
Investigating Factors Predicting Derivative Mishandling: A Sociological Perspective

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Abstract:

The purpose of this paper is to determine whether experience with derivatives, level of education, anomic behaviour, introversion, environmental influence and competitiveness can predict derivative mishandling.

A study was conducted amongst 268 users of derivatives. Respondents were asked to indicate their level of education, and the experience (in years) using derivatives. Additionally, they were requested to rate their level of agreement with each of 12 statements on a four-point scale ranging from strongly disagree (coded as 1) to strongly agree (coded as 4).

Derivative mishandling increases with lack of experience, higher levels of anomic behaviour, competitiveness and environmental influence. Education and introversion did not emerge as a significant predictor of derivative mishandling.

This study contributes to the literature by highlighting the importance of understanding whether derivative users show signs of Organization Anomie, since this can help in predicting mishandling.

Keywords: Organization Anomie, Derivatives, Derivative Mishandling, Anomic Behavior.

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1. Introduction

Waring, Wiesburd and Chayet (1995) claim that although efforts have been made to link white collar crime and anomie, there hasn't been an intensive effort to expand on the relationship between these two factors. They believe that Meton's theory of anomie can propose a deeper understanding of white collar crime. They argue that Sutherland's (1947) work had a great influence on Merton and both rejected theories that poverty and crime were casually related. Sutherland (1947) claims that competition drives people to achieve higher goals. People compete either because they like to defeat their competitors or because they want the material rewards associated with the winning. Therefore restrictions or inhibitions on competition are aggravating.

The 2008 scandal of Societe Generale, which resulted in a reported loss of €4.9bn at the hands of trader Jerome Kerviel, caught the authors' attention who were intrigued by the fact that nearly, always in these situations, companies, both financial and non-financial ones, continuously seemed to find a scapegoat whom to blame. Similarly to this case, were those cases, which happened a few years before, with John Rusnak, in Allied Irish Bank, Nick Leeson in Barings Bank, Robert Citron in Orange County and Yasou Hamanaka in Sumitomo Corporation to mention a few. It seemed that these men acted in a vacuum and brought down the companies they worked for single-handedly. De Bondt & Thaler (1995) argue that "Regret is the feeling of ex-post remorse about a decision that led to a bad outcome" (De Bondt & Thaler, 1995). They argue that one way for decision makers to avoid regret is to transfer the responsibility of certain decisions onto someone else (De Bondt & Thaler, 1995).

Durkheim in his 1899 paper on anti-Semitism argues that "When society suffers, it needs someone to blame, someone upon whom to avenge itself for its disappointments; and those persons whom opinion already disfavors are naturally singled out for this role." Durkheim was writing this in the aftermath of the Dreyfus Affair which occurred in the late 1890s. After the trial, which found Alfred Dreyfus guilty of selling military secrets to the Germans, he claims that, "people finally knew whom to blame for the economic troubles and the moral distress through which they lived." (Durkheim, 1899/2008)

Also as Levitt, (1997) put it "There have been too many instances of so-called 'rogue traders' causing millions, or even billions of dollars in losses – not to mention the demise of some well-known institutions. In his view, there would be no 'rogue traders' if every firm had good internal controls and risk management systems" (Levitt, 1997). Bezzina and Grima highlight that not enough importance is given to sociological factors and cultural trends when devising internal controls to manage derivative use (Bezzina and Grima, 2011; Grima, 2012; Gorina, 2016; Denisova *et al.*, 2017).

This repetition or so called déjà-vu type problems and the involvement of scapegoats and derivatives, instigates the need to look deeper into the financial crisis and these large losses, or rather some of the incidents that led to it/them, from a sociological perspective. Since it seems that the perspectives looked at so far have not yet addressed or identified the underlying problem and an a priori resolution to such problems.

With the current study the authors' aim to determine predictors of derivative mishandling through level of experience with derivatives, level of education, anomic behaviour, introversion, environmental influence and competitiveness.

2. Literature Review

2.1 Derivative Mishandling and Agency Theory

Derivatives, have been blamed for causing the collapse of and large losses made by so many multimillion dollar companies around the world. Hull defines them as “financial instruments whose value depends on (or derives from) the values of other, more basic, underlying variables”. In most cases, the variables are the prices of traded assets. He claims that while a stock option derives its price from a particular stock, “derivatives can be dependent on almost any variable, from the price of hogs to the amount of snow falling at a certain ski resort”. Hull states that since 1988, the derivatives market has developed manifold and that today one can trade in credit derivatives, electricity derivatives, weather and insurance derivatives (Hull, 2012).

The main traders in derivatives are hedgers, speculators and arbitrageurs. Hedgers face the risk that is associated with the price of an asset. So they use derivatives to hedge or eliminate that risk. Speculators want to take a position in the market. Therefore they will bet whether the future price of an asset will go up or down and they use derivatives to get leverage. He maintains that arbitrageurs are important actors in the derivatives market and explains arbitrage as involving locking in a riskless profit by entering into concurrent transactions on two or more markets. This way they take advantage of a discrepancy between prices in two different markets.

Hull continues by claiming that derivatives are versatile instruments and when employees have a mandate to hedge or look for arbitrage opportunities, they become speculators. This is what happened to for example, Nick Leeson at Barings Bank. He was entrusted with the task of finding arbitrage opportunities between the Nikkei 225 and the Osaka Exchange. Over the months, Leeson changed from being an arbitrager to being a speculator and no one at Barings Bank knew how exactly he was using derivatives. This change led Leeson to start incurring losses. At first he was able to hide them, but as he tried to make up for the losses, the losses continued to grow. When he was finally caught, the losses were so great (\$1 Billion), that Barings Bank (that had been established over 200 years before) went bankrupt (Hull, 2012).

Hull maintains that certain arbitrage prospects such as the case of Barings Bank cannot go on for very long. He explains that when arbitrageurs buy stock in New York, the dollar price will rise due to the supply and demand forces. Alternatively, when they sell stock in London, the sterling price will go down. "Very quickly the two prices will become equivalent at the current exchange rate". He argues that the very existence of arbitrageurs denotes that in practice, "only very few arbitrage opportunities are observed in the prices that are quoted in most financial markets" (Hull, 2012).

The authors, strive on the premise of the Agency Theory problem and that derivatives are mishandled if they are not being used for hedging or arbitrage purposes (i.e. speculation) and therefore in conflict with the appetite of the principle. Agency theory deals with the relationship between two parties, one (the principle) which delegates the work and the other party (the agent) who performs that work. Agency theory includes also the agency problem which occurs when the two parties have different goals. According to Eisenhardt, the agency theory tries to answer two problems: (1) The agency problem that occurs when there is a conflict between the goals of the principal and the agent and the difficulty for the principal to check what the agent is doing and (2) the problem which arises when the risk appetite of the principal and the agent differs (Eisenhardt, 1989).

2.2 The Anomie Concept and Deviant Behaviour

The concept of Anomie was first introduced by Emile Durkheim in his book 'The Division of Labour in Society' in 1893 and he then developed it further in 'Suicide: A Study in Sociology' in 1897. "Durkheim's work provided the intellectual foundation for Merton's attempt to develop a macro-level explanation of rates of norm-violating behaviour in American society", developing it further to become a truly general sociological approach to deviance (Orcutt, 1983). While Durkheim focused on the insatiable passions and appetites of man, Merton argues that human needs and desires are primarily the product of a social process: i.e., cultural socialization (Merton, 1957).

Society lays down rules and norms, which provide guidelines as to what is acceptable behaviour and what is not in a particular society. Through socialization, individuals may embrace the values of their society and abide by the rules of that same society. In a world where 'anything goes', norms cease to influence people to act in an acceptable way, therefore, giving rise to normlessness or 'anomie' (Durkheim, 1893) (Merton 1938). When individuals feel that the means to reach the prescribed goals are not doing that, then problems arise, which leads to anomie, which in turn leads to deviant behaviour (Merton, 1938).

Sutherland and Cressey (1978) argue that a child is confronted with different ways of behaving within the home. This is because nowadays parents are themselves not consistent for they play various roles. Likewise, groups outside the home have different standards of conduct from those in the home. People learn behaviour through role play and when roles are conflicting and not clear, the behaviour is not

consistent. Sellin (1938) states that members of a group, learn and conform to the norms which the group shares with other groups but also with norms which are uniquely of the group. When people are members of different groups they internalize the norms of those other groups, which norms might support or contradict those of the original group (Sellin, 1938). When individuals are confronted with contradicting norms, there arises a condition of social 'disorganisation'. Thus a person is confronted with other goals and means. A person stops being someone's son or daughter and becomes a citizen (Sutherland and Cressey, 1978). The individual might find himself/herself in a situation where what was correct and right in one group might be considered wrong or improper in another group. They maintain that "...in the condition of anomie, he literally does not know how to behave, for he does not know what is expected of him" (Sutherland and Cressey, 1978; Baldacchino *et al.*, 2017).

Anomie, for Durkheim, alluded to the failure of society to manage or restrain the end objectives of human craving. Merton, then again, is more concerned with social regulation of the methods individuals utilise to acquire material objectives (Orcutt, 1983).

Merton claims that irrelevant of the role of biological impulses, deviant behaviour varies from society to society and from one social structure to another. Merton's primary aim within his 'Social Structure and Anomie' chapter was to, "discover how some social structures exert a definite pressure upon certain persons in the society to engage in non-conforming rather than conforming conduct" (Orcutt, 1983).

2.3 Scales of Anomie

Merton claims that Durkheim did not offer, "explicit and methodical guidance to the various signs of anomie, to the observables of normlessness and deteriorated social relationships." (Merton, 1957) While Durkheim and Merton saw anomie as a state effecting society at large, other researchers applied this concept to individuals. To distinguish between them, scholars use the term anomie to refer to the original concept and they use the word anomia for the individual characteristic (Babbie, 2009). Babbie refers to the work of Elwin Powell who was writing 20 years after Merton and who provided the following conceptualization of anomia:

"When the ends of action become contradictory, inaccessible or insignificant, a condition of anomie arises. Characterized by a general loss of orientation and accompanied by a feeling of 'emptiness' and apathy, anomie can be simply conceived as meaninglessness" (Powell, 1958).

He also refers to Leo Srole's work who came up with a "scale of anomie". Merton thought that this was important if the idea of anomie was to be used in empirical research. Srole (1956) came up with five statements which individuals could agree with or not. According to Zhao (2007), Srole's scale of anomie was an effort towards measuring the social psychological effects of the social structure variable, which was anomie (Zhao, 2007). However, he argues that this scale does have its

limitations. Heydari, Davoudi and Teymoori (2011), argue that researchers have not given careful consideration to the high abstraction of anomie and have considered it as a one-dimensional concept. In their study, they looked at all the scales of anomie which were available and they came up with a 22 item questionnaire (later reduced to 20 items) which they conducted amongst 500 University students. They identified three sub-scales which were named Meaninglessness and distrust, Powerlessness and Fetishism of money. Heydari, Davoudi and Teymoori (2011) put together their questionnaire using statements from different researchers as well as putting in 3 statements of their own. Under the Meaningless and distrust section, Heydari, Davoudi and Teymoori (2011) put statements concerning lack of trust in authority and the respondents had to agree or disagree with the statements.

The following are the statements pertaining to the Meaningless and distrust section:

1. I can trust to the statements of high-ranking officials (authority).
2. There is little use writing to public officials because often they aren't really interested in the problems of average man.
3. In spite of what some people say, a lot of average man is getting worse, not better.
4. I believe most of the congress bills are towards the welfare of people.
5. Most public officials (people in public office) are not really interested in the problems of the average man.
6. I often wonder what the meaning of life really is.
7. It's hardly fair to bring children into the world with the way things look for future.
8. Everything is relative, and there just aren't any definite rules to live by.

Their next set of questions was directed towards feeling of powerlessness:

9. I lead a trapped or frustrated life.
10. Nobody knows what is expected of him or her life.
11. I have no control over my destiny.
12. The socioeconomic status of people determines their dignity and it's inevitable.
13. The world is changing so fast that it is hard for me to understand what is going on.
14. My whole world feels like it is falling apart.
15. No matter how hard people try in life it doesn't make any difference.

The last set of questions was aimed at feelings about money:

16. To make money, there are no right and wrong ways anymore, only easy ways and hard ways.
17. A person is justified in doing almost anything if the reward is high enough.
18. I am getting a college education so I can get a good job.
19. I follow whatever rules I want to follow.
20. Money is the most important thing in life (Heydari, Davoudi and Teymoori, 2011).

They concluded that, "...anomie is a state of mind and set of attitudes, beliefs and personal feelings. This state of mind gives a kind of feeling to the person that his

surrounding is full of chaos and confusion which does not bear any regularity and systematic rules. For the anomic person, the norms that regulate the behaviours are weak and vague and he is living in a situation where "norms pressure" is low and moral principles have collapsed" (Heydari, Davoudi and Teymoori, 2011).

McClosky & Schaar (1965) also came up with a set of statements meant to assess different aspects of an anomic state of mind. Statements dealt with uncertainty, disorder, change, lack of beliefs and expectations. The statements are listed below:

1. With everything so uncertain these days, it almost seems as though anything could happen.
2. What is lacking in the world today is the old kind of friend-ship that lasted for a lifetime.
3. With everything in such a state of disorder, it's hard for a person to know where he stands from one day to the next.
4. Everything changes so quickly these days that I often have trouble deciding which are the right rules to follow.
5. I often feel that many things our parents stood for are just going to ruin before our very eyes.
6. The trouble with the world today is that most people really don't believe in anything.
7. I often feel awkward and out of place.
8. People were better off in the old days when everyone knew just how he was expected to act.
9. It seems to me that other people find it easier to decide what is right than I do. (McClosky & Schaar, 1965).

2.4 Demographics Characteristics: Level of Education and Experience

Reimanis, researched the relationship between education and anomie in 571 respondents in more than 600 households. He found that "feelings of anomie are related negatively to interest in continuing education and to the belief that formal education is important in becoming successful" (Reimanis, 1983). Subjects who were neither continuing their education and who were not interested in any form of education recorded higher on anomie than those who were either still studying or interested in resuming their education.

Also, respondents who considered work experience and position as being more important than formal education for success scored higher on anomie than those preferring education. Further findings supported the argument that feelings of anomie, adopted during childhood, generate an emphasis which overlooks the importance of education during adult years (Reimanis, 1983). According to Baker and Haslem (1974) and MacCrimmon and Wehrung (1986), education plays an important role in the decision-making process. Through education a person acquires the capacity and skills needed to make investment decisions by acutely analysing the existing risks.

Bezzina and Grima (2013) noted that education, and experience with derivatives produced a significant impact on derivative handling. In fact both experience and education, emerged as a significant predictor of derivative handling.

2.5 Introversion, Competitiveness and Environmental influence

Muehring (1995), suggests that mishandling of derivatives is caused the “can't-lose mentality” (i.e. Competitiveness) which fails to take note of the downside of the investment. Moreover, Das (2006) sees the “world of derivatives trading as a world of beautiful lies.” They breakdown the trading floor into sales people, “who lie to clients, traders who lie to sales and to risk managers, risk managers who lie to people who run the place (or as it is sarcastically noted in this article – only think that they run the place); the people who run the place lie to shareholders and regulators, the quants (sarcastically described as fabulous rocket scientists) develop a model for lying and lastly the clients, they lie mainly to themselves.”

Kuprianov (1995), highlights the concept that traders who mishandled derivatives were often seen as a ‘star player’ and often mishandled derivatives because they were pushed by society (due to expectations) to remain such (Environmental Influence). He also, noted that these traders had very strong characters and were very assertive and had a high ego (Assertiveness).

The environment influence, competitiveness and assertiveness of derivative traders is also noted by Partnoy (1999), who cited the Procter & Gamble, Dell Computer, Mead Corporation, and other firms' announcement of large losses from trading derivatives and reported the following:

„Soon after the first losses were announced [Morgan Stanley's President John] Mack told a group of managing directors, ‘There's blood in the water. Let's go kill someone.’ The idea was that if our derivatives customers were in trouble, and we could convince them that they needed us--perhaps to “double-down” on their losses--we could make even more money off their hardship. Management salivated at these potential victims, known euphemistically as distressed buyers. As my bosses told me repeatedly during this period, ‘We love distressed buyers’”.

Creaton and O’Clery (2002) also highlighted the competitiveness of the environment of derivative trading and the assertiveness of traders who mishandled derivatives. They showed how the trader who mishandled derivatives (in this case John Rusnak trader at Allfirst) managed to convince all of the profits he was doing and to ensure that no checks are carried out. They also, highlight the fact that the environment which he was working in expected him to continue to make profits, no matter what and to beat the market.

3. Research Methodology and Results

To determine whether experience with derivatives, level of education, anomic behaviour, introversion, environmental influence and competitiveness significantly predict derivative mishandling a survey was used. This survey was administered online using Linked-in „users of derivatives” contacts of the authors during the periods between January to April 2016. Respondents were asked to suggest other participants who could answer the survey. The authors received 268 valid responses. SPSS (version 20) was then used for the empirical analysis. In the first part of the survey the authors asked participants to indicate the level of education, and experience with derivative. 79% of them held a postgrad degree or higher and only 2.6% did not hold a degree, but held a school leaving certificate/diploma. Moreover, 40% of participants had over 5 years’ experience with derivatives.

Respondents were then requested to rate their level of agreement with 12 statements on a four-point scale ranging from strongly disagree (coded as 1) to strongly agree (coded as 4). These 12 statements were chosen from literature highlighted above after discussion with peers to understand which are the most appropriate for this study. Then categorized under 4 scales the *anomic behaviour*, *introversion*, *environmental influence*, *competitiveness* and *derivative mishandling*. The authors then checked the Cronbach’s alpha to determine the reliability of the scales being used.

The *anomic* scale was obtained after the responses pertaining to the following four items, borrowed from the works of Heydari, Davoudi and Teymouri (2011) mentioned above, were averaged - “In spite of what some people say, the lot of the average man is getting worse”, “These days, a person doesn’t really know who he can count on”, “There is little use in writing to public officials because they are often not really interested in the problems of the average man” and “I follow whatever rules I want to follow”. This was possible since these four items were internally consistent (Cronbach $\alpha = 0.87$) and loaded on single factor in exploratory factor analysis ($\lambda = 2.89$, variance explained (VE) = 72.2%).

Similarly, the *introversion* scale was based on the items “I am not an introvert” and “I do not tend to keep to myself” (Cronbach $\alpha = 0.95$, $\lambda = 1.90$, VE = 95.1%); *environmental influence* was based on “The environment which surrounds me has a strong impact on my behaviour” and “I usually blame outside factors when things do not go my way” (Cronbach $\alpha = 0.86$, $\lambda = 1.81$, VE = 90.4%); *competitiveness* was based on “I consider myself to be very competitive” and “I prefer challenging work” (Cronbach $\alpha = 0.72$, $\lambda = 1.58$, VE = 79.1%), while *derivative mishandling* was based on “For me, using derivatives is similar to betting or gambling” and “I tend to take risks when using derivatives” (Cronbach $\alpha = 0.74$, $\lambda = 1.66$, VE = 83.1%). Here the authors wanted to have a picture of how traders viewed themselves and others in their environment.

Should the participants answer that they either strongly agree or agree with the statements above, this will show that derivative traders are in an anomic state and are

influenced by the culture of the organisation in that they want to be seen as excellent traders and reach targets assigned to them, that they are very assertive and competitive and had their way even when their decisions were not the right ones. In the case of *derivative mishandling*, the authors wanted to gauge the risk appetite of Traders, who are often under pressure to increase profits for their organisation. Thus, instead of using derivatives to hedge or for arbitrage profits, they take certain risks to increase the company's annual revenue (speculate – which is not in line with Shareholder' appetite). This in turn puts them in a position where they are taking more risk than is advisable. Therefore, if the respondents' answer that they strongly agree or agree, this may mean that they are mishandling derivatives.

Derivative mishandling was specified as the dependent variable while *education, experience, anomic behaviour, introversion, competitiveness, and environmental influence* were entered as dependent variables. Zero-order correlations were also generated to ensure that the beta coefficients were in the expected direction. Finally, to assess the assumption of independent errors and that multicollinearity was not a matter of concern, the Durbin Watson statistic and the Variance Inflation Factors (VIFs) were obtained and interpreted.

The multiple regression analysis output was good ($F_{6,261} = 501.94$, $p < 0.001$) and that the variables explained 92% of the variability in derivative mishandling. In fact, derivative mishandling increases with lack of experience ($\beta = -0.157$, $t = -6.06$, $p < 0.001$), higher levels of anomic behaviour ($\beta = 0.662$, $t = 20.44$, $p < 0.001$), competitiveness ($\beta = 0.738$, $t = 22.21$, $p < 0.001$) and environmental influence ($\beta = 0.748$, $t = 19.18$, $p < 0.001$). Education ($\beta = 0.028$, $t = 1.09$, $p = 0.278$) and introversion ($\beta = -0.038$, $t = -1.01$, $p = 0.312$) did not emerge as a significant predictors of derivative mishandling.

All significant predictors were significantly correlated with the dependant variable, implying that that there were no suppressor variables among the predictors. Additionally, the Durbin Watson statistic (DW = 1.979) was close to 2 indicating that the assumption of independent errors was tenable while the Variance Inflation Factors were less than 4, indicating that there were no serious issues concerning multicollinearity. More details on statistical output are presented in the Tables below.

Tables 1. Model Summary

Model Summary^b

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.959 ^a	.920	.918	.21165	1.979

a. Predictors: (Constant), Environmental influence, Education, Anomic behaviour, Experience, Competitiveness, Introversion, b. Dependent Variable: Derivative mishandling

Table 2. ANOVA
ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	134.901	6	22.484	501.935	.000 ^b
Residual	11.691	261	.045		
Total	146.592	267			

a. Dependent Variable: Derivative mishandling

b. Predictors: (Constant), Environmental influence, Education, Anomic, Experience, Competitiveness, Introversion

Table 3. Coefficients
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations	
	B	Std. Error	Beta			Zero-order	Partial
1 (Constant)	-3.866	.355		-10.890	.000		
Experience	-.128	.021	-.157	-6.058	.000	-.682	-.351
Education	.056	.052	.028	1.086	.278	.010	.067
Anomic	.823	.040	.662	20.536	.000	.807	.786
Competitiveness	.987	.044	.738	22.203	.000	.367	.809
Introversion	-.030	.029	-.038	-1.013	.312	-.749	-.063

Environmental_influence	.777	.040	.748	19.179	.000	.697	.765
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a. Dependent Variable: Derivative mishandling

4. Discussion and Conclusions

The findings, contribute to the on-going debate and literature concerning the handling of derivatives and could possibly encourage more research studies to be conducted in order to generate more information than is currently available. The study relates derivative handling to a sociological state - organisation anomie, which as far as the authors could determine is something that has not yet been explored directly. It highlights whether derivative users show signs of anomie and corroborates this with previous findings relating to 'derivative mishandling' and how this is impacted with lack of experience, higher levels of anomic behaviour, competitiveness and environmental influence.

It shows that these factors can be predictors of derivative mishandling and can help auditors and employers anticipate the most appropriate persons to employ for specific positions in for example, their financial markets divisions such as the trading rooms, settlements departments and support teams such as internal audit.

However, an important finding was that, although literature considered education and introversion as important predicting factors, findings herein contrary to some previous literature shows that education and introversion, did not emerge as a significant predictors of derivative mishandling.

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