC would regard the proposed market makers as a more accountable alternative to the liquidity supply mechanism of the NYSE.

The proposal reveals the constitutive power of the multi-arena environment and its effect on the relations between controllability and responsibility. The design of the market making responsibility centre was aimed to comply with the demands of two arenas: that of the exchange's internal trading environment and that of the SEC's regulatory worldview. From the CBOE's point of view, introducing these limitations to the responsibility centre that is given the task of supplying liquidity was intended to increase the dependence of the market makers on trading in their designated options. This way, it was hoped, the market makers interests' would be channelled to the options, they would be involved actively in trading and the result would be profits to the market makers and the creation of an active responsive market for the exchange as a whole. Similarly, from the SEC's perspective, the proposal to supply liquidity in the

new options exchange through competing market makers presented a good testing ground where it could be shown exist a viable alternative to the unaccountable specialists' mechanism of the NYSE. That is, an operational and commercial success of the CBOE's market makers – the liquidity supply responsibility centre – could be translated, in a different realm, to political capital. Contrastingly, as the following evidence reveal, aiming to create compliance in multiple arenas decreased considerably the controllability of the competitive market makers over their responsibility centre and, eventually, led to the demise of the market function.

In late summer 1971, after the team presented the competitive market maker concept to the SEC's staff and more discussions were held with the SEC, Milton Cohen, the head of the team, requested a private interview with Casey. According to Cohen, the only remaining witness from that meeting<sup>5</sup>, Casey was convinced about the options concept and knowing that his staff was satisfied about the competitive market makers who would operate in the new exchange, he saw no remaining obstacles to the approval of the exchange (CBOE 1998). In October 1971, the SEC gave its consent for the opening of an organised exchange for the trading of options and the exchange, names Chicago Board Options Exchange (CBOE), began trading in April 1973.

### ***The responsibility centre between the political and the commercial: the demise of the competitive market maker***

The proposed responsibility centre was devised as part of an effort to legitimize the options exchange and to align it with the SEC' regulatory discourse. However, the design and the constitution of the responsibility centre did not eliminate the need for

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<sup>5</sup> William Casey died in 1987.

the liquidity supply to operate in multiple arenas. The critical reliance of liquidity suppliers on working capital – funding for the operation of market making – re-established connection between the different realms of practice.

When CBOE was established and trading began, stock options were an unknown ‘beast’ to both commodities and securities traders and recruitment of new members to the exchange was a challenging task. Additionally, in late 1973 the agricultural commodities market showed signs of recovery, futures trading volumes started to grow significantly and, consequently, the interest expressed by commodities traders in options markets diminished (Markham 1987). On its first year, CBOE’s founding members encountered difficulties in selling seats for the new exchange. Edward Joyce, a senior staff member of the exchange at the time, describes:

It was a hard sell. They really put the muscle to sell a seat.

(Joyce interview)

Low demand drove the seat prices down. The relatively cheap seat prices (\$ 10,000 for a CBOE seat in comparison to \$50,000 for CBOT one, for example – Joyce interview) attracted people who had no prior experience in floor trading. For example, a large proportion of the traders who joined the CBOE in its early days were sons and daughters of CBOT members:

[T]here was quite a few sons of traders that were starting their first jobs. Like a guy that his father was a corn trader and saw the concepts and saw that he could get the son there fairly cheap, could get him a job coming out of college. There was quite a few of those.

(Joyce interview)

As a result, many of those who bought seats in the first year of CBOE’s trading were assisted by funds from relatives or friends. Therefore, by the time that the new member traders paid their fees and started trading they usually had little working capital. Since only members could apply for the positions of market makers, the new

options exchange began to operate with a population of market makers who were relatively strapped for cash. Among the staff of the SEC, it was also widely known that CBOE's market makers had inferior financial resources in comparison with specialists in other exchanges, such as the NYSE. Nelson Kibler, who was a senior employee of the SEC's division of market regulation and participated in the approval of CBOE, said that the common notion among the staff of the SEC about CBOE market makers was that:

If they [CBOE] were going to run the floor with 'taxi cab drivers and hair dressers' they would have to find a way to get these people financed.

(Kibler interview)

The fact that CBOE market makers competed with each other exacerbated this situation and turned serving as a CBOE market maker in its early into a financially risky endeavour. For example, in the first five years to CBOE's existence annual bankruptcy rate among market makers stood at about 10% (Doherty interview). The difficulties that the individual market maker faced signaled potential problems for the exchange as a whole. Market makers determined, in effect, the CBOE's responsiveness to orders from the public when many orders could not be matched without intervention and therefore it was critically important for the exchange that the operation of its market makers would be as smooth and as trouble-free as possible.

A possible solution to the market makers' plight was suggested by the exchange's legal team: to demonstrate that the function market makers filled in the options market made them eligible for special extensions of credit under the Federal Reserve Board (FRB) credit extension rules. This set of rules known as regulation T (US Congress 2002), included definitions of situations ('provisions') in which special extensions of credit were granted to individuals that contributed directly to the smooth operation of financial markets. The special extensions of credit provided relatively comfortable conditions under which loans could be given, allowing options market makers to use

borrowed funds to replenish their working capital under more favourable conditions than were available otherwise (e.g. lower collateral would be required, longer periods for return of the loan would be allowed). To bring about a change in the FRB's regulation<sup>6</sup>, CBOE needed to show that the role played by the competitive market maker contributed to the smooth running of markets. In effect, the CBOE was required to extend the applicable goal congruence of the market makers beyond the exchange itself. Now, to be eligible to the benefits of Regulation T, the market makers were not asked to supply liquidity to the options market, but also to be recognised as contributors to operation of the American financial system as a whole. At first, the line of argument that the CBOE's legal team employed was based on the risk that competitive market makers take regularly as they supply liquidity for the market. The rationale behind this line of argument was that since market makers were taking such risks on behalf of the exchange, and by proxy, on behalf of the investing public, it would only be fair that they would be compensated for it by the public.

During the first year to the operation of CBOE, its legal team held discussions with regarding regulation T with the FRB. However, it was soon discovered that the negative attitude towards options that was described in the previous section was also prevalent among the staff of the FRB. For example, as part of these discussions, Burton Rissman met with Janet Hart, then an assistant director of the Federal Reserve Board's Savers and Consumers Affairs Department, who was responsible for the maintenance of regulation T. Upon entering the room, Rissman found that:

[...]she had spread out on the desk a *Wall Street Journal* article on CBOE's start up and I could see, as I sat there, that some places were underlined in red and I looked at it and everywhere that was underlined was the word 'gambling'. [...] I lost that meeting hands down

(Rissman interview)

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<sup>6</sup> Precisely, to include an additional 'interpretation' to the provisions of the rule.

Such a comparison between activities in financial markets and gambling indicated how deep was the distrust of options among the staff of the FRB. As the quote above indicates, it was clear that in such an environment a new interpretation of the credit rules was unlikely to be approved.

The options market makers were seen as gamblers – excessive risk takers – and so presenting risk as a positive virtue, one that contributes to goal congruence was not likely to yield the expected result from the FRB. Following this initial interaction the discussions between CBOE and the FRB were stopped for two years, during which, as described above, competitive market making was in operation. Providing funding for the market makers, however, remained a pressing problem for the fledgling exchange and in spring 1975, the CBOE's senior staff learned that a new assistant director – Robert Plotkin, replaced Janet Hart at the FRB. Plotkin, who had been a SEC staff member, was regarded as a more 'receptive' person to new ideas than his predecessor (Rissman interview). In fact, the staff of the CBOE learned about the new appointment during one of their meetings with SEC's staff, who were aware of the market makers' difficulties (C interview). This change in personal motivated the CBOE to prepare another line of arguments to support the application of Regulation T to the case of market makers.

CBOE's chosen argument in favour of changing the regulation or its interpretation was that purchasing financial assets was an essential part of the CBOE market maker's function. The practice to which that CBOE's argument was specifically referring was known as 'hedging' – buying or selling of securities as a measure against price movements that would have an adverse effect on the options position. The rationale behind the argument was that market makers who hedge their positions and try to avoid risk do not use their role to speculate and try making profits for themselves, but, instead, fill their designated organisational function. The

aggregate effect of this improved performance, the argument continued, would be that the exchange as a whole maintains a more liquid market – becomes more receptive to orders from the investing public. The proposed argument aimed at reconfiguring the complexity inherent to options trading and reducing it to a simple ‘either-or’ distinction: either the market makers were hedging their positions, operating in congruence with the goals of the exchange as a whole (and were, therefore, operating eligible to the benefits of regulation T), or they were speculating – taking risks that were not helping them to provide liquidity to the market – and therefore are not entitled to funding under the Regulation.<sup>7</sup> Again, as seen in the previous historical ‘episode’, a degree of the market makers’ controllability was proposed to be exchanged in return for legitimacy and improved operational conditions in the responsibility centre. The proposal offered to subjugate the market makers’ trading practices to an interpretative and calculative logic that is designed to comply with the FRB’s worldview.

The conceptual simplicity of the proposal does not reveal the practical complexities related to determining the performance of market makers. The main difficulty comes from the fact that the market makers’ actions themselves, buying securities, for example, can be done either as part of hedging or as part of a speculative act. Consequently, the application of regulation T’s provisions to options market makers, as the argument that CBOE was promoting, needed to present a way to distinguish between the hedging-related and speculative securities transactions. The exchange and the market makers had to demonstrate risks are taken, but that at the same time the responsibility centre does maintain a trading behaviour that contributes

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<sup>7</sup> It has to be noted that a methodology similar to the one used by the NYSE (using market volatility as an indicator for market makers’ accountability) would probably have been of limited use in a stock exchange as the price volatility of options is typically higher than that of the stocks and would not serve as a good indicator.

to congruence with the exchange's goal – the supply of liquidity. This set of conflicting demands shows how deeply embedded in the function of liquidity supply is the exposure to market risk and, consequently, how significant this exposure is in the shaping the responsibility centre. On one hand, the market making practice were designed on the premise that its market makers were held accountable to for the quality of the service they provided to the exchange and, ultimately, to the investing public (indeed, the legitimacy for the entire exchange was based on this premise). On the other hand, the very nature of the liquidity supply function role was based on taking risk (e.g. buying when prices are falling and selling when they rise), a fact that was emphasised by the competitive setting in which the responsibility centre was placed.

The different realms in which liquidity supply had to operate were also reflected in the practices of the market makers. Hence, in order to understand the difficulties in the creation of rule for the distinction between hedging and speculating, it is necessary to look at the practicalities of options trading. Let us assume that a market maker bought stocks and sold call options: this position implies a potential obligation by the market maker to sell the stocks if the call options are exercised by their buyers. Hypothetically, the market maker could buy a number of stocks that would cover exactly all of the market maker's potential future obligations. This would eliminate the market risk of the position, but would make it practically impossible for the market maker to trade profitably.<sup>8</sup> However, any position of less than complete

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<sup>8</sup> A more technical explanation of this point: First, options usually cost much less than the stocks for which they are written, especially when they were 'out of the money'. An options contract is 'out of the money' when the market price for the stock on which the options is written is lower than the price indicated on the option (call option) strike price or higher than that price (put option). During such times, it would not be profitable to exercise the option and therefore its price would be relatively low. Second, each options contract was written for 100 stocks, so that many (relatively expensive) stocks would be needed to cover fully each options position. Third, market makers usually sold not just one series of options contracts, but instead several ones with different strike prices at the same time. Strike price is the price stated on the option contract and at which, (when the stock reaches that price in

coverage of the obligations would entail undertaking a certain degree of risk. Underpinning this conclusion is a question that ties together risk and goal congruence: what degree of risk would be accepted as hedging, thus, allowing the market makers to be eligible for the provisions of regulation T? After all, even if risk can be measured in a valid manner, there still exists the challenge of subjectivity. Each market maker evaluated differently the risk involved in holding market positions and may chose to hedge these differently. How can the exchange choose a degree of risk that would be applicable to all?

The CBOE's proposed solution for reconciling the tension of the market making practice and, more generally, for determining to the assessment of the market makers' goal attainment was to use an options pricing model to asses the risk involved in holding the stock-option positions (Joyce interview). The pricing model, known as the Black-Scholes model (Black and Scholes 1973a; Black and Scholes 1973b), can be used to calculate a ratio between the number of stocks and number of options contracts in a position that would, together, make up a model-generated risk-free portfolio (known as 'delta neutral'). The idea to use a model-based methodology was presented to the CBOE staff by a trader who had been using the Black-Scholes model (Millo & MacKenzie, 2009). The rationale behind the methodology was that a market maker's portfolio that is deemed risk-free by the model represents an attempt to hedge market positions and indicates beneficial genuine market making activity The idea was presented to a joint committee of CBOE's staff and members that decided to develop it into a detailed plan. During the following months, various departments in

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the market) the option becomes exercisable. For example, a market maker may sell call options on IBM's stock with the same expiration date but with strike prices of \$120, \$125, \$130 and \$135. If IBM's current market price is \$85 then there is a higher chance that the price would reach \$120, and thus make the \$120 options exercisable, than the chance for the \$130 or the \$135 options to become exercisable. Consequently even if, from a hypothetical perspective, one might expect a market maker to own enough IBM stocks to cover the \$120 strike price options, it would be far less reasonable to expect the market maker to have bought enough stocks so as to cover the whole range of options up to the \$135 ones.

CBOE's staff developed the regulatory and technical aspects of the model-based distinction method. In November 1976, Joseph Sullivan sent a letter to Robert Plotkin of the Federal Reserve Board in which he explained the proposed method:

[According to the proposal] [T]he Board [the Federal Reserve Board] would either issue an interpretation of, or adapt an amendment, to the specialist account provisions of regulations T and [let us] know that credit may be extended to options specialists and market makers with specialist accounts with respect to certain exercise and hedging transactions in the underlying securities. [...] [A] [...]definition that we believe merits consideration is the one which would incorporate an options pricing model formula by reference. Under a formula of this type, it is possible to estimate the rate of change in the price of an option with respect to small changes in price in the underlying stock. The estimate of the amount by which an option price would change upon a change of \$1 in the stock price is commonly called the 'dollar delta' and, thus, determines the amount of stock that would theoretically hedge an [...] option position against small changes in the price of the stock. [...] The principle advantage of the dollar delta formula is that it provided good mathematical test of a bona fide hedge.

(Letter, Sullivan to Plotkin, November 19, 1976)<sup>9</sup>

The distinction method that CBOE proposed used risk-taking as an indication of accountability and compliance with the exchange's goals. Market makers who were deemed as risk takers were regarded as one who were not performing their role properly and thus not acting in congruence with the exchange's goal of supplying liquidity to its investors. In other words, if by taking risks market makers were promoting their own goals at the expense of the exchange then risk-taking corresponds with the lack of accountability. Nonetheless, the specific role of market maker calls for taking of risks so that liquidity would be supplied. This is part of the complexity related to the operation of market makers (or other agent-based roles of liquidity supply) in the multiple arenas: market makers *do* need to take risks to play

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<sup>9</sup> All the quotes from the November 19, 1976 letter are taken from a letter sent by Joseph Sullivan, President, CBOE to Robert Plotkin, Assistant Director, Division of Savers and Consumers Affairs, Federal Reserve Board, November 19, 1976 (Federal Reserve Board's library archive)

their role successfully and provide liquidity to the exchange. However, to secure funding from the FRB, which is critical to their success, they had to show that they *were not* seeking risks.

The FRB began to examine the proposal in late 1976 and over the following two years periodic discussions about this issue were held between the FRB and CBOE.<sup>10</sup> In late 1978, as part of a broader examination of options markets, the FRB sent its final decision about the proposal, where it was rejected:

The staff is also concerned that the use of the “delta model” as a formalized part of regulation T would sharpen the conflict which the staff believes currently exists between a marketmaker’s [sic] obligation to the market he serves and his desire to become “delta neutral” in order to minimize his risk. [...] Incorporation of the “delta model” into the specialist credit provisions of regulation T would appear to discourage a marketmaker [sic] from assuming these risks [involved in making a market] since if he did so, he might break his “delta neutrality”<sup>11</sup>[...]

(Plotkin, letter to Teberg, December 5, 1978)<sup>12</sup>

The FRB’s justification for rejecting the proposal refers directly to the tension that lies at the core of responsibility centres: the potential effect that the system would have on have on the organisational actors it assesses. The concern raised was that, knowing that the extension of credit dependent on it, market makers would prefer to maintain a ‘delta neutral’ portfolio instead of getting involved in transactions that would be risky if examined using the Black-Scholes model. That is, the concern was that the methodology would have a negative performative effect (MacKenzie and Millo, 2003): applying a risk-based measurement to the operation might incentivize them not to act in congruence with the goals of the exchange and to perform worse than they

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<sup>10</sup> Documents related to these discussions are protected under confidentiality rules are not available.

<sup>11</sup> “Delta neutrality” refers to the ratio between the quantities of stocks and options at which, at a given price, the position would be free of risk.

<sup>12</sup> Letter from Robert Plotkin, Assistant Director, Division of Banking Supervision and Regulation, FRB to Richard L. Teberg, Director, Special Study of the Options Market, SEC, December 5, 1978. (SEC library, filed under ‘Options Special Study’, Exhibit 7).

would have otherwise.<sup>13</sup>

The decision signalled the beginning of a process whereby, in essence, the responsibility centre of competitive market makers was eliminated. Failing to secure credit conditions via regulation T, CBOE added requirements from market makers that increased the dependence of these market actors on the exchange's clearing firms (CBOE, Rule 8.5) and, overall, decreased the incentives behind the model of the competitive market makers. In the early 1990's the CBOE moved further away from the competitive model by creating the role of designated primary market makers (DPMs), which were less exposed to competition within the exchange.

This chain of events might lead to the conclusion that the competitive market maker function was established only to comply with a regulatory requirement. The CBOE needed to demonstrate to the SEC that its liquidity supply responsibility centres served as an alternative to the monopolistic specialists of the NYSE. It did so by creating the competitive market makers. However, once the exchange was approved, was operating and, in particular, after a period of three years where the CBOE was at the status of a 'pilot program' (SEC, 1978) had elapsed, it could be argued that the CBOE no longer needed the costly and risky responsibility centre and it transformed it. Similar conclusion may be drawn with regard to the SEC's role in the historical events. The SEC approved the exchange when it was known that the competitive market makers may struggle to secure funding and fill their organisational function. From the regulator's perspective, the 'experiment' proved that a liquidity supply mechanism that combines an element of internal competition was not viable and contributed to the exchange's long-term instability. Both conclusions, at which the evidence and the analysis point, in turn, serve as further evidence for the

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importance of analysing the emergence of responsibility centres through a conceptual framework that incorporates the effect on inter-realm presence and exposure to uncertainty on the relation between controllability and responsibility. The creation of the competitive market maker did not follow only one line of considerations, but instead the resulting responsibility centres was shaped so that it would comply with the demands of internal organisational environment of options trading as well as with those of the regulatory realm, where the SEC's worldview was dominant. This constellation of demands from the multiple arenas in which market makers were to perform contributed significantly to a situation whereby controllability over the performance of the responsibility centres was diminished and, in combination with high degree of exposure to uncertainty, the existence of the sub-unit, as well as that of the organisation as a whole were threatened. A similar conclusion can be drawn regarding the second inter-realm 'episode', where it was attempted to reconfigure the practices underpinning goal congruence between the market maker and the exchange and represent these in terms of risks. Also, in the this case controllability was 'sacrificed' in return in an attempt to secure higher degree of compatibility with an external arena (the FRB); an attempt, which, ultimately, failed and resulted in the demise of the responsibility centre in its previous shape.

## ***Conclusion***

The case of the competitive market maker reveals the importance of using the responsibility centre concept in the analysis of market liquidity. The initial conclusion that emerges from the analysis of this historical case is that the specific set of circumstances (interests, existing institutions, events) that surrounded the introduction of the competitive market maker organisational unit had a crucial influence on the

supply of liquidity and on robustness of the exchange as a whole.

The analytical framework presented in the paper is a step towards developing a more generalised theory for understanding the roles that organisational units play in shaping market behaviour. The historical case maps the relation between two factors that affect the gap between controllability and responsibility in organisations and, consequently, their strength and robustness: the exposure of the responsibility centre to uncertainty and the degree to which they did to perform in or comply with a multiplicity of arenas. The evidence indicates that the more exposed a responsibility centre is to uncertainty and the more it is dependent on multiple arenas the less stable and the more vulnerable it is to external shocks. The competitive market maker responsibility centre played a role in the political arena as well as in the organisational one: the practices of embodied the values of transparency and accountability that were central in the SEC's regulatory worldview and thus were crucial for granting an approval to the options exchange. In turn, the practices through which these values were performed made competitive market makers vulnerable: the competitiveness embedded in their operation required large amounts of available working capital and, coupled with the fact that the recruited market makers operated in a fledging exchange, created an acute need in regulation-based funding. This vulnerability was brought about through the challenge of operating across different arenas – the competitiveness of the market makers, the factor that legitimised them (and CBOE as a whole) in the eyes of the SEC – was also the reason behind their weakness as a viable responsibility centre. Indeed, when the gap between the conflicting demands became, in effect, insurmountable, it led to the demise of options market makers in its original form and to a gradual elimination of the competitive elements from it.

The historical narrative analysed in the paper portrays, inevitably, an idiosyncratic chain of events. Yet, it is indicative of a generalised process of

institutionalisation. The competitive market-making sub-unit was an economic actor, but at the same time, it was also a political actor (presenting an alternative to the NYSE specialists) and an actor that represented a regulatory value (inter-exchange competition). These multiple roles do not merely co-exist, but together establish the characteristics of the responsibility centre. The case demonstrate that it would be virtually impossible to provide a comprehensive of how market liquidity is supplied without taking into account the roles that it played in each arena and the interactions among them. As the events of the last 18 months indicate, the organisational and inter-organisational mechanisms responsible for trade facilitation are fragile and are not understood thoroughly. This insight indicates a new and unexplored avenue in management accounting research – the role of responsibility centres in the supply of market liquidity. Such a research programme, combining management accounting and SSF can shed new light on this important, but under-studied area.

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## Appendix 1: Timeline of the competitive market maker concept

<b>Timeline of the competitive market maker concept</b>
1968 – CBOT committee decides to develop an options exchange; discussions between the CBOT committee (headed by Milton Cohen and Joseph Sullivan) and SEC begin; SEC’s staff is reluctant to approve options.
1968-1971 – CBOT-SEC discussions continue
April 1971 – William Casey appointed chairman of the SEC
June 1971 – proposal by Milton Cohen to develop competitive market maker; SEC’s staff is supportive
August 1971 – Milton Cohen and William Casey meet: SEC approves options exchange.
April 1973-mid 1975 – CBOE starts trading; competitive market makers face difficulties
November 1975 – Sullivan proposes to CBOE members the delta hedging methodology as a way to measure market makers’ performance.
December 1977 – The FRB rejects the delta hedging proposal: may lead to inferior performance of competitive market makers