

Financial Derivatives

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Financial Derivatives: A Blessing or a Curse?

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This work is largely based on an unpublished PhD thesis by Dr Simon Grima, finished in 2011, 'A study of Uses and Misuses of Derivatives', at the University of Malta, Banking and Finance Department, and some of his papers which are referenced in the bibliography and text. Here, the authors introduce and discuss financial derivatives, their uses and the debates surrounding their use by digging into literature, theory and famous case studies.

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Chapter 1

The Perception on Financial Derivatives: The Underlying Problems and Doubts

This opening chapter introduces derivatives and the debates surrounding their use. It highlights the scope for this book, provides the objectives, the intended contribution, presents the problem and discusses some questions and curiosities surrounding their use. Moreover, previous studies carried out on derivatives are summarised herein.

1.1. Overview

Edington (1994) sees the opinions on derivatives as two opposing camps: ‘those who embrace them as the “Holy Grail” of the new investment era, and those who denigrate them as the financial Antichrist’. As this quote suggests, there are many conflicting views and opinions on derivatives and their use. Derivatives are seen either as useful instruments or as a complete waste of time and money (Dodd, 2002b). As defined by Hull (2008), derivatives are any ‘financial instruments that derive their value from the value(s) of other, more basic, underlying variables’. The underlying can be anything, for example, a financial asset or a rate, with payments that are linked to an index, the weather in a specific region or the profitability of selected companies (Stulz, 2005).

Stulz (2004) in his paper ‘Should We Fear Derivatives?’ specifies ‘two types of derivatives: plain vanilla and exotic’. Plain vanilla derivatives are forward and future contracts, swaps, options or a combination of these. Exotic derivatives are all other remaining derivatives. These will be described in more detail in the second chapter.

‘A Chronology of Derivatives’, by Chance (1995), focuses on the history and development of derivatives. He notes that the start of derivatives came about at around 580 BC, ‘when Thales the Milesian, purchased options on olive presses and made a fortune off a bumper crop in olives’. According to Chance, in 1700 BC, Jacob (Bible, Genesis chapter 29), ‘purchased an option, at a cost of seven years of labour, that granted him the right to marry Laban’s daughter, Rachel’. Chance identifies key historical moments in the derivatives development: the very first derivatives exchange was the ‘Royal Exchange in London’, where forward

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contracts were carried out. The first ‘futures’ contracts are said to have been executed in the 1650s in Osaka on Japan’s Yodoya rice market. Chance notes that the next most important ‘event happened with the formation of the Chicago Board of Trade in 1848’.

In another paper, ‘Demystifying Financial Derivatives’, Stulz (2005) notes that until the 1970s, the derivatives markets were not always so large. However, the changes in the economic climate and the advances in the pricing methodologies of derivatives led to spectacular growth. During that period, the instability of ‘interest rates and currency exchange rates increased sharply, making it crucial to find ways to hedge the relative risks more efficiently. Meanwhile, deregulation in a variety of industries, along with soaring international trade and capital flows, added to the demand for financial products to manage risk’. According to Stulz (2005), the development, in the early 1970s of the Black-Scholes formula and technology innovations which enabled faster and more efficient management of computations, stronger network and communication infrastructures, changed trading of derivatives drastically. Thereafter, financial engineers could build new derivative products and find their value more easily.

The market for derivatives, according to the Bank for International Settlements (BIS) Quarterly Review (2019), in the first half of 2018 stood at a notional amount of outstanding of all types of over-the-counter (OTC) derivative contracts of US\$544.4 trillion at the end of June 2018 (gross market value of US\$9,662 billion). Although large, this was a slight decline from end-June to end-December 2018, of approximately US\$50.6 trillion.

Exchange-traded futures and options derivatives, however, measured by notional amounts, stood at US\$39 trillion and US\$68.2 trillion as at December 2018 (BIS, 2019).

Therefore, there is a considerable need to further understand and contribute to the scholarship on derivatives. Moreover, the large and variable market size necessitates controls that are constantly kept up to date in order to prevent a potential global financial crisis started by this instrument.

As we shall see in the next chapters, experience has indicated that derivative products have transformed the way firms view financial risk and mitigate it. It is no longer relatively simple and risks are changing continuously with innovation. Risks are no longer nationwide but global and the internet and other fast communication channels have further complicated the issue. In her article, ‘Are Derivatives Financial “Weapons of Mass Destruction”?’ Simon (2008) explains that although derivative instruments have been used to hedge risks that were previously left open, there are still those who are sceptical about using these instruments. As the Group of Thirty (G30) (1993) note, users from ‘both inside and outside of the financial industry, remain uncomfortable with derivatives activity’. Moreover, over the years, we have seen a widespread increase in employment of derivatives with adequate risk management systems. Nevertheless, not all firms are immune to derivatives misuse.

In Philippe Jorion’s (1995, p. 4) ‘Big Bets Gone Bad’, he recites the words of a Wall Street wise man Felix Rohatyn, who described derivatives as ‘financial hydrogen bombs created by 26 year-olds with computers’. He notes the

description given to derivatives ‘a monstrous global electronic Ponzi scheme’, by Henry Gonzalez, former House Banking Committee chairman. In a March 1995 broadcast of the CBS TV show *60 Minutes*, derivatives were depicted as ‘too complicated to explain but too important to ignore’. This show suggested that derivatives are ‘highly exotic, little understood and virtually unregulated. Some people believe they are so unpredictable they could bring down the world banking system’ (Jorion, 1995, p. 4).

Hull (2008) highlights that the perception of derivatives as inherently bad financial instruments which have led to large financial failures of companies and government institutions. However, according to Cochran (2007), the understanding of the concept of derivatives – ‘which most economists view as a positive innovation that emerged over the past 30 years’ – is a predominant factor in the global financial markets. Since many derivatives involve cross-border trading, ‘the derivatives market has brought increased international financial fragility and the attendant need for greater supranational governance of the instrument’ (McClintock, 1996).

Beckett (1995) notes the popular belief that firm-specific risk and systemic risk are increased by derivatives use and perceived to have threatening effects on both the real sector and the financial system. Firm-specific risk includes ‘credit or default risk, legal risk, market and liquidity risk, operating or management risk’.

He highlighted further that the greater competition and interconnectedness between the financial institutions (both credit institutions and non-credit institutions) and financial markets, the increasing concentration of derivative off balance sheet trading resulted in reduced transparency in disclosure of information have intensified reactions to market disturbances.

Warren Buffett (2003), as noted by Simon (2008), describes derivatives in the Berkshire Hathaway Inc. 2002 Annual Report as being ‘financial weapons of mass destruction and contracts devised by madmen’. An article by Das (2005), ‘Traders, Guns and Money’, highlighted that ‘ever since Warren Buffett memorably described derivatives as ‘financial weapons of mass destruction’ there has been a thriller waiting to be written about them’.

Following the numerous cases of losses where derivatives have been used, the question is whether derivatives and their markets are the real culprit that brings about large failure and the losses by companies and government entities. Some of these cases are summarised in the following chapters. [Table 1.1](#) lists a summary of some of the renowned trading losses ever, highlighted in literature. It demonstrates the trouble that these derivatives instruments are perceived to have brought to the economy and the losses derived from their use. All, except for a few (such as Daiwa Bank in 1995), have involved the use of, and trading in, derivatives. In addition, just to give a perspective of the losses, we added the percentage of the total losses as summarised in this table. Moreover, Barth and McCarthy (2012) note in their article, ‘Trading Losses: A Little Perspective on a Large Problem’, when seen through the lens of relative size relative to the net equity, the losses of, for example, Amaranth Advisors and LTCM and at the Investment bank Barings were nearly equal to or exceeded those firms’ net equity and pushed all the three into or close to insolvency.

Table 1.1. Summary of Trading Losses.

Name	Loss in US\$ Billion	Institution	Market	Percentage of Total Losses	Year
Howard 'Howie' Hubler	9.0	Morgan Stanley	Credit default swaps on real estate	11.79	2008
Jérôme Kerviel	7.2	Société Générale	European index futures	9.43	2008
Brian Hunter	6.5	Amaranth Advisors	Gas futures	8.51	2006
John Meriwether	4.6	Long-Term Capital Management	Interest rate and equity derivatives	6.02	1998
Yasou Hamanaka	3.5	Sumitomo Corporation	Copper futures	4.58	1996
No specific trader	2.9	Kashima Oil	Foreign exchange derivatives trading (Forex forwards)	3.80	1994
William Hunt Nelson Hunt	2.52	Hunt Brothers	Silver – commodity	3.30	1980
No specific trader	2.5	Aracruz	Foreign exchange options – on the Brazilian real estate	3.27	2008
Wolfgang Flotti & Helmut Elsner	2.5	Bawag	Currency and interest swaps	3.27	2006
Kweku Adoboli	2.3	UBS	European equities – S&P 500, DAX, and EuroStoxx Futures	3.01	2011

No specific trader	2.14	Showa Shell Sekiyu	FX forwards	2.80	1993
Bruno Iksil known as the 'London Whale' and 'Voldemort'	2.0	JPMorgan Chase	Credit derivative markets	2.62	2013
Frances Yung	1.82	CITIC Pacific	Foreign exchange trading	2.38	2014
Maksim Grishanin, VP Finance	1.76	Transneft	Derivatives	2.30	2008
Boaz Weinstein	1.74	Deutsche Bank	Derivatives	2.28	2000
Robert Citron	1.7	Orange County	Interest rate derivatives	2.23	1994
Wolfgang Flöttl, Helmut Elsner	1.56	BAWAG	Foreign exchange trading	2.04	1995
George Soros	1.46	Soros Fund	S&P 500 futures	1.91	1987
Nick Leeson	1.4	Barings Bank	Nikkei futures	1.83	1995
Heinz Schimmelbusch	1.3	Metalgesselschaft	Oil futures	1.70	1993
Toshihide Iguchi	1.1	Daiwa Bank – Resona Holdings	US treasury bonds	1.44	1995
Boris Picano-Nacci	1.06	Groupe Caisse d'Epargne	Equity derivatives	1.39	2008
Adriano Ferreira, Álvaro Ballejo	1.05	Sadia	FX and credit options	1.37	2008
Peter Young	0.85	Morgan Grenfell	Shares	1.11	1997
David Askin	0.84	Askin Capital Management	Mortgage-backed securities	1.10	1994

Table 1.1. (Continued)

Name	Loss in US\$ Billion	Institution	Market	Percentage of Total Losses	Year
Friedhelm Breuers	0.82	WestLB	Common and preferred shares	1.07	2007
David Lee	0.8	Bank of Montreal	Natural gas options	1.05	2007
Dany Dattel	0.76	Herstatt Bank	Foreign exchange trading	1.00	1974
David Lee, Kevin Cassidy	0.64	Bank of Montreal	Natural gas derivatives	0.84	2007
Chen Jiulin	0.60	China Aviation Oil (Singapore)	Oil futures and options	0.79	2004
Ramy Goldstein	0.55	Union Bank of Switzerland	Equity derivatives	0.72	1998
Chen Jiulin	0.55	China Aviation Oil	Jet Fuel futures	0.72	2005
Howard A. Rubin	0.51	Merrill Lynch	Mortgages (IOs and POs) trading	0.67	1987
A. James Manchin	0.51	State of West Virginia	Fixed income and interest rate derivatives	0.67	1987
Joseph Jett	0.49	Kidder, Peabody & Co	Government bonds	0.64	1994
Michael Berger	0.48	Manhattan Investment Fund	Short IT stocks during the internet bubble	0.63	2000
Thomas Joyce	0.44	Knight Capital Group	Equities	0.58	2012
No specific trader	0.41	Hypo Alpe-Adria-Bank International	Foreign exchange trading	0.54	2004

Richard 'Chip' Bierbaum	0.35	Calyon	Credit derivatives	0.46	2007
Marc Colombo	0.328	Lloyds Bank	Foreign exchange trading	0.43	2004
No specific trader	0.31	Dexia Bank	Corporate bonds	0.41	1974
Juan Pablo Davila	0.30	Codelco	Copper, silver, gold futures	0.39	2001
Raymond Mains	0.22	Procter & Gamble	Interest rate derivatives	0.29	1994
Paul Erdman	0.214	United California Bank of Basel	Cocoa futures	0.28	1970
Liu Qibing	0.21	State Reserves Bureau Copper Scandal	Copper futures	0.27	2005
Kyriacos Papouis	0.19	NatWest	Interest rate options	0.25	1997
Peter Shaddick	0.164	Franklin National Bank	Foreign exchange trading	0.21	1974
David Bullen	0.187	National Australia Bank	Foreign exchange options	0.24	2003–2004
Luke Duffy	0.176	BNP Paribas Arbitrage	Structured products	0.23	2016
Vince Ficarra	0.15	Cuyahoga County, Ohio	Leveraged fixed income	0.20	1994
Gianni Gray					
Armin S.					
No specific trader					

Table 1.1. (*Continued*)

Name	Loss in US\$ Billion	Institution	Market	Percentage of Total Losses	Year
Fredrik Crafoord, Mikael König, Patrik Enblad	0.143	HQ Bank	Equity derivatives	0.19	2010
Evan Dooley	0.13	MF Global	Wheat futures	0.17	2008
Matt Piper	0.12	Morgan Stanley	Credit-index options	0.16	2008
Eduard Nodilo	0.12	Riječka banka (Rijeka Bank)	Foreign exchange trading	0.16	2002
Matthew Taylor	0.118	Goldman Sachs	S&P 500 e-mini futures	0.15	2007
Joseph Jett	0.074	Kidder, Peabody & Co	US treasury bonds	0.10	1994

Source: Compiled by the authors.