

Corporate Valuation Methodologies during an Uncertain Economic Climate In Malta: Evidence from COVID-19

By

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May



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Abstract

TITLE: Corporate Valuation Methodologies during an Uncertain Economic Climate in Malta: Evidence from COVID-19

PURPOSE: This study attempted to build on previous studies by conceptualising the effect of economic downturns on this practice. Firstly, the study aims (i) to evaluate any shifts in the value relevance of earnings and book values underpinning valuations; (ii) to assess changes that occurred to the conventional valuation methods; (iii) to investigate the usage of real options and other risk identification instruments as a means to gauge fundamental firm uncertainty.

DESIGN: To comprehensively address these objectives, this research employed a mixed-methods approach. A multiple regression model was utilised to comprehend the payoffs that recessions exert on accounting numbers' utility. Twelve (12) semi-structured interviews with valuers, stockbrokers, and CFOs were conducted to attain a holistic understanding of the ramifications of other aspects of the valuation process.

FINDINGS: The statistical facet highlights the low utility levels offered by annual reported financial statements for local equity valuations, with neither earnings nor book values indicative of value creation amidst a turbulent economic climate. The findings further elicit that enhanced investor scepticism, earnings manipulation, and diminished earnings sustainability contribute to this lack of significance. Additionally, conventional valuation models endured significant fluctuations in their constituents, with the market and asset approaches facing reduced credibility due to volatile financial data, while the income model suffered from greater valuer discretion and subjectivity. Essentially, the income model prevailed among local practitioners during shock events. Furthermore, unawareness, complexity and resource constraints impeded analysts from implementing real options and simulations, with stress testing and narrative reporting emerging as the most prevalent risk identification technique implemented during this time.

CONCLUSIONS: The study concludes that a recessionary environment establishes a more arduous environment for valuers. Essentially, accounting fundamentals detach from firms' economic reality, as valuers must adjust the fundamentals of valuation models and consider other performance indicators. Despite being inherently influenced by economic shocks, these methods remain the pediment for valuers in their appraisals. Thus, local valuers tend to conform to an approach of model stability based upon the most simplistic assumptions and risk-measuring instruments, hindering the application of novel methods, with a preference towards satisficing rather than precision. Ultimately, external influences play a key role with the level of professional guidance and scrutiny highly correlated with the accuracy of firm values during macroeconomic imbalances.

VALUE: This study is of significant value as it bridges the disciplines of economics and accounting, providing crucial insights into the impact of economic downturns on corporate valuation practices. By doing so, it enriches the knowledge base, equipping the valuation community with a comprehensive analysis of the external economic environment, thereby enhancing their decision-making capabilities.

KEYWORDS: Corporate Valuation Models, Net Asset Valuation, Income Approach, Relative Valuation, Real Options Approach, Recessions, COVID-19

Dedication

*To my family, especially
my dearest Mother, for her
endless support and love*

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List of Abbreviations

BVPS	Book Value per Share
CAPM	Capital Asset Pricing Model
CE	Certainty Equivalent
CFO	Chief Financial Officer
CoE	Capitalization of Earnings
CLRM	Classical Linear Regression Model
CPA	Certified Public Accountant
DCF	Discounted Cash Flow
DGM	Dividend Growth Model
DTA	Decision Tree Analysis
EBITDA	Earnings before Interest, Tax, Depreciation and Amortization
EPS	Earnings per Share
ERC	Earnings Response Coefficient
EV	Enterprise Value
FHH	Financial Health Hypothesis
GDP	Gross Domestic Product
IASB	International Accounting Standards Board
IVSC	International Valuation Standard Council
MLE	Maltese Listed Entity
MSE	Maltese Stock Exchange
MVEPS	Market Value of Equity per Share
NAV	Net Asset Valuation

OLS	Ordinary Least Square
PBV	Price-to-Book-Value
PE	Price-to-Earnings
RADR	Risk-Adjusted Discount Rate
ROA	Real Options Approach
ROV	Real Options Valuation
RV	Relative Valuation
SoPV	Sum-of-Parts Valuation
UoM	University of Malta
WACC	Weighted Average Cost of Capital

Chapter 1

Introduction

1.1 Introduction

This chapter introduces fundamental concepts pertinent to the subject and outlines the motives behind the selected area, the research objectives, as well as the resulting limitations.

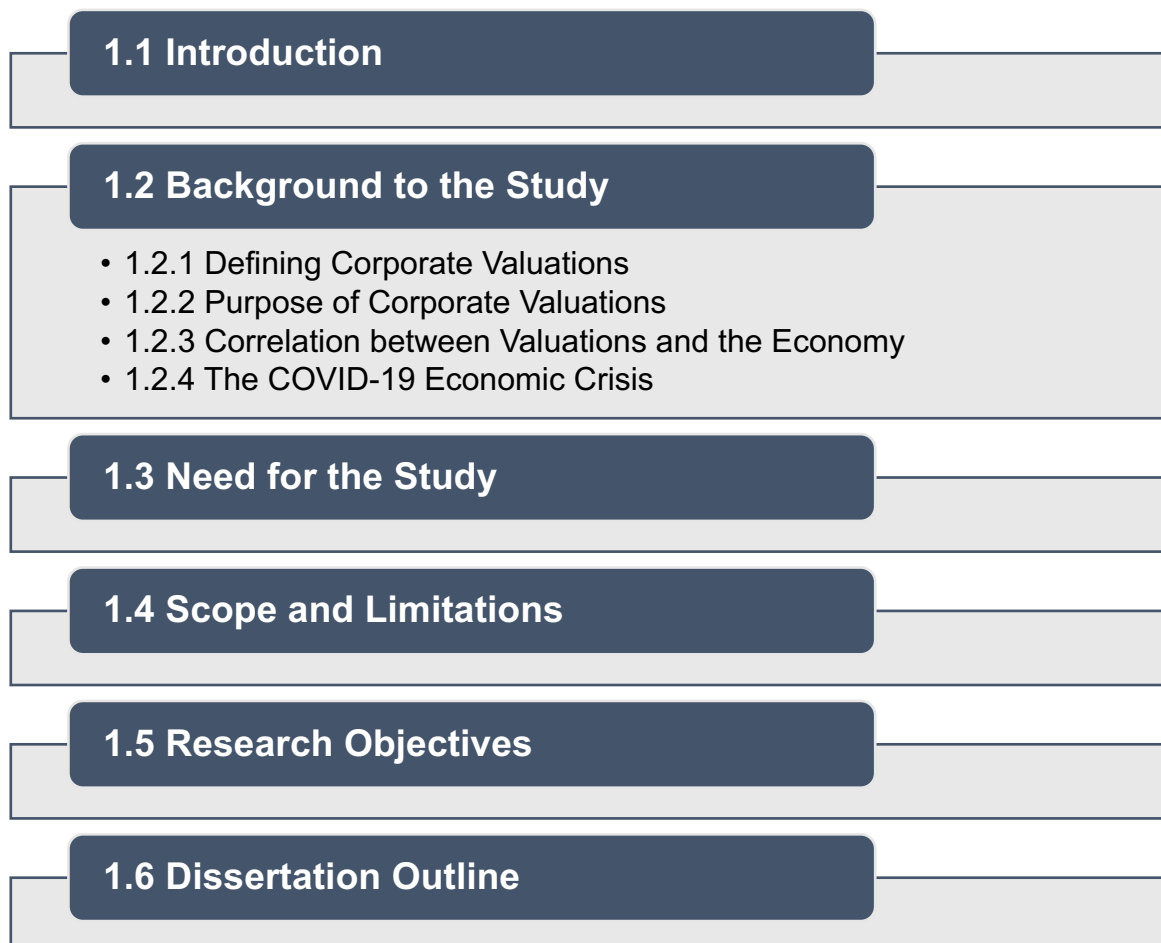


Fig. 1.1: Outline of Chapter 1

1.2 Background to the Study

1.2.1 Defining Corporate Valuations

The act of assigning a definite value stems from economic theory, which stipulates that an asset's worthiness reflects its desirability to the consumer (Anderson 2012) and mirrors the satisfaction reaped from its use (Sloman, Wride 2009).

Estimating a company's intrinsic value is a critical component in corporate finance, with scholars striving to explore the optimal method of enhancing a firm's value through its financial strategy and investment mix (Damodaran, 2007). Corporate strategies have an element of risk attached. Hence, maximising shareholder wealth through optimal portfolios requires the assessment of risk and return. These two concepts continuously intertwine in the valuation process, reflecting a delicate trade-off in establishing an asset's value (Gitman, Zutter 2015). Fazzini (2018) expands on this notion, defining the art of valuation as a comprehensive process that considers both external and internal variables. Internal variables encompass the firm's performance, captured by accounting information, including financial metrics such as the subject entity's liquidity and profitability. External variables embody the broader macroeconomic, industrial and political environment in which the entity operates.

Consequently, firm and equity valuations cannot be considered a hard science. Business valuations are inherently complex, given that no two entities are identical, nor is the valuer's perception of the undertaking's performance and model selection the same (Damodaran 2006; Pike, Neale 2009; Fazzini 2018). Fazzini (2018) denotes that:

"There is an objective component of value, based on valuation methods, and a subjective one, based on the valuer's experience and ability to capture reality."

(Fazzini, 2018, p.2)

All valuation engagements are inhibited with subjectivity based upon the engagement's purpose and the valuer's understanding, perspectives and insights regarding the subject entity, as depicted in Fig. 1.2 below. The assumptions applied, the models articulated, the market's efficiency, and the unforeseen shifts in internal and external firm performance render the assignment highly judgmental. In fact, Damodaran (2006) contemplates that analysts exert an element of bias and must struggle with peripheral uncertainty when valuing companies, ensuing from the selection of inputs, such as growth prospects and risk exposure, the concept of 'post-valuation thinking'¹ and the entity's qualitative attributes, such as strategic considerations and synergies.

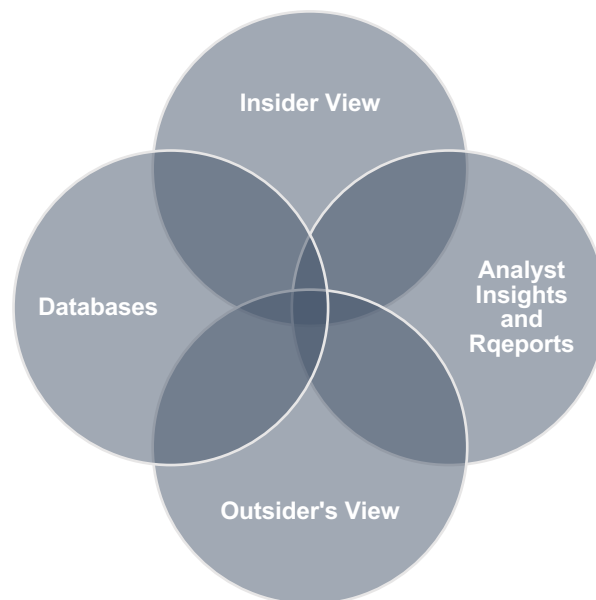


Fig. 1.2: Valuation as a Field of Perspective and Use

Source: adapted from Thomas, Gup (2009), pg. 13

¹ The adjustments made by the analyst, following the estimation process to further align the computed value with the valuer's expectation of the asset's worth (Damodaran 2006)

1.2.2 Purpose of Corporate Valuations

Corporate Valuations may either reflect past, present and/or future economic firm performance. Business valuations aim to enable stakeholders to make sound and optimal economic decisions based on the overarching objective of value-based management, which is to enhance and increase shareholder value (Drury 2018). Per Fig. 1.3, Damodaran (2006) classifies corporate valuations' role into various².

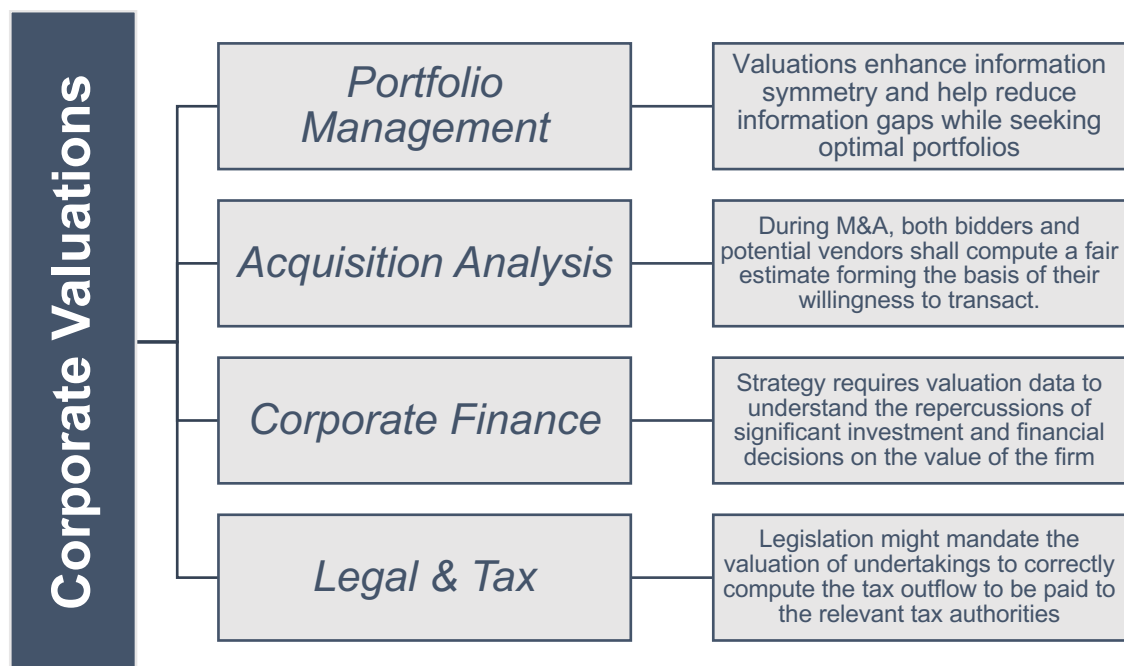


Fig. 1.3: Purpose of Corporate Valuations

Source: Author

1.2.3 Correlation between Valuations and the Economy

The economic outlook is a crucial input in valuation exercises. Damodaran (2006) iterates that firm misevaluation could occur due to unpredictable fluctuations in the economic landscape, even though firm-specific assumptions about

² Vide ApxA1.1

enterprises' life cycles may be precise. The main exogenous shocks that have the potential to augment incorrect company valuations are shown below:

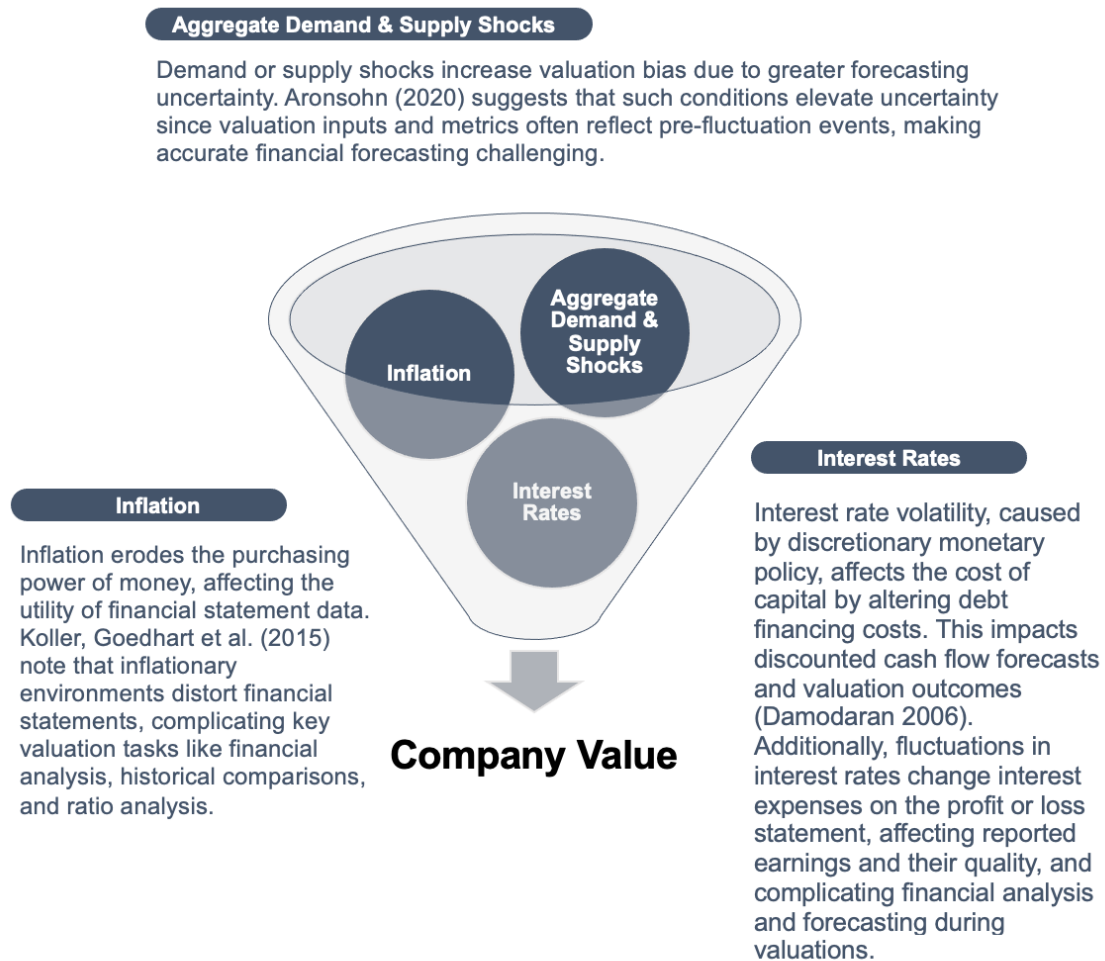


Fig. 1.4: Corporate Valuations and Economic Factors

Source: Author

1.2.4 The COVID-19 Economic Crisis

The World Health Organization (WHO) declared the novel coronavirus a pandemic and a global health concern on 11th March 2020 (WHO 2023). Christine Lagarde³, elicited that:

³ Present of the European Central Bank

“Unlike in 2008-9, the shock we are facing is universal: it is common both across countries and across all sections of society..Essentially, for a temporary period, a large part of the economy is being switched off”

(Lagarde, 2020)

The initial government response to the outbreak involved strict measures such as nationwide lockdowns, travel restrictions, social distancing, curfews, and institution closures (Heltzer, Mindak 2021). As a result, economic and business activity stalled as enterprises were ordered to shut temporarily, with gross domestic product (GDP) falling by 14.6% in Malta during the second quarter of 2020 (NSO 2021).

Moreover, a wave of uncertainty unfolded as many could not predict the outbreak's progression and authorities' mitigation efforts. An array of entities experienced a loss of operating income and cash flow cessation, resulting in deflated company values (Kurniawati, Anggraini, 2023). Additionally, operating firms' growth prospects were severely impacted as economic volatility threatened prior forecasted results, with aggregate demand plummeting, hindering earnings results. A positive correlation between the pandemic-induced parameters and firm values was uncovered by Rizvi, Yarovaya et al. (2022), emphasising their conceptual relationship.

Until the pandemic was officially downgraded on 5th May 2023, other macroeconomic turmoil manifested, including supply chain interferences, reduced consumer confidence, dampened business sentiment, rising unemployment (Arriola, Kowalski et al. 2022) and inflationary pressures (Armantier, Koşar et al. 2021). The first four factors stemmed from consumer demand and supply capacity disruptions, while inflation resulted from expansionary monetary policies.

1.3 Need for the Study

Recent “*anecdotal and professional surveys suggest that valuation estimates can differ widely among experts*” (Bancel, Mittoo 2014, p.106), implying that several external factors should reconcile such discrepancy. Thus, research within the context of corporate valuations is necessary to extract the potential motives for these disagreements. Thus, the primary focus of this research is to enhance the knowledge base available on the impact of economic recessions on business valuation practices, considering the coronavirus pandemic as a mere representation of a severe economic downturn. The pandemic has been selected as part of the scope of this study due to the abundance of economic and market risks manifesting simultaneously. Moreover, as the pandemic crisis has been declared as officially ceased, statistical research and fully comprehensive evaluations could now be extracted given a definitive time dimension.

As part of this research, the main valuation approaches shall be analysed to dissect and portray optimal amendments and considerations to the art of firm and equity valuations in the event of a decline in economic stability. Previous academic literature encompassing the economic environment in which business valuations are executed is inherently scarce. Locally, current academic attention has been solely devoted to focusing on these method's application in the context of select business valuations, such as those conducted by, Manicolo (2010) Grech (2012) and Scicluna (2014), with only a limited number of studies focusing on the models themselves within the local scenario, in reference to Mifsud (2009), Tabone (2016) and Bonello (2018). One study piloted by Mizzi (2016) attempted to explore financially distressed firm valuations and their subsequent turnaround strategies. However, these studies fail to address and clarify the issue around the economic landscape within which such models are applied. Research surrounding the correlation between macroeconomic exogenous shocks and business valuation assignments in the local scenario has not been executed. Consequently, this study shall navigate uncharted waters to unveil the

unknowns of corporate valuations in Malta when faced with macroeconomic imbalances, rendering severe economic uncertainty on firm fundamentals.

Moreover, since accounting data underpins valuation models, empirical research on the influence that economic slumps exert on the utility of financial figures shall shed light on the relevance of select information during crisis periods. The shift in the significance of accounting information towards investors and markets, collated by annual financial statements, shall be investigated as the outbreak and the resultant economic decline progressed. In value relevance literature, *“the role of external shocks and economic conditions is a relatively understudied area”* (Dunham, Grandstaff 2022, p.239), and studies on this concept are also rare locally. The sole study that attempted to explore this topic was conducted by Cutajar (2021), but which focused mainly on evaluating the link between the accounting and economics disciplines through the concept of value relevance. Distinctively, this study shall turn its attention towards empirically obtaining statistical information on the value relevance of accounting information itself within the broader sphere of corporate valuations. The rationale behind this research segment is to substantiate any modifications established within valuation models with quantitative data for the optimal utilisation of financial data within local firm valuations.

1.4 Scope and Limitations

The scope of this research shall be to gather insights from valuation practitioners to understand the extent, if any, to which the main valuation approaches and models have been adjusted to cater for augmented levels of economic uncertainty. Simultaneously, the usability of novel models and methodological adjustments shall be critically reviewed and analysed with valuation experts to understand select approaches' applicability and/or deterrence. In turn, capturing the ramifications of economic shocks may invite the construction of effective evaluations on the most optimal adjustments and reduce shortsighted decisions

made by venture capitalists as valuation experts expand their horizons to present more factual and accurate company values backed by academic evidence. Moreover, the statistical results obtained from the regression analysis shall substantiate the data collected from practitioners to shed light on the shifts in sensitivity of accounting information to equity values during the pandemic and, hence, their pertinence within particular models.

Due to several caveats, one must denote the remits within which this study shall be executed. Firstly, a limitation of scope is implied, as small entities and unquoted undertakings shall be excluded from the quantitative segment of this study due to the difficulty in obtaining relevant information to perform in-depth analyses. Another limitation manifests within the statistical portion, as Maltese Listed Entities (MLEs) are limited in amount and only represent a handful of local enterprises.

1.5 Research Objectives

Following the review of academic literature and the scope of this research, the undermentioned objectives were formulated, which are:

1. To evaluate shifts in the value relevance of earnings and book values entrenched within business valuation methods in Malta during severe uncertainty of firm fundamentals.
2. To assess the changes that occurred due to the COVID-19 crisis to the conventional valuation models and their constituents in the local context.
3. To investigate the reasonableness of the real options approach and other techniques in the event of macroeconomic shocks.

1.6 Dissertation Outline and Structure

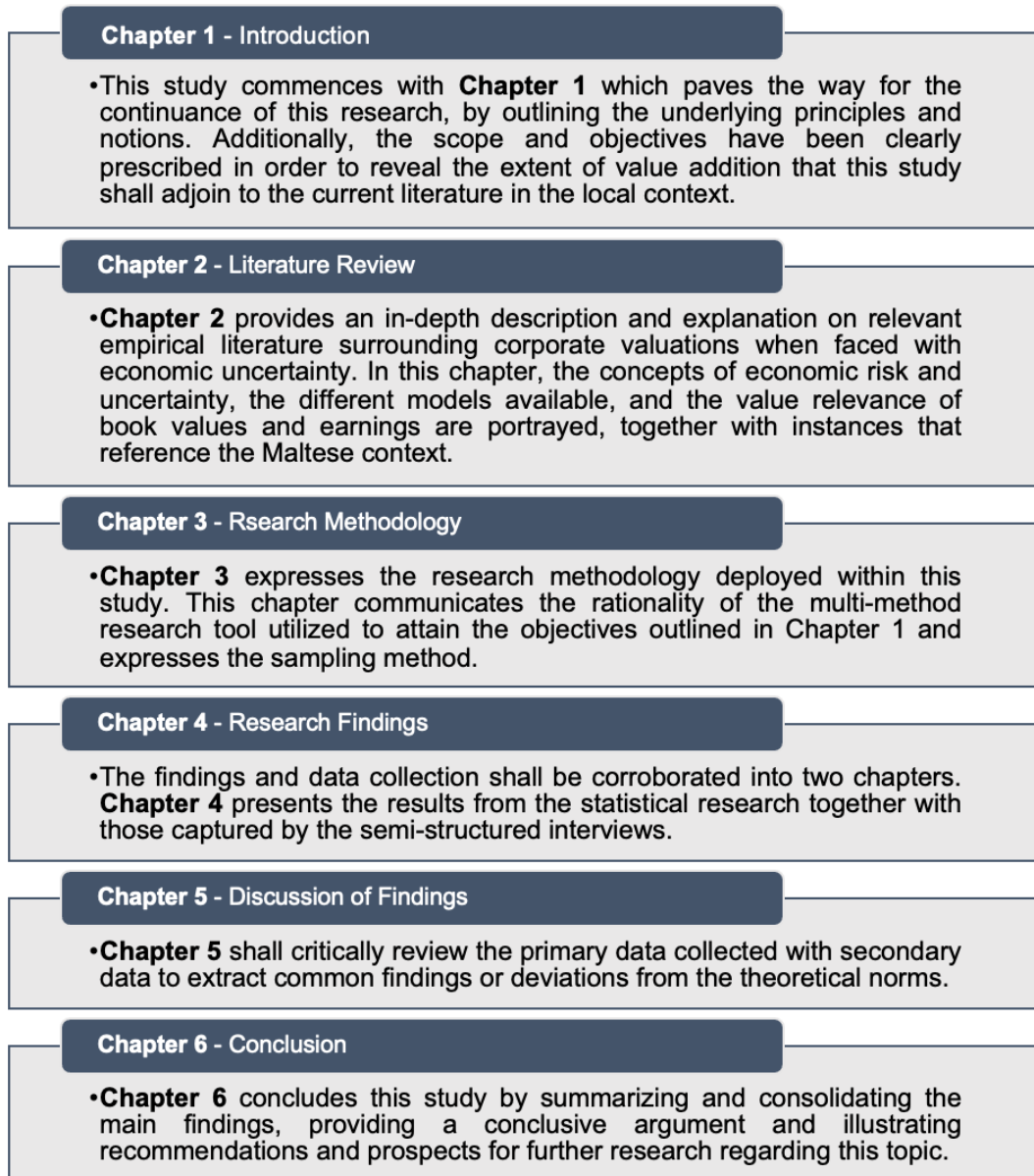


Fig. 1.5: Dissertation Outline

Chapter 2

Literature Review

2.1 Introduction

This chapter synthesises academic papers to explore the research objectives, consolidating empirical literature on the different corporate valuation methods, the value relevance of earnings and book value during crisis and non-crisis periods, and the influence of macroeconomic imbalances on business valuations. The structure of this chapter is outlined in F2.1 below:

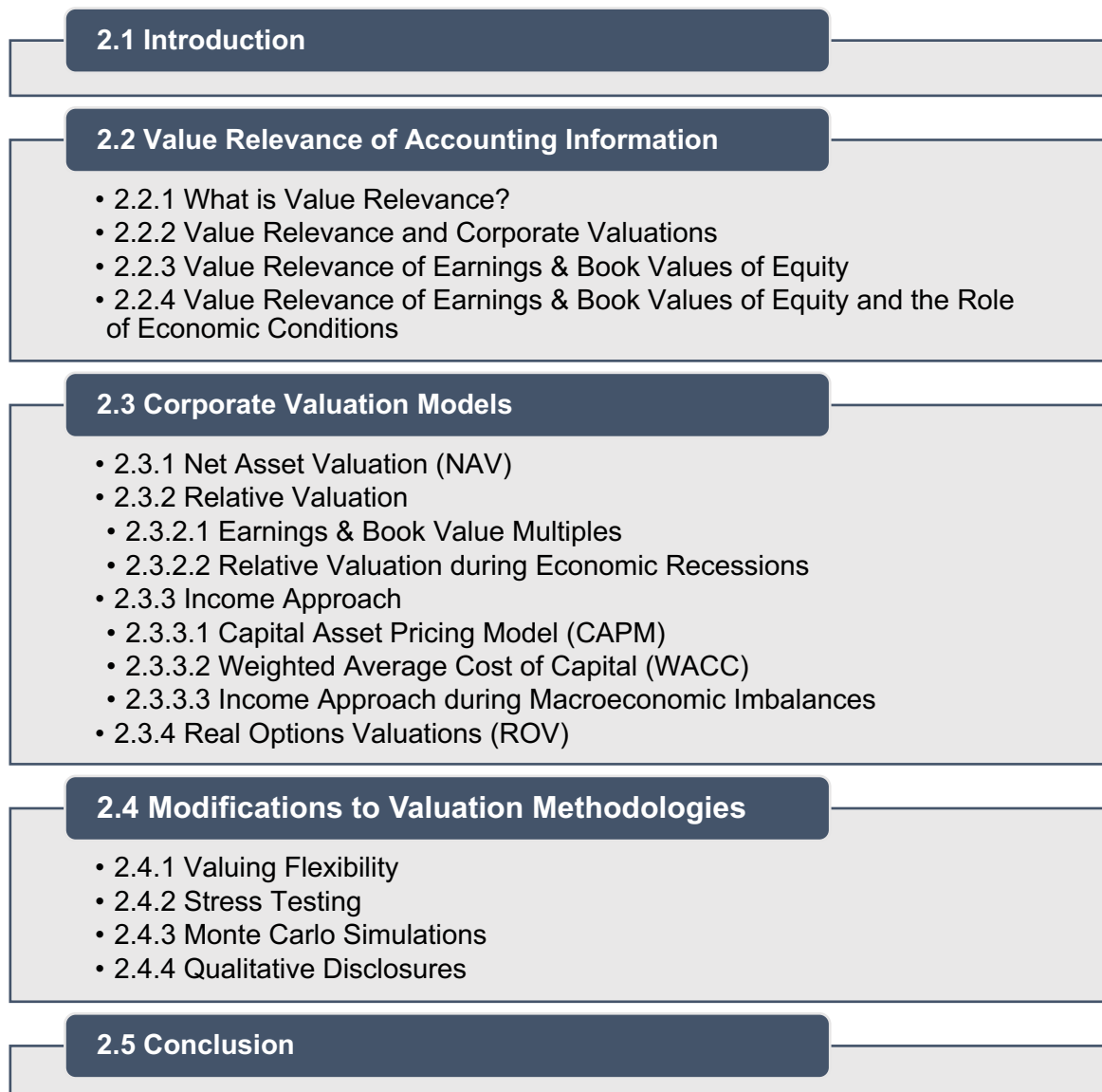


Fig. 2.1 Outline of Chapter 2

2.2 Value Relevance of Accounting Information

2.2.1 What is Value Relevance?

Published financial information should provide substantive data to draw reasonable conclusions regarding the entity's prospects (Cascino, Clatworthy et al. 2014; International Accounting Standards Board [IASB] 2018). Consequently, it should possess the ability to be leveraged as a decision-making tool embodying the concept of decision usefulness through the provision of high-quality accounting data (Beest, Braam et al. 2009). Cascino, Clatworthy Mark et al. (2016) and Camilleri (2020) exhibit the surpassing utility of financial accounting information for assessing firm performance and subsequent valuation for professional investors, both from an international and local perspective⁴.

Paolone (2020) articulated that value relevance theory conceptualises financial information quality, materiality and reliability by correlating accounting figures to stock prices (Brown, Lo et al. 1998). Fundamentally, this philosophy underscores analysts' ability to execute economic decisions by providing valuable corporate data (Negakis, 2005), demanding this academic niche to determine its significance towards investors (Paolone 2020). Consequently, the usefulness of financial statement outputs should be captured by security price movements (Barth, Beaver et al. 2001), exemplifying that value-relevant information displays *"a predicted association with equity market values"* (Barth, Beaver et al. 2001, p.79).

2.2.2 Value Relevance and Corporate Valuation

Value relevance studies aim to ascertain whether specific financial metrics faithfully convey information for stakeholders evaluating a company's stock market equity value (Barth, Beaver et al. 2001). When contemplating the notion

⁴ Vide ApxA2.1

of value relevance, one should ponder “*whether stock investors use accounting numbers as an input for valuation*” (Beisland 2009, p.12). The conceptual association between firm value and contemporaneous accounting information manifests through three interrelated channels: (1) the association between share prices and future expected cash flows outlined in valuation methodologies; (2) the association between those future expected cash flows and future earnings; and (3) the association between future earnings and current earnings (Hail 2013).

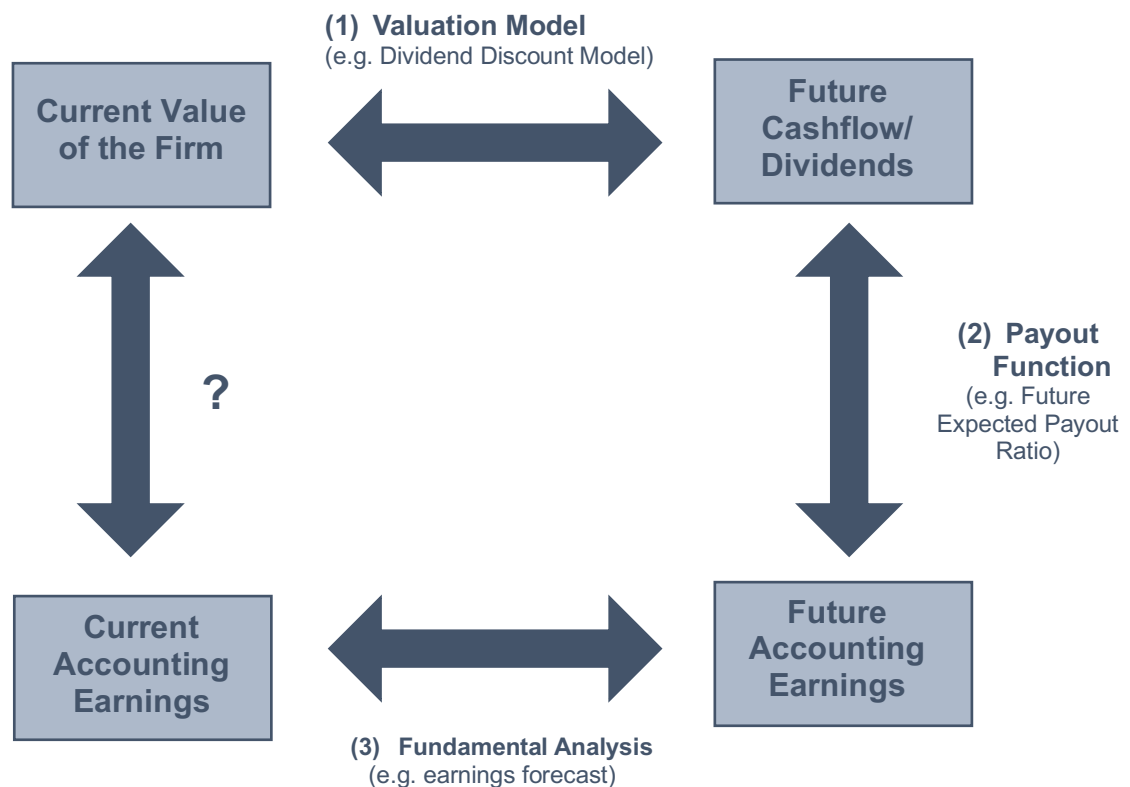


Fig. 2.2: Fundamental Association between Earnings and Firm Value

Source: adapted from Beaver (1998) as cited by Hail (2013) p.332

This underscores the fundamental relationship between accounting information and the work of valuation professionals who rely on these financial metrics to determine firms' worth. In fact, Francis and Schipper (1999) articulate that financial information is value-relevant if it incorporates parameters considered within valuation models.

2.2.3 Value Relevance of Earnings & Book Values

Academically, value relevance research was pioneered by Beaver (1968) and Ball and Brown (1968), uncovering the high responsiveness of common stocks to their associated published earnings while diverging on the time dimension of earnings announcements. Empirical literature evolved to incorporate balance sheet items into stock price information content, presenting statistically robust data and connoting these variables' sensitivity towards investors. This was executed by devising statistical models that tie a firm's market value with their applicable earnings and equity book values (Ohlson 1990; Feltham, Ohlson 1995; Ohlson 1995). While some scholars support the significance of book value (Gee-Junga and Kwon 2009; Mostafa 2016), others uncover contradicting levels of utility (Puspa, Nazaruddin et al. 2023).

Nevertheless, the professional community posits that the relevance of accounting information seems to be declining (Collins, Maydew et al. 1997; Lev, Zarowin 1999). Barth, Li et al. (2023) note a decrease in earnings' value relevance and a rise in equity book values, possibly due to the rise of the new economy and intangible assets (Lev, Zarowin 1999). Henceforth, increased market saturation of technological and service firms, with substantial intangibles, should offset such decline in earnings relevance with equity book values (Francis, Schipper 1999). Moreover, Hayn (1995) and Collins, Pincus et al. (1999) suggest that value irrelevance of earnings also originates from the enhanced levels of market volatility, increasing the number of loss-making firms within the economy.

2.2.4 Value Relevance of Earnings & Book Values and the Role of Economic Conditions

To date, only a few studies have reflected on the influence of the macroeconomic environment on financial statement utility. Nevertheless, the value relevance of accounting information is subject to fluctuations in the prevailing economic context (Beisland, Hamberg 2013; Bilgic, Ho et al. 2018). Aimed at reducing information asymmetry and optimising decision-making systems hindered by a shortfall of resources, investor attention increases amidst macroeconomic uncertainty (Schaberl 2016; Benhabib, Liu et al. 2019) despite the higher relevance of other accounting data (Schaberl 2016). Additionally, a significant association between economic policy uncertainty and financial reporting quality has been evidenced by Bermpei, Kalyvas et al. (2022), pondering declining value relevance due to preparers' discretionary practices.

When focusing on earnings and book values, the academic community has yet to offer a definitive resolution on their value relevance and correlation with macroeconomic deviations (Dunham, Grandstaff 2022). For a sample period between 1970-1987, Johnson (1999) unveils that earnings response coefficients (ERC) and earnings persistence are positively correlated to economic activity levels, conveying that earnings fluctuate with the business cycle and ERCs are higher during economic upturns. Thus, these findings, supported by Kane, Leece et al. (2015), depict that earnings are deemed value-relevant during economic prosperity and less relevant amidst a recessionary environment (Kane, Leece et al. 2015). Conversely, equity book values are perceived as more informative during contractionary economic phases (Kane, Leece et al. 2015) as the Financial Health Hypothesis (FHH) theorises that the relative value relevance of net income and equity book values is determined by the fiscal well-being of the enterprise (Barth, Beaver et al. 1998). Equity book values serve as a value-relevant proxy for financially unstable firms, as they capture better the entity's liquidation values (Barth, Beaver et al. 1998; Collins, Pincus et al. 1999).

Nevertheless, amid heightened market uncertainty, the informational content and explanatory power of book values is superior to earnings for the USA and Japan (Boonlert-U-Thai and Schaberl 2022; Mion, Georgakopoulos et al. 2014). This superiority is derived from the presence of transitory components embedded within current earnings (Collins, Pincus et al. 1999), the incidence of negative earnings (Davis-Friday, Gordon 2002) and the impact posed by earnings management techniques (Feltham, Pae 2000; Habib 2004).

Contrarily, during the 2008-09 Global Financial Crisis, earnings' value relevance increased compared to book values, maintaining the status quo of aiding investors with their investment considerations compared to non-crisis periods (Bepari 2015; Tahat, Alhadab 2017). Superior earnings relevance during contractionary phases has been attributed to preparers' heightened accounting conservatism, enhancing current earnings' persistence (Jenkins, Kane et al. 2009). Additionally, analysts increasingly employ earnings-based benchmarks (Graham, Harvey et al. 2005) to reduce information processing costs caused by information overload. Thus, investors adopt a simpler and cost-effective solution to assess firm performance (Bepari 2015), enhancing the value relevance of earnings during crisis periods.

Moreover, limited academic research has been conducted regarding the pandemic's influence. Belesis, Kampouris et al. (2022) attempted to compile corroborative evidence regarding the shift in value relevance as the pandemic unfolded. The researchers collected data from six European nations from 2010-2020, unearthing that five out of six nations experienced a decrease in the relevance of financial statements⁵. Similarly, a decline in the explanatory power of earnings from 2019 to 2020 highlighted reduced reliance on earnings during the pandemic (Liu, Sun 2022)

⁵ , i.e., earnings and book values

2.3 Corporate Valuation Models

2.3.1 Net Asset Valuation (NAV)

The NAV approach reflects valuers' perception that a third-party buyer shall not remit more than the cost to acquire an asset of equal utility (Fazzini 2018). This model is less commonly applied (Bancel, Mittoo 2014) due to its illusory precision, mismanagement of risks, and inconsistencies with asset and liability market values (Coulon 2021). Nevertheless, it serves as a valuation floor for firms with going-concern risks (Mellen, Evans 2010) and as a means of verification (Buttignon 2020).

2.3.2 Relative Valuation (RV)

The RV model⁶ computes a firm's value based on the price of similar enterprises in an open market (Fazzini 2018). This approach stems from the 'Law of One Price', stating that an asset's value operating in homogeneous markets should be priced equally by the market (Kumar, Sharma 2019)⁷.

Demirakos, Strong et al. (2004) demonstrate that by inspecting 104 analysts' reports, all refer to some form of a multiple of earnings, pondering its widespread adoption. Similar results were corroborated by Erkilet, Janke et al. (2022). Essentially, around 80% of 365 financial analysts employ an RV approach (Bancel, Mittoo 2014). The model's popularity emanates from its conformity with investors' sentiment (Sharma, Prashar 2013), its relative simplicity (Rossi, Forte 2016), the enhanced representation of current market trends, and the method's resource conservation (Damodaran 2006). In fact, Fazzini (2018) infers that the model's attractiveness is derived from its ease of use and objectivity, advocating

⁶ also denoted as the Market-based approach

⁷ Vide ApxA2.2

that its application is “*undeniably easy to handle*” as fewer reliable and available sources are required.

Despite incurring fewer application concerns than other methods (Beltrame, Sclip 2023), the RV model has several shortcomings. Its embedded simplicity may invite inconsistencies caused by improper value-driver adjustments (Holthausen, Zmijewski 2012). Key parameters, such as expansion potential, cash flow generation, and the entity's risks, may be ignored and omitted. Henceforth, mispricing of corporate structures would be probable due to forecasting errors in selecting comparables (Feldman 2005), with data quality being a significant issue when estimating company values using multiples (Caruso 2020). All valuation models embrace a certain degree of uncertainty; thus, the problem lies in the method's failure to capture the assumptions during selection, which allows practitioners' manipulation (Damodaran 2006) and 'ratio shopping' (Lynn 2020). Furthermore, the model's synchronisation with the market landscape may lead to periods of overvaluation or undervaluation of comparable entities, affecting the subject entity's valuation (Damodaran 2006).

Local appraisals employing a market-oriented approach pose significant obstacles due to Malta's size, rendering it arduous to probe for comparable entities with similar attributes (Bonello 2018). Thus, the model's appeal diminishes due to a limitation of scope, yet it continues to be used for triangulation purposes (Bonello 2018).

2.3.2.1 Earnings & Book Value Multiples

Earnings multiples are profitability-driven metrics and are the most utilised by practitioners (Damodaran 2012), with the Price-to-Earnings (PE) measure being analysts' most popular earnings benchmark (Koller, Goedhart et al. 2015). The PE ratio posits that an investor reaps the benefits of future earnings following a share acquisition (Berk, DeMarzo et al. 2022), portraying expected performance

as opposed to the firms' current performance (Pike, Neale 2009). It is derived from the Gordon Growth Model (Constand, Freitas et al. 1991)⁸ and simply connoted as the market price of the share divided by the earnings per share, as shown below:

$$\frac{P}{E} = \frac{\text{Share Price}}{\text{Earnings per share}}$$

Fig. 2.3: Price-Earnings Equation

On the other hand, book value multiples are asset-driven measures that relate the market price of securities with the underlying asset base and are relevant in non-dividend paying firms (Nenkov 2010). The Price-to-Book Value (PBV) ratio is a proxy for a firm's Tobin's Q, which determines future firm investment (Nezlobin, Rajan et al. 2016). It is derived from similar components as the PE ratio⁹ computed by dividing the book value of equity from the market price of a stock, as shown hereunder:

$$\frac{P}{BV} = \frac{\text{Share Price}}{\text{Book Value of Equity}}$$

Fig. 2.4: Price-Book-Value Equation

Despite Bonello (2018) documenting the greatest association between local share prices and multiples valuation, accounting conventions, measurement variances, and management manipulation can distort PE and PBV estimates (Damodaran 2012; Larrabee, Voss 2013).

⁸ Vide ApxA2.3

⁹ Vide ApxA2.3

2.3.2.2 Relative Valuation during Economic Recessions

Valuing entities amidst a downside cyclical phase amplifies the likelihood of valuation inaccuracies when applying an RV model (Tremolizzo 2009), as there exists a risk of encompassing the entire recessionary period within the valuation estimate (Damodaran, 2009). Market fluctuations create an arduous climate for valuers, both in selecting peer groups composed of comparable entities and adjusting for the degree of financial decline between similar firms (Damodaran 2009). This comparability issue is exacerbated due to deteriorating financial statement quality (Bermpei, Kalyvas et al. 2022) and geographical differences (Horvath, Leung 2010). Due to the small inherent market, selecting comparable entities in Malta is fundamentally more tedious (Mizzi 2016; Bonello 2018). However, the latter further insinuates that searching for firms amidst a distressed environment adds another layer of difficulty. Additionally, Damodaran (2009) recounts that while comparable firms within the same industry may reveal similar declining performance trends, the extent varies among entities. The author stresses that analysts must account for these disparities in their valuations, requiring considerable judgment and subjectivity.

Moreover, severe market fluctuations drastically impact selected multiples (Mellen, Evans 2010; Altman, Hotchkiss, et al. 2019). Forward-looking multiples are considered more appropriate than trailing multiples (Altman, Hotchkiss, et al. 2019) despite being imperilled by a pro-cyclicality effect (Rossi, Forte 2016). In fact, the trend fluctuation of the PE ratio mirrors business cycle trends, rendering it ineffective in a negative or low-earnings environment (Rossi, Forte 2016). Higher risk premiums, caused by higher interest rates, and lower earnings quality characterised by higher inflation contribute towards deflating PE ratios (Kane, Marcus et al. 1996). Conversely, PBV is less influenced by cyclical movements as book values are less distorted by macroeconomic conditions (Larrabee, Voss 2013).

2.3.3 Income Approach

The Income Model is based on the economic premise that an asset's intrinsic worth comprises the present value of expected future gains generated from its use, discounted at a rate that demonstrates the level of embedded risk (Mellen, Evans 2010). Mathematically, the value of a firm is a function of the applicable discount rate and the asset's expected cash inflows and terminal value (Fazzini 2018), as shown below:

$$\text{Value of firm} = \sum_{t=1}^n \frac{ECF_t}{(1+i)^t} + \frac{TV}{(1+i)^t}$$

ECF_t = the Expected Cash Flows
 TV = Terminal Value
 i = Discount Rate
 t = the number of years in the future

Fig. 2.5: Income Model Equation

A firm's expected cash flow is defined as the summation of all the sources of cash, less the capital expenditures required to remain in business to expand at the expected rate. The discount rate connotes the rate of return an investor would need to be persuaded to invest in the discounted cash-flow stream (Mercer 2021). Additionally, the terminal value highlights the company's value in the distant future, beyond the forecast period, represented in a single-point estimate (Larrabee, Voss 2013)¹⁰.

According to Imam, Barker et al. (2008), and supported by Bonello (2018), the DCF model emerges as the prevalent technique implemented by analysts, owing to its superior "*theoretical credentials*" (Damodaran 2007) and enhanced reliability, precision, and ability to capture a longer-term horizon. This is despite the relative inaccuracy of the model in explaining local security prices (Bonello,

¹⁰ Vide ApxA2.2

2018). Its theoretical merits, exemplified by its target price accuracy (Erkilet, Janke et al. 2022), exhibit its sophistication as a powerful mechanism for asset valuation and to increasingly scrutinise the ramifications of economic scenarios on an entity's worth (Steiger 2010). Conversely, the author postulates that the method is highly susceptible to manipulation given the relative ease of altering the inputs and providing differing subjective judgements (Steiger, 2010).

2.3.3.1 Capital Asset Pricing Model (CAPM)

Underpinning the DCF approach is the CAPM, a theory that “describes the conditions of equilibrium about returns on the macro level” (De Luca 2018, p.247). It encapsulates the sensitivity of a stock's risk to the overall market by equating the expected return on a given stock to the risk-free rate plus the stock's beta multiplied by the market risk premium as shown below (Koller, Goedhart et al. 2015):

$$E(R)_j = R_f + \beta(R_m - R_f)$$

$E(R)_j$	= Return on the Stock
R_f	= Risk-Free Rate
β	= Beta Coefficient
R_m	= Return on the market

Fig. 2.6: CAPM Equation

The beta coefficient captures the marginal risk of incrementally increasing the diversified portfolio by a single security (Fernandez 2002), which serves as a risk indicator (Pike, Neale 2009). Given that investors diversify asset holdings to minimise unsystematic risks, a portfolio of securities is exposed only to systematic risk (Berk, DeMarzo et al. 2022). Systematic risks encompass an array of economic value drivers, such as inflation, GDP and industrial forecasts that could alter a given market portfolio's expected returns (Arnold 2005).

2.3.3.2 Weighted Average Cost of Capital (WACC)

All income models depend on a discount rate that accounts for the entity's risks and historical volatility (Fernandez 2002). It is constructed from external factors, including economic and industry landscapes, the returns from substitute investments, and internal factors, including financial, operational and methodological risks (Larrabee, Voss 2013). The WACC captures investors' opportunity costs, estimating the expected returns to all equity and debt holders for an applicable investment with similar risks (Koller, Goedhart et al. 2015). It is partly derived from the CAPM and encapsulates the default spread, the risk-free rate and the tax rate (Fazzini, 2018), as shown below:

$$WACC = k_e \left(\frac{E}{D + E} \right) + k_d (1 - \tau) \left(\frac{D}{D + E} \right)$$

k_e	= Cost of Equity
k_d	= Cost of Debt
τ	= Tax Shield
D	= amount of Debt financing
E	= amount of Equity financing

Fig. 2.7: WACC Equation

Besides indicating the blended opportunity costs of all funding sources, the WACC calculation offers an intuitive way to estimate the underlying risks of a firm with long-term debt expected to remain (Caruso 2020). Several methodological issues comprise the WACC estimation, including neglecting risk variability across a firm's divisions and being inflexible to annual company capital structure changes (Mitra 2011).

Locally, Bonello (2018) uncovers that analysts and finance managers often use the WACC approach in DCF techniques, though experts' opinions on capital structure vary.

2.3.3.3 Income Approach during Macroeconomic Imbalances

Despite economic nuisances embedded within traditional DCF models, executing such an approach without proper modifications for exogenous shocks would:

“consistently underestimate the expected future cash flow stream and as a result underestimate both value and the discount rate.”

(Booth 2003, p.506)

Damodaran (2005b) outlines that risk exposure is isolated into the discount rate analysis, as the estimation of free cash flows is approximated from the most rational assumptions. However, inconsistencies in the assumptions regarding the general economic outlook applied to estimate free cash flows skew these projections and add a further layer of subjectivity (Massari, Gianfrate et al. 2016).

Discount rates are naturally associated with local and national economic performance and fluctuate accordingly (Muir, 2021), with premiums added to compensate for augmented investment ambiguity (Carmichael, 2017). This premium is constructed from the higher risk of equity financing, higher liquidity and credit risk of debt financing (Stubelj, Primož et al. 2014). Research by Ke (2022) and Hasan, Politsidis et al. (2021) support this by uncovering that both the cost of equity and the cost of debt, respectively, rose as the pandemic unfolded.

As part of the CAPM, the Beta coefficient is depicted to be inappropriate to be uniformly applied to both healthy and distressed companies, as it implies peculiar risk patterns for the latter firms, thus suggesting that economic shocks entail an alteration to such coefficient (Meitner, Streitferdt, 2014). Studies exhibit that the size of betas inflates during the crisis period, compared to the pre-crisis period (Alexandridis, Hasan 2020), and sudden shocks deteriorate its accuracy (Liu, Xu 2021). Yet, in practice, the extent and magnitude of rate and beta adjustments are affected by analysts on an arbitrary basis rather than on pure economic data (Carmichael 2017).

Empirical evidence postulates a knowledge gap on the applicability of the DCF approach in volatile markets. While some studies portray a rise in DCF usage (Demirakos, Strong et al. 2010; Huang, Tan et al. 2023), factors such as earnings quality and asset riskiness play critical roles (Larrabee, Voss 2013). Investors seek cash flow information instead of accrual-based earnings when the latter's probability of containing material misstatements is high (DeFond, Hung 2003). In contrast, discount rate analysis is more informative for investors to evaluate risky firms (Huang, Tan et al. 2023). Conversely, the potential lack of informative data on cash flows, due to their nature as being naive extensions of earnings forecasts and the incremental effort required to extract accurate DCF-based valuations contradict an increased inclination to implement such method in times of economic ambiguity (Huang, Tan et al. 2023).

2.3.4 Real Options Valuations (ROV)

The Real Options Approach was coined by Myers (1977), which separates corporate estates into assets in place and real options. The latter is deemed to be intrinsically analogous to financial options (Damodaran 2005a), drawing on similar investment opportunities (Myers 1977). These real options refer to the inputs that outline management's strategic decision-making processes (Amram, Kulatilaka 2000), encapsulating their flexibility through the organisations' core competencies and abilities (Allen, Bhattacharya et al. 2008). Thus, a ROA offers an option-based view of firms' strategic alternatives (Savolainen 2016).

ROV evolved from the notion that conventional models, such as the DCF model, fail to secure the embedded synergies ex-post an investment decision (Ragozzino, Reuer et al. 2016) such that assets are undervalued due to the realistic opportunities attached to different investment strategies (Peters 2016; Trigeorgis, Reuer 2017). Consequently, besides an enterprise's expected risk-adjusted earnings capabilities, investment strategies contain diverse

opportunities, such as the options to defer, expand or abandon¹¹ (DePamphilis, 2015). Henceforth, a firm's assets in place are not substantial enough to capture the intrinsic values of securities, demonstrating that analysts incorporate real options in their investment analysis (De Andrés-Alonso, Azofra-Palenzuela et al. 2006).

Rigopoulos (2015) notes that theorists accentuate its superiority against the DCF, pondering it as a revolutionary approach that shall dethrone traditional models' legacy. Nevertheless, classical models should not be shouldered in exchange for a ROA, but the novel method should complement traditional methodologies in business valuations (Larrabee, Voss 2013; Emott 2011). Emott (2011) expounds on how this approach applies elements of the DCF to determine expected returns of exercising options, linking the two frameworks.

Despite scholars acknowledging the notion that valuing managerial flexibility mimics realistic investment decisions (Damodaran 2005a), the method is perceived as too complex (Mathews, Datar et al. 2007) and theoretical as embedded options cannot be estimated reliably (Damodaran 2005a). Thus, it often emphasises perfection, detaching itself from economic reality (Triantis 2005). Additionally, implementing a ROA is problematic due to firms' inadequate information base (Busby, Pitts 1997; Triantis 2005).

2.4. Modifications to Valuation Methodologies

2.4.1 Valuing Flexibility

By augmenting upside potential and mitigating downside losses, management flexibility improves an investment opportunity's value (Pivorienė 2015). This stems from the organisation's ability to react to new external environments,

¹¹ Vide ApxA2.4

commit resources, and act promptly (Tamayo-Torres, Ruiz-Moreno et al. 2010). The value of flexibility is highly associated with uncertainty, including economic ambiguity, as advocated by Lee, Makhija et al. (2008) and time for management's reaction (Koller, Goedhart et al. 2015), as shown in Fig. 2.8:

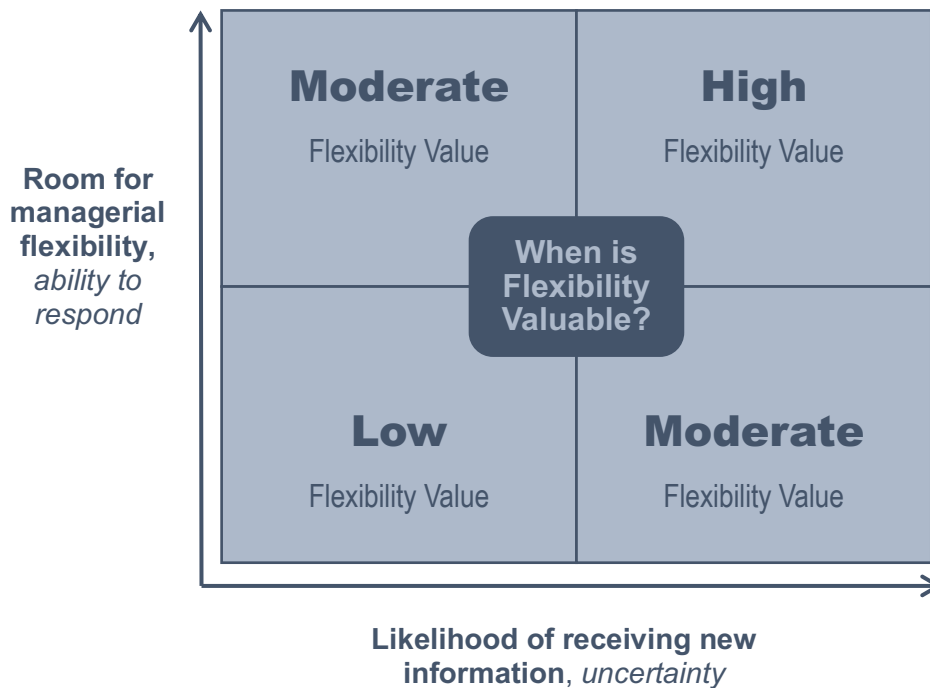


Fig. 2.8: When is Flexibility Valuable?

Source: adapted from Koller, Goedhart et al. (2015, p.747)

One way to estimate the intrinsic worth of strategic adaptability is through the ROA, which has been regarded as an alternative method to “*effectively capture management flexibility to respond to future uncertain developments*” (Gennady 2008). The model could be employed by adjoining the value of embedded options to the value computed using traditional approaches (Malmcrona, Andersson 2018). The Black-Scholes is a mathematical approach embraced within the ROA computed real options through their similarity with financial options (DePamphilis 2015). Furthermore, flexibility could be embedded through a Decision Tree Analysis (DTA). This enables the recognition of interdependencies of decisions

by analysing a series of complex sequential investment decisions to be made over time (De Reyck, Degraeve et al. 2008).

However, caution must be applied, as higher interest rates enhance the value of options by augmenting the time value of deferring an investment option (Koller, Goedhart et al. 2015). However, both uncertainty and changes to interest rates facilitate shifts in the projected cash flows of the investment, and therefore, a reassessment must occur (Koller, Goedhart et al. 2015).

2.4.2 Stress Testing

Comprehensive business models combine known and unknowns (Diebold, Doherty et al. 2010). Thus, incorporating stress tests, such as scenario analysis and sensitivity testing, is pivotal to assessing its resilience in the face of economic deviations (Fairhurst 2015). Sensitivity analysis indicates the variance in the financial model's output caused by altering one input criterion (Jovanović 1999), showcasing its responsiveness to the modified variable (Fairhurst 2015). The criticality of this approach stems from selecting key input variables that exert a considerable impact on the entity (Massari, Gianfrate et al. 2016).

Sensitivity and scenario analysis share comparable objectives (Hüttche, Schmid 2024), being described as *“a slight variation of the same thing”* (Fairhurst 2015, p.344), distinguished by their relative complexities. Sensitivity analysis only focuses on a single starting value, while scenario analysis accumulates a wide array of parameters and alters the amount of each input value for differing future states (Samonas 2015). This risk-oriented tool has also been considered an instrument for opening new doors about an entity's future prospects (Massari, Gianfrate et al. 2016), delineating plausible viewpoints of subsequent events impacting the firm (Samonas, 2015). Essentially, the technique embodies future uncertainties *“through the number of possible scenarios within the field of probables”* (Godet 2000, p.7), which such ambiguity may manifest from

macroeconomic and industry-wide shocks (Hüttche, Schmid 2024; Joos, Piotroski et al. 2016). Consequently, scenario analysis permits analysts to comprehend the risks embedded within the valuation task, providing insights into variances within valuation figures and the correlation between final results and underlying assumptions in the model (Massari, Gianfrate et al. 2016).

The simplest scenario-based approach conceptually estimates risky assets' best-case, base-case and worst-case circumstances (Damodaran, 2012). Besides, as single-variable scenarios provide a limited description of future prospects, a combination of scenarios may provide more insightful data, thus suggesting a multi-scenario approach (Massari, Gianfrate et al. 2016) as shown in Fig. 2.6:

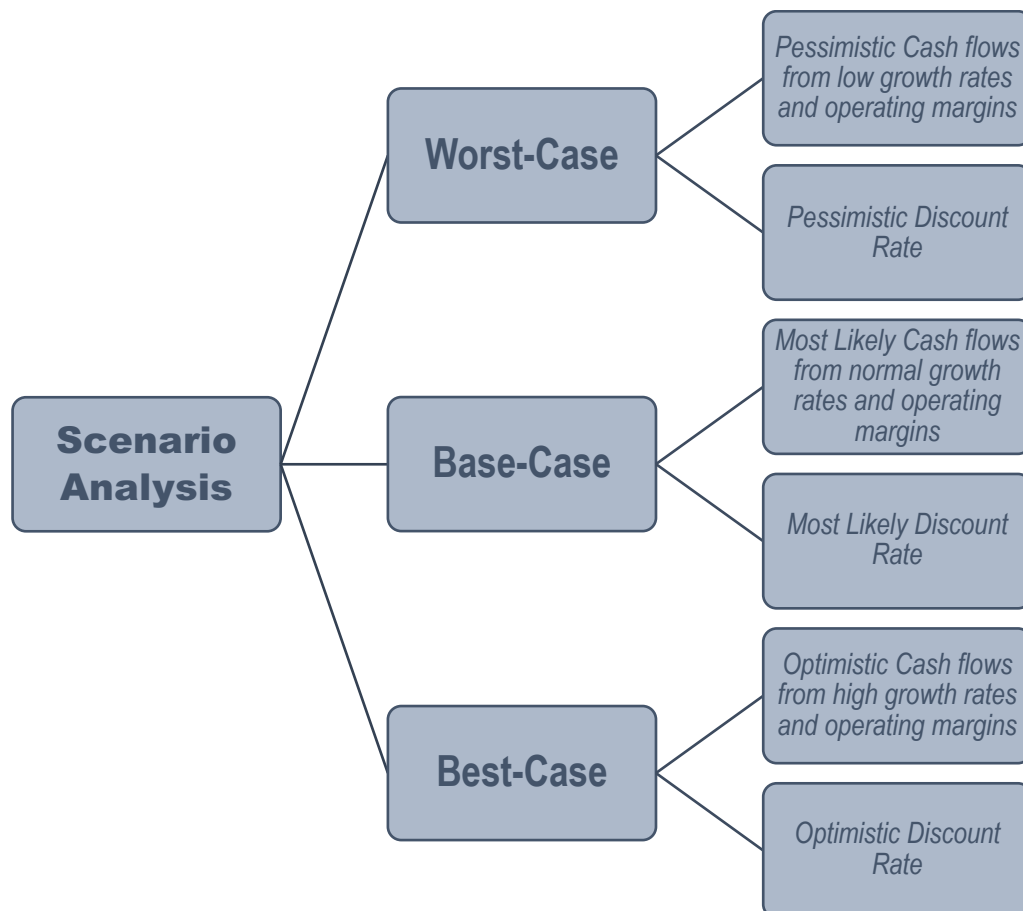


Fig. 2.6: Structure of a Scenario Analysis

Source: as adapted from Damodaran (2012)

The growing prevalence of scenario analysis in corporate valuations (Arnold, Hatzopoulos 2000; Hüttche, Schmid 2024), is credited to its manifestation of substantial benefits in the valuation process (Massari, Gianfrate et al. 2016). The model's ease of use, informativeness, and clarity for stakeholders contribute to its popularity, as it provides a clear overview of potential uncertainties affecting entity value in appraisals (Massari, Gianfrate et al. 2016). The approach resembles a risk indicator device (Damodaran, 2012), fostering innovative thinking (Hoffmann 2017) by estimating plausible minimum and maximum values. Hence, sell-side analysts would be intrigued to comprehend the lowest and highest possible value to establish their negotiation terms, while buy-side analysts require the worst outcome to appraise the investment outlay (Massari, Gianfrate et al. 2016).

Despite its simplicity, the analysis heavily relies on subjective considerations established beforehand (Godet 2000), and thus, any incorrect input assumptions would render the exercise inadequate (Damodaran 2012). Additionally, the risk of adding too many scenarios is high, which could reduce the traceability of these situations due to a saturated combination of endeavours (Damodaran 2012). An optimal figure to avoid distortions to the model's credibility has been recommended towards applying 2 to 3 scenarios (Massari, Gianfrate et al. 2016). The relatability of the included variable may aid in restraining the number of alternatives, but doing so hinders valuation accuracy as continuous risks and scenarios would need to be discretised into particular classifications (Damodaran 2012).

2.4.3 Monte Carlo Simulations

Abrams (2010) describes the Monte Carlo approach as a concept that embodies the idea of crafting artificial future states by generating a high volume of outcomes selected from *“a user-predefined probability distribution for uncertain variables”*

(Mun, Pomeroy, 2010, p.82) and analysing their attributes. The Monte Carlo approach has amassed heightened interest within corporate valuations (KPMG 2024), as its features aid in eradicating the complications encountered when factoring into valuations, economic value drivers, predominantly those generated by the market models (Massari, Gianfrate et al. 2016). Given that these value drivers are inherently volatile and driven by randomness, more complex statistical estimation methods offer an improvement compared to conventional methods (Nowak, Hnilica 2012). Thus, a simulation-based valuation¹² is far more applicable and informative to the users of valuation results (Massari, Gianfrate et al. 2016).

Fundamentally, traditional methods inadequately represent real-world uncertainty, relying solely on normal stochastic single-point estimates amidst a broader probability set (Massari, Gianfrate et al. 2016). Additionally, the CAPM is implied by Szumilo, Gantenbein et al. (2016) to inadequately incorporate idiosyncratic risks due to its poor diversification. Hence, a simulation-oriented approach alleviates this pitfall through the provision of supplementary data regarding the risk profile of the entity's value (García-Sánchez, Preve et al. 2010), delineating enhanced information for decision-making through the dispersion range of key input parameters (García-Sánchez, Preve et al. 2010; Hüttche, Schmid 2024). Besides, this revelation of more information has accumulated criticism over the years, primarily caused by fear of the 'garbage in, garbage out' principle (Damodaran 2012). This highlights the need for probability distributions to capture the movements in the input parameters for the model to be valuable (Damodaran 2012).

Nonetheless, this stochastic perspective reduces appraisals' subjectivity by eradicating ad hoc discount rates and biased expected cash flows and incorporating firm-specific risks (García-Sánchez, Preve et al. 2010). However, issues with its complexity, demand for high-quality data (KPMG 2024),

¹² Vide ApxA2.5

interpretation (Nowak, Hnilica 2012) and communication (KPMG 2024) render it unfavored (Ernst 2022). Other shortcomings relate mainly to statistical issues, including the ability to match distributions with the underlying variable, the shifting correlation between variables and the effect of non-stationary distributions (Damodaran, 2012).

2.4.4 Qualitative Disclosures

Information constraints and bounded rationality diminish investors' ability to seek optimal portfolios (Weber, Siebenmorgen et al. 2005). Hence, the International Valuation Standards Council (IVSC)¹³ requires that valuation reports allow non-experts to understand essential parts of the estimation process (IVSC, 2022). Both Thorne (2021) and the IVSC (2022) reveal that expressing solely quantitative estimates of market variability may elicit a false precision of industry uncertainty and the omission of whether such uncertainty is materially based on statistical inferences. Thus,

“..purely numeric illustration will only confirm uncertainty, not explain it, and will not provide the recipient with a better understanding of the valuation”.

Thorne (2021, p.507)

Therefore, quantitative estimates must be accompanied by narrative explanations related to the nature and cause of any uncertainty unfolding (IVSC 2020). Valuers must communicate the source of market disruption and its influence on the variability of the value computed, including an uncertainty clause (RICS 2020). Consequently, the more relevant and transparent the verbal communication inscribed within the report is, the more valuable it is to the recipient (Bywater 2011), contributing towards diminishing the concerns prescribed by investors relating to the faithful representation of data recorded in reports (Mehnaz, Rahman et al. 2022). Transparency enhances communication

¹³ Through its valuation standards

effectiveness and strengthens advisor-client relationships (Sharma, Patterson 1999).

Nonetheless, it is imperative to exercise caution as markets react rapidly. Uncertainty clauses should be revised when temporary economic anomalies evolve into long-term structural deficiencies (Thorne 2021). Thus, analysts must execute periodic assessments of the macroeconomic landscape.

2.5. Conclusion

This chapter synthesised an array of literature to describe different aspects of the prescribed objectives. The subsequent chapter will describe the research methodology adopted.

Chapter 3

Research Methodology

3.1 Introduction

This chapter describes this study's research process, the methodologies applied and their rationale for achieving the research objectives. This chapter is structured according to Fig. 3.1 below:



Fig. 3.1: Outline of Chapter 3

3.2 Preliminary Research

Initially, existing literature, consisting of peer-reviewed academic papers, books, and dissertations held by the University of Malta (UoM), was scrutinised. This enabled the researcher to comprehend the research area and identify local and international gaps within the literature on which this study was framed. Also, it facilitated the selection of the optimal methodology to be employed and the recognition of significant caveats within the research process.

3.3 Research Design

Quantitative and qualitative research illustrates a spectrum's extremes (Creswell 2014), with quantitative research rooted in the positivistic philosophy (Slevitch 2011), concentrating on examining correlations between variables described through numerical data and analysed using statistical and graphical representations (Saunders, Lewis et al. 2023). This method employs deductive reasoning, focusing on outcomes and extrapolating general conclusions to practical scenarios (Yilmaz 2013). Conversely, a qualitative approach draws on interpretivism (Slevitch 2011), centering on apprehending participants' experiences based on their self-reflection on given phenomena (Yilmaz 2013). The findings are prescribed through words and images to formulate conceptual frameworks and theoretical advancements (Saunders, Lewis et al. 2023). This requires an in-depth analysis of participants' viewpoints on the mechanics of the world around them and the value attributed to these experiences (Aspers, Corte 2019).

Mixed methods research capitalises on the practical paradigms of both perspectives, including data collection techniques and analysis, within the same study (Saunders, Lewis et al. 2023). This approach offsets their weaknesses¹⁴,

¹⁴ Quantitative – omitting perceptions (Choy, 2014); Qualitative - lack of objective data verification and the shift of data control (ACAP 2012; Yauch, Steudel 2003)

providing a broader perspective and enabling a more comprehensive interpretation of the phenomena than either technique alone could achieve (Cameron 2011). Triangulation lowers research bias, enabling more valid and reliable outcomes (D O'Gorman, MacIntosh 2015).

Consequently, as the nature of the research question governs approach selection (Fetters, Curry et al. 2013), this study employs a concurrent mixed-method approach to conform with a pragmatic research philosophy. This approach “*offers an alternative, flexible, and more reflexive guide to research design*” (Yvonne Feilzer 2010, p.7), offering valuable insights that inform future practice (Saunders, Lewis et al. 2023). This philosophy is applied throughout, as shown in Table 3.1:

Aspect	With respect to pragmatism	Application to the study
Ontology (<i>nature of reality and being</i>)	Complex, rich, external 'Reality' is the practical consequences of ideas Flux of processes, experiences and practices	Economic crises are complex and dynamic, with multiple dimensions influencing the valuation practice. The reality of valuing assets could be both objective and subjective.
Epistemology (<i>what constitutes acceptable knowledge</i>)	Practical meaning of knowledge in specific contexts 'True' theories and knowledge are those that enable successful action Focus on problems, practices and relevance Problem solving and informed future practice as contribution	Knowledge was assembled through statistical testing and personal views regarding the theoretical validity of valuation models in times of economic shock. An iterative process was employed when analysing responses, shifting from theory and practice. Knowledge was accumulated from an interdisciplinary approach drawing on the economics, accounting finance and risk management disciplines.
Axiology (<i>role of values</i>)	Value-driven research Research initiated and sustained by researcher's doubts and beliefs Researcher reflexive	The researcher refrained from compromising objectivity to ensure that results are valuable to be expended in real-world scenarios. But the researcher's beliefs from theory and practice shape the final conclusions.

Table 3.1: Application of Pragmatism in the Study
Source: adapted from Saunders, Lewis et al. (2023, p.147)

3.4 Research Instrument

Semi-structured interviews¹⁵ and regression analysis, respectively, were determined to be suitable tools for the qualitative and quantitative components.

3.4.1 Semi-Structured Interviews

Semi-structured interviews incorporate elements of both structured and unstructured exchanges within the data collection phase (D O'Gorman, MacIntosh 2015). The perceived adequacy of such interviews necessitates amalgamating main questions, follow-ups and probes (Rubin, Rubin 2004). The former should combine open-ended questions, allowing participants to elicit their experiences and theoretically driven queries, providing a sense of direction and guidance from existing empirical literature (Galletta 2013). This composition allows flexibility within the interview process, with new questions arising due to the responses given (Ruslin et al., 2022). Table 3.2 outlines the separation of the interview questions according to their relevant theme:

Section Heading	Section Purpose	Questions		
		Interview Schedule		
		A	B	C
Value Relevance	Questions on the usefulness of accounting information in corporate valuations emphasizing any changes that occurred between earnings and book values amidst the pandemic	A1. – A5.	A1. – A3.	

¹⁵ Vide ApxA3.5-A3.7

Overview of Valuation Models	Questions on the common practices employed locally and their benefits and challenges	B6. – B7.	B4. – B5.	A1. – A4.
Impact of Pandemic	Questions on the influence the induced economic recession had on the valuation practice and employment of the conventional valuation methods	C8. – C17.	C6. – C13.	C5. – C11.
Supplementary Tools	Questions on the use of ancillary techniques to mitigate valuation errors and substantiate the intrinsic value computed	D18 – D23.	D14 – D20.	D12 – D18.

Table 3.2: Outline of Interview Schedule

3.4.2 Regression Analysis

As the value relevance component¹⁶ attempts to identify a statistical correlation between accounting fundamentals and company value (Ogeh Fiador 2013), a regression analysis is deemed the standard practice (Beisland 2009). It is defined as:

“the study of the relationship between one variable called the explained, or dependent, variable and one or more other variables called independent, or explanatory, variables.”

(Gujarati, Porter 2010, p.21)

The relationships between two or more parameters are identified by estimating the explanatory variables' coefficient and deducing the association's relative

¹⁶ Vide Sn1.5

strength (Adams, Khan et al. 2014). This analysis could be differentiated further, encompassing a simple and a multiple regression model with the primary distinction reflecting the number of predictors describing changes in the dependent parameter (Das 2019). A multiple regression model has been deemed adequate for this research, as more than one parameter is incorporated, consistent with Ohlson's (1995) valuation framework.

3.5 Research Participants & Sampling

A non-probability method¹⁷, known as purposive or judgmental sampling, was utilised to address this study's quantitative and qualitative areas. By selecting “a more representative sample by using (their) judgement” (Bajpai 2011, p.105), the researcher must critically appraise participants by concentrating on the influence of including or excluding their perspectives from the study (Saunders, Lewis et al. 2023). Henceforth, to draw on the experiences encountered, a multitude of perspectives were selected from valuation experts, stockbrokers and financial managers, ensuring a more holistic view of the research topic. Anonymised with codes, the participants are delineated in Table 3.3, including their occupations, to illustrate the breadth of perceptions.

Type of Interviewees	No	Respondent Code	Occupation	Firm
Type A ¹⁸	1	V01	Manager	<i>Big 4 Audit Firm</i>
	2	V02	Partner	<i>Big 4 Audit Firm</i>
	3	V03	Senior Manager	<i>Big 4 Audit Firm</i>
	4	V04	Partner	<i>Big 4 Audit Firm</i>
	5	V05	Partner	<i>Mid-tier Audit Firm</i>
	6	V06	Partner	<i>Mid-tier Audit Firm</i>

¹⁷ Non-probability sampling entails selecting a sample based on specific attributes or distinguishing features pertinent to the study, rendering it uncertain whether the research results accurately represent the entire population (D O'Gorman, MacIntosh 2015).

¹⁸ Vide ApxA3.6

	7	V07	Partner	<i>Mid-tier Audit Firm</i>
	8	V08	Partner	<i>Small Audit Firm</i>
Type B¹⁹	9	S09	Financial Analyst	<i>Stockbroker</i>
	10	S10	Head of Capital Markets	<i>Stockbroker</i>
Type C²⁰	11	F11	Chief Financial Officer (CFO)	<i>Maltese Listed Entity</i>
	12	F12	Chief Financial Officer (CFO)	<i>Maltese Listed Entity</i>

Table 3.3: Research Participants

The selection of companies placed on the MSE Official List between 2013-2021 was elected using a judgmental sampling process. No additional criteria were adopted to ensure relevancy and avoid distorting the data. Simultaneously, interim results were excluded for possible undesirable biases²¹. The companies employed within this quantitative aspect are summarised below:

No	Listed Entity	Trading Symbol	Sector	Market Capitalization As at Mar 2024
1	Bank of Valletta plc	BOV	Financial Services	€764,843,000
2	HSBC pls	HSB	Financial Services	€464,795,000
3	Lombard Bank plc	LOM	Financial Services	€131,387,000
4	Malta International Airport plc	MIA	Tourism	€764,445,000
5	International Hotel Investments plc	IHI	Tourism	€284,446,000
6	Simonds Farsons Cisk plc	SFC	Food & Beverages	€252,000,000
7	Plaza Centres pls	PZC	Commercial Property	€15,805,000
8	Tigne plc	TML	Commercial Property	€46,248,000
9	MIDI plc	MDI	Property Development	€64,248,000

¹⁹ Vide ApxA3.7

²⁰ Vide ApxA3.8

²¹ Oberholster, Zulu et al. (2017) state that book values are value relevant for interim stock reactions, while earnings are not. Thus, incorporating intermediate results would bias the model.

10	Mapfre Middlesea plc	MMS	Financial Services	€115,000,000
11	Malita Investments plc	MLT	Commercial Property	€74,054,000
12	Loqus Holdings plc	LQS	Technology	€6,380,000
13	Maltapost plc	MTP	Postal	€36,431,000
14	Grand Harbour Marina plc	GHM	Maritime	€18,000,000
15	GO plc	GO	Communication	€314,063,000
16	RS2 Software plc	RS2	Technology	€268,615,000
17	MedservRegis plc	MDS	Oil and Gas	€75,212,000
18	Fimbank plc	FIM	Financial Services	€114,938,000
Total Market Capitalization of Entities Included				€3,810,910,000
Total Market Capitalization as March 2024				€4,416,456,095
Market Share [%]				86.2%

Table 3.4: Description of Sample for Quantitative Segment

3.6 Data Collection

The robustness of the compiled data and its capacity to fulfil the research aims is contingent on the effectiveness of the researcher's data collection strategy (Adams, Khan et al. 2014).

3.6.1 Primary Data Collection

Primary data was assembled from the virtual or face-to-face semi-structured interviews, depending on the interviewee's preference. The researcher strived to conduct most interviews physically to better connect with the participants and facilitate the efficacy of the interview process.

3.6.2 Secondary Data Collection

Secondary data from various credible sources, including peer-reviewed academic papers, books and UoM dissertations, shaped the literature supporting this research and interview schedule and jointly formed the foundation of the quantitative component. Raw data from publicly available information on the Malta Stock Exchange (MSE) website was processed and organised to undertake the regression analysis.

Stock prices were sourced from the closing prices of the MSE's daily trading summaries. Primarily, estimating the market value of equity per share (MVEPS) necessitates determining the date to be applied (Ofor 2022). Following Easton and Harris (1991), earnings were employed as an explanatory variable upon the start of the stock return period, such that share prices coincided with the end of the fiscal year-end, augmented by three months. This accommodates a lag period for stock reactions and report announcements, consistent with Dimitrios, Anestis et al. (2010), Bepari (2015), Kane, Leece et al. (2015) and Barth, Li et al. (2023).

Data observations on the earnings per share (EPS) and book value of equity per share (BVPS) figures were extracted from publicly available sources, specifically the issued annual reports on the MLE's website. The EPS for each successive year was computed using the equation highlighted in Fig. 3.2 below. Although EPS is disseminated in annual reports and governed by IAS33, the figure was recalculated to ensure preciseness, free from any rounding issues.

$$\text{Earnings per Share} = \frac{\text{Earnings after tax attributable to equity holders}}{\text{Weighted Average number of Outstanding Shares}}$$

Fig. 3.2: Formula for EPS

Furthermore, BVPS was estimated using the formula in Fig. 3.3, similar to that applied by Dimitrios, Anestis et al. (2010), as shown below:

$$\text{Book Value of Equity per Share} = \frac{\text{Book Value of Equity}^{22}}{\text{Weighted Average number of Outstanding Shares}}$$

Fig. 3.3: Formula for BVPS

Finally, the pre-pandemic and pandemic cut-off date was connoted as financial years ending in 2020 and 2021, similar to when health and economic policy were highly volatile due to local recurring lockdown announcements.

3.7 Regression Analysis

3.7.1 Hypothesis Development

Developing the research hypothesis is integral to the study's overarching aim. It requires thoroughly refining the research problem by examining empirical literature (Toledo, Flikkema et al. 2011), which could be tested and validated (Bulajic, Stamatovic et al. 2012). Building upon the insights gleaned from synthesised academic literature set out in Chapter 2²³, the following hypotheses were developed:

H₁: The Value Relevance of Earnings decreases during the Pandemic.

H₂: The Value Relevance of the Book Value of Equity increases during the Pandemic.

²² Equity was computed net of Non-Controlling Interest (NCI)

²³ Vide Sn2.2.4

3.7.2 Model Specification

Undertaking a regression analysis necessitates selecting the correct model, as misspecified models result in the researcher expressing sub-optimal conclusions (Beisland 2009), giving rise to a specification error (Gujarati, Porter 2010). Nevertheless, one may never estimate precisely the true model; a sceptic mindset enables a researcher to define a “*reasonably accurate representation of reality*” (Gujarati, Porter 2010, p.219). The two main doctrines in value relevance research relate to Price and Return Models (Kothari, Zimmerman 1995; Paolone 2020).

Price models determine whether there is a correlation between the levels of securities prices and levels of firm-specific attributes (Landsman, Magliolo 1988). In return models, emphasis is placed on security returns (Paolone 2020), which examine the association between annual stock returns and changes in accounting variables (Easton, Harris 1991). A sensible evaluation of both models is required to capitalise on their econometric strengths and mitigate their weaknesses (Beisland 2009). The choice between the two specifications is condensed between the nature of the econometric properties of the data and the economic model of equilibrium (Landsman, Magliolo 1988; Beisland 2009).

Accordingly, price models offer impartial estimators, while return models align better with statistical assumptions, including regression analyses (Beisland 2009). Conversely, issues related to scale and transitory earnings may lead to biased estimates for price and return models, respectively (Ota 2003). Regardless, the study’s economic motivation, categorised into relative, incremental and marginal association studies (Tahat, Alhadab 2017), becomes the predicament within the selection criteria (Beisland 2009). Ultimately, price models are interested in determining what is reflected in firm value (Barth, Beaver et al. 2001), representing a relative association approach (Holthausen, Watts

2001). Thus, as this study aims to investigate the relative correlation of EPS and BVPS during two specific periods rather than the aspect of value creation, a price model has been determined to be a suitable specification for the regression model. Hence, the following regressions were estimated:

$$PRICE_{it} = \beta_0 + \beta_1 BVPS_{it} + \beta_2 EPS_{it} + \mu_{it} \quad (1)$$

Where:

$PRICE_{it}$	= Price of the stock of firm i at time t , three months after fiscal year-end
$BVPS_{it}$	= Book Value of Equity per share of firm i at time t
EPS_{it}	= Earnings per share of firm i at time t
μ_{it}	= error term

To prevent spurious relationships, the following model was ameliorated by deflating each variable with the stock price observation of the previous period, denoted as $PRICE_{it-1}$, following Dimitrios, Anestis et al.'s (2010) study.

$$\frac{PRICE_{it}}{PRICE_{it-1}} = \beta_0 + \beta_1 \frac{BVPS_{it}}{PRICE_{it-1}} + \beta_2 \frac{EPS_{it}}{PRICE_{it-1}} + \mu_{it} \quad (2)$$

Where:

$PRICE_{it-1}$	= Price of the stock of firm i at time $t - 1$
----------------	--

Goodness-of-fit, individual coefficient variables, and their significance were compared to reveal the change in informational value, concurring with foreign literature²⁴. Additionally, as a proactive measure to mitigate heteroscedastic biases caused by scale effects, all variables are deflated by the number of shares within the company, following Barth and Clinch (2009). As a robustness test, the pandemic effect on the value enigma could be estimated using the following specification:

²⁴ Davis-Friday, Gordon (2005) and Kim, Kim et al. (2022)

$$PRICE_{it}^* = \delta_0 + \delta_1 BVPS_{it}^* + \delta_2 EPS_{it}^* + \delta_3 CP * BVPS_{it}^* + \delta_4 CP * EPS_{it}^* + \mu_{it} \quad (3)$$

Where:

CP	= Dummy variable taking the value of 1 if EPS or BVPS manifest during the pandemic period
$PRICE_{it}^*$	= Price of the stock of firm i at time t , three months after fiscal year-end divided by the price of the stock of firm i at time $t - 1$
EPS_{it}^*	= EPS of firm i at time t , three months after fiscal year-end divided by the EPS of firm i at time $t - 1$
$BVPS_{it}^*$	= BVPS of firm i at time t , three months after fiscal year-end divided by the BVPS of firm i at time $t - 1$

Based on the hypotheses, δ_3 and δ_4 are expected to be positive and significant, and negative and significant, respectively.

3.8 Data Analysis

3.8.1 Qualitative Data Analysis

After the data collection phase, a systematic process was implemented to extract the optimal value from participants' experiences. The audio-recorded interview responses were transcribed verbatim promptly to ensure the data was organised and the content remained fresh in the interviewer's mind (D O'Gorman, MacIntosh 2015). Transcript summaries were affected to yield a more concise description of responses before executing further analyses. These summaries aid in uncovering principal themes when undertaking thematic analysis. The latter is defined as a process whereby a data set is inspected and reviewed to unearth common themes and patterns using coding (Saunders, Lewis et al. 2023). An iterative coding system was implemented whereby responses exemplifying "*the same theoretical or descriptive idea*" (Gibbs, 2008, p.38) were assigned identical codes.

3.8.2 Quantitative Data Analysis

Once all empirical data was collected on a Microsoft Excel sheet²⁵, the data was migrated to the E-Views platform to commence the data analysis phase. Firstly, the normality assumption was tested, using the Shapiro-Wilk Test²⁶ to uncover whether the dependent variable (P_{it}) follows a normal distribution²⁷. Additionally, the linearity assumption was examined by developing scatter plots²⁸ between the dependent (P_{it}) and independent variables ($BVPS_{it}$, EPS_{it}) separately. Furthermore, the regression was subject to further diagnostic tests for heteroscedasticity²⁹, autocorrelation³⁰ and multicollinearity³¹, common in cross-sectional data (Gujarati, Porter 2010), to ensure better interpretation and unbiased hypothesis testing and coefficients.

3.9 Ethical Considerations

The ethical process undertaken in this study is delineated in Appendix A3.9.

3.10 Limitations

The researcher encountered the following limitations while undertaking this empirical study:

- 1) Severe econometric difficulties hinder conclusions drawn from the value relevance segment, which raises questions about their reliability (Beaver 2002).

²⁵ Vide ApxA3.12

²⁶ Vide ApxA3.1

²⁷ A probability distribution of a variable that is represented with a normal curve that is asymptotic and symmetrical in area (Mariappan, 2019, p. 179-180)

²⁸ Vide ApxA3.2

²⁹ Vide ApxA3.3

³⁰ Vide ApxA3.4

³¹ Vide ApxA3.5

- 2) Malta's stock market compromises this study's data integrity due to scale and liquidity issues, challenging value relevance research assumptions about market efficiency (Beisland 2009)³².
- 3) The regression's stock prices may not wholly reflect investors' reactions to expected firm performance, as delayed pandemic-era stock oscillations (D'Augusta, Grossetti 2023) suggest reduced market efficiency.
- 4) Inevitably, participants' personal perspectives enable a certain degree of subjectivity throughout the interview process (Alshenqeeti 2014).
- 5) Translating Maltese interview responses may diminish information richness, potentially forfeiting valuable perspectives during transcription.

3.11 Conclusion

This chapter describes the research methodology. The subsequent chapter shall present the empirical findings.

³² Beisland (2009) implies that statistical bias could manifest due to a lack of market efficiency, at least in the semi-strong form, albeit small given the choice to undertake a price return model

Chapter 4

Research Findings

4.1 Introduction

This chapter unveils the interview findings and regression analysis results, detailing changes in value relevance, examining the state of corporate valuation models in Malta and assessing the usage of additional components pre- and during the pandemic crisis. The structure of this chapter shall follow that prescribed in Fig. 4.1 below:

4.1 Introduction	
PART A: QUANTITATIVE ANALYSIS	
4.2 Statistical Analysis of the Value Relevance of Earnings & Book Values of Equity	
• 4.2.1 Descriptive Statistics • 4.2.2 Relative Association & Explanatory Power during the Pre-Pandemic Period • 4.2.3 Relative Association & Explanatory Power during the Pandemic Period • 4.2.4 Robustness Analysis	
PART B: QUALITATIVE ANALYSIS	
4.3 Corporate Valuations, Accounting Data and Business Cycles	
• 4.3.1 Role of Accounting Data in Corporate Valuation • 4.3.2 Reliance on Income Statement & Statement of Financial Position • 4.3.3 The Influence of the Pandemic	
4.4 Common Valuation Practices in the Maltese Context	
4.5 The Interplay between Economic Recessions and Corporate Valuations	
• 4.5.1 The Net Asset Valuation Methods • 4.5.2 The Relative Model • 4.5.3 The Income-Based Model • 4.6.4 Selection of Valuation Model	
4.6 Adoption of Supplementary Valuation Instruments in Uncertain Times	
• 4.6.1 The Application of Real Options Valuation • 4.6.2 The Application of Stress Testing • 4.6.3 The Application of Monte Carlo Simulations • 4.6.4 The Significance of Verbal Reporting	
4.7 Influence of External Factors on the Valuation Practice Amid Economic Downturns	
• 4.7.1 Due Diligence • 4.7.2 Valuation Committee	
4.8 Conclusion	

Fig. 4.1: Outline of Chapter 4

PART A: QUANTITATIVE ANALYSIS

4.2 Statistical Analysis of the Value Relevance of Accounting Information

4.2.1 Descriptive Statistics

Table 4.1 conveys *PRICE*, *EPS* and *BVPS* between the different temporal phases: the aggregate, the pandemic and the non-pandemic periods. These descriptive analytics underscore the data's statistical properties by delineating information regarding measures of central tendency and dispersion. For instance, in the pre-pandemic era, the mean stock price was slightly higher than its median, indicating minimal skewness to the right. Notably, the pandemic's mean and median stock prices were considerably lower than the non-pandemic period, highlighting its potential impact on stock valuations. Additionally, the standard deviation of both independent variables increased between the two periods, emphasising increased accounting volatility during the COVID-19 pandemic.

All Period: 2013 – 2021						
	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Deviation</i>
<i>PRICE</i>	162	0.32910	2.43000	1.0294154	0.9859500	0.28503614
<i>EPS</i>	162	-0.22190	0.69370	0.0388815	0.0406000	0.08488131
<i>BVPS</i>	162	0.03160	2.21220	0.7396691	0.6863000	0.49370551

Non-Pandemic Period: 2013 – 2019						
	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Deviation</i>
<i>PRICE</i>	125	0.32910	2.43000	1.0489128	1.0000000	0.30989009
<i>EPS</i>	125	-0.13940	0.29400	0.0489872	0.0443000	0.05801243
<i>BVPS</i>	125	0.03710	1.79020	0.6874888	0.6714000	0.42208533

Pandemic Period: 2020 – 2021						
	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Deviation</i>
<i>PRICE</i>	37	0.65630	1.50770	0.9733081	0.9394000	0.16510773
<i>EPS</i>	37	-0.22190	0.69370	0.0121459	0.0232000	0.14027635
<i>BVPS</i>	37	0.03160	2.21220	0.9150541	1.0005000	0.65957571

Table 4.1 Descriptive Statistics

4.2.2 Relative Association & Explanatory Power during Non-Pandemic Periods

Given the local research gap, the relative and explanatory association of earnings and book values was examined before analysing the effects of a pandemic-inflicted economy, to obtain insights into the strength of the correlation during normal macroeconomic conditions³³. Therefore, the following regression was estimated for 2013 – 2019 period, with a breakdown of the results displayed in T4.2.

$$\frac{PRICE}{PRICE_{t-1}} = 0.954 + 1.447 \frac{EPS}{PRICE_{t-1}} + 0.039 \frac{BVPS}{PRICE_{t-1}}$$

The regression analysis unveils the positive coefficient estimators, denoted by β_1 and β_2 , affirming a direct causality between both earnings and equity book values. For every unit increase in *EPS* and *BVPS*, relative to the prior period's share ($PRICE_{t-1}$), current stock prices rise by €1.447 and €0.039, respectively. Thus, higher levels of *EPS* and *BVPS* are associated with higher share prices. Consequently, the larger coefficient parameter demonstrates greater responsiveness between *EPS* and MLE equity prices as opposed to *BVPS*, emphasising investors' heightened sensitivity towards earnings fluctuations.

³³ In this study, normal macroeconomic conditions refer to the scenario of constant economic output without being hindered by extraordinary or adverse economic anomalies.

However, while both *EPS* and *BVPS* exhibit positive coefficients, it is noteworthy that, as per Table 4.2, only *EPS* emerges as statistically significant_(p=0.0079), while *BVPS* does not attain statistical significance_(p=0.1413), as determined using robust standard errors³⁴. This discrepancy implies that investors perceive earnings as the primary determinant of local MLE equity prices, particularly amid a stable economy. Thus, despite the positive association between *BVPS* and stock prices, the statistical insignificance suggests that, locally, earnings hold greater value relevance in assessing MLEs' future performance

Parameter Estimates				
			Hypothesis Testing	
	β	Standard Error	Huber-White t-Test	Sig.
(Intercept)	0.954382	0.051114	18.67145	< 0.0000
EPS	1.446703	0.535944	2.699356	0.0079
BVPS	0.039037	0.058838	0.663460	0.5083
Dependent Variable: <i>PRICE</i> R-squared – 0.084027 Adjusted R-squared – 0.069011				

Table 4.2 Regression Output for the Non-Pandemic Period

With an adjusted R-squared value of 0.069011, the multiple linear regression model accounts for approximately 6.9011% of the variation in MLEs' share prices, implying that the fitted independent variables (*EPS* and *BVPS*) only modestly accounts for the variability observed in stock prices. This low adjusted R-squared value posits the model's inability to capture the complex factors influencing local stock prices, such that beyond *EPS* and *BVPS* several other factors³⁵ likely contribute (Gu 2007). Hence, despite earnings being a predictor of equity prices,

³⁴ Vide Apx3.4

³⁵ including macroeconomic variables (Trivedi, Behera 2012) and investor sentiment (Kim, Lee 2022).

the explanatory power is low, showcasing that the local extent of value relevance is relatively weak.

4.2.3 Relative Association & Explanatory Power during Pandemic Period

A separate regression was executed for the pandemic period to examine shifts in value relevance during the pandemic, as presented below and tabulated in T4.3.

$$\frac{PRICE}{PRICE_{t-1}} = 0.951 + 0.473 \frac{EPS}{PRICE_{t-1}} + 0.019 \frac{BVPS}{PRICE_{t-1}}$$

The results portray conflicting views on the relative association of *EPS* and *BVPS*, as determined by the OLS estimators, α_1 and α_2 , respectively. Interestingly, the coefficient for $EPS/PRICE_{t-1}$ and $BVPS/PRICE_{t-1}$ is positive ($\alpha_1=0.473$ & $\alpha_2=0.019$), highlighting that a rise in *EPS* and *BVPS* relative to MLEs' share price for the prior period is associated with an increase in the relative change in stock prices. This implies that investors identify increases in book values or earnings indicative of value creation during macroeconomic turmoil.

Furthermore, Table 4.3 exhibits the statistical insignificance for both $EPS_{(p=0.0929)}$ and $BVPS_{(p=0.6220)}$. This infers that during the pandemic, the relative association between *EPS* and share prices deteriorated such that earnings-based information no longer remains statistically robust. Therefore, the hypothesis prescribed³⁶, H_1 is accepted. Consequently, the results suggest that Maltese investors do not leverage the reduced value relevance of earnings with book value-based data, rejecting the hypothesis proposed³⁷, H_2 , as the relative association between *BVPS* and stock prices remain weak comparatively between the two periods.

³⁶ Vide Sn3.7.1

³⁷ Vide Sn3.7.1

Moreover, the common explanatory power for both *EPS* and *BVPS* has inflated to 13.73% (adj.R-squared=0.137296) from an explanatory power of 6.9% (adj.R-squared=0.069011) during normal business cycle conditions. Thus, financial statement information describes a higher proportion of variation in stock prices at the onset of the pandemic, such that the common explanatory power of earnings and book values improved by approximately 6.83% ($\Delta \text{adj.R-squared} = 0.13729 - 0.069011 = 0.068285$).

Parameter Estimates				
			Hypothesis Testing	
	β	Standard Error	Huber-White t-Test	Sig.
(Intercept)	0.951203	0.047830	19.88699	0.0000
EPS	0.472880	0.273527	1.728825	0.0929
BVPS	0.019316	0.035894	0.497519	0.6220
Dependent Variable: PRICE				
R-squared – 0.185224				
Adjusted R-squared – 0.137296				

Table 4.3 Regression Output for the Pandemic Period

4.2.4 Robustness Analysis

From a different viewpoint, Model (2) was expanded into Model (3), incorporating an interaction dummy variable, taking a value of 1 if the observation lies within the pandemic period, i.e. 2020 – 2021. The computation of this regression model serves as a robustness check to validate the findings from the previous regression models estimated. The results from Model (2) are illustrated below, with a description of the output depicted in Table 4.4:

$$\frac{PRICE}{PRICE_{t-1}} = 0.944 + 1.614 \frac{EPS}{PRICE_{t-1}} + 0.021 \frac{BVPS}{PRICE_{t-1}} - 1.144 \left(CP * \frac{EPS}{PRICE_{t-1}} \right) + 0.003 \left(CP * \frac{BVPS}{PRICE_{t-1}} \right)$$

The negative coefficient estimate for $CP * EPS_{(\gamma_3=-1.144)}$ corroborates the results obtained in the previous regression models. This deduces that, *ceteris paribus*, amidst the pandemic crisis, an increment in EPS for MLEs relative to the previous period's share prices deflates the current stock values, demonstrating an inverse correlation. Hence, the impact of earnings-based information is weaker during the pandemic period, suggesting that earnings are less value-relevant. Conversely, the positive coefficient parameter for $CP * BVPS$ relative to the prior period's stock price ($\gamma_4=0.003$), *ceteris paribus*, indicates that book values of equity are directly related, since during the macroeconomic shock brought about by the pandemic, share prices positively reacted towards fluctuations in book values.

Parameter Estimates				
			Hypothesis Testing	
	β	Standard Error	Huber-White t-Test	Sig.
(Intercept)	0.944651	0.035087	26.92294	<0.0000
EPS	1.614321	0.331050	4.876370	0.0000
$BVPS$	0.020536	0.039543	0.519347	0.6042
$CP * EPS$	-1.144333	0.430121	-2.660491	0.0085
$CP * BVPS$	0.002862	0.032215	0.088831	0.9293
Dependent Variable: PRICE				
Adjusted R-squared – 0.132566				

Table 4.4 Regression Output of Robustness Analysis

Nevertheless, given the statistical insignificance of $CP * BVPS_{(p=0.9293)}$, it is imperative to note that a shift in value relevance from earnings to book values did not manifest locally at the onset of the global pandemic crisis. Conversely, the statistical significance of $CP * EPS_{(p=0.0085)}$. This reaffirms the previous finding regarding the deterioration of earnings data as a value-relevant mechanism for financial statement users in Malta.

PART B: QUALITATIVE ANALYSIS

4.3 Corporate Valuations, Accounting Data and Business Cycles

4.3.1 The Role of Accounting Data in Corporate Valuations

All interviewees_(12/12) emphasised the significance of financial data in appraisals. Two valuers_(2/8) underscored that it *“forms the foundation for all corporate valuations”*[V01], highlighting that *“historical information could give the context, the narrative and a good basis to build a forward-looking valuation”*[V02], respectively. Therefore, it aids in understanding the history behind the entity and developing projections, as forecasting is hinged upon mirroring historical information, both in terms of data extrapolation and format.

Two respondents_(2/8), while acknowledging the importance of accounting information, accentuated that its interpretation may undermine its usefulness, stressing the equal significance of sound evaluation of accounting figures and policies. They opined that economic conditions, changing accounting rules, and differential reporting compromise financial statements' coherence, consistency, and comparability. Accordingly, V06 expressed that incorporating *“non-cash items and depreciation in the financials”*[V06] raises significant doubts on the relevance of financial data, with a *“look at the accounting policies”*[V06] essential. Analyst V04 underlined that established procedures like fundamental and technical analysis are necessary to address these problems when computing firms' inherent value.

Despite these limitations, one valuer_(1/8) recounted that efforts are being made to enhance investors' information environment. Correspondingly, a new International Financial Reporting Standard (IFRS), IFRS 18, shall replace the

previous standard³⁸, “where the presentation of the financial statements is going to change because of criticism from investors”[V06]. The professional expounded that the new standard's homogeneous presentation of Earnings before Interest, Tax, Depreciation and Amortization (EBITDA), disaggregation of income statement items, and performance measurement disclosure guidelines should address annual reports' lack of comparability.

One CFO_(1/2) highlighted that although this interlink is strong, “*valuers tend to overlook aspects*”[F12] beyond financial information, adding that other characteristics, such as “*uniqueness*”[F12], cannot be captured by financial information and thus by looking:

“...only at the numbers, I don't think that you really justify the underlying value of certain assets...you need to look at other data points”[F12]

Conversely, another CFO_(1/12) pondered that the “*investor is not knowledgeable enough to give precedence*”[F11] to non-financial information despite its relevance.

4.3.2 Reliance on Income Statement & Statement of Financial Position

All participants_(12/12) acknowledged that earnings are more relevant than book values such that “*valuations supersede the importance of book values*”[F11], with one CFO_(1/2) emphasising “*the strength and the value of that company is by its capability to continue generating earnings*”[F12]. Despite several respondents_(3/12) perceiving book values as “*historic*”[V08], others_(7/12) accredited them as providing a “*current snapshot in time*”[S09], which is essential to “*understand where the company stands*”[F12]. Nevertheless, several interviewees_(4/12) pondered that the relevance between the two is determined by the firm's industry in which an individual is analysing. In fact, V06 articulates that one has to be aware of:

³⁸ IAS1

“...whether it is a trading company generating income or whether it is an asset holding company where in that case possibly looking at book values might be relevant”[V06]

Conversely, three interviewees_(3/12) insinuated that their relevance is undermined as *“retail investors in Malta don't play with their money as actively as in other countries”*[V04] owing to their lack of a solid accounting foundation.

4.3.3 The Influence of the Pandemic

In reply to the question brought forward³⁹, most_(8/12) stated that such a shift did not manifest, one_(1/12) was unable to respond, and some_(3/12) agreed with this statement. Notwithstanding this, one stockbroker_(1/2) delineated that a reaction to the insecurity of firms' going concern *“led to market participants wanting more information”*[S09]. However, due to the local stock market's illiquidity, another stockbroker_(1/2) expressed that companies are disincentivised to offer more information as their share price is unlikely to fluctuate, depriving firms of any potential *“reward”*[S10].

Furthermore, two analysts_(2/12) discussed that an entity's intangible assets played a prominent role during the pandemic. One of those_(1/2) referred to companies with a higher brand valuation might have been insulated from sharp declines in share prices. Additionally, the other_(1/2) articulated that the relevance of intangible assets increased since many enterprises were leveraging transfer pricing regulations *“to optimise their tax position”*[V04].

4.4 Common valuation practices in the Maltese context

Unsurprisingly, eleven interviewees_(11/12) denote that the income-based approach remains the *“gold standard”*[V03] for local valuations, aligning with Bonello's (2018)⁴⁰ findings. This is derived from the notion that *“the dividend is quite*

³⁹ Vide ApxA3.6 Q4, ApxA3.7 Q3

⁴⁰ Vide Sn2.3.3

important in Malta”[S10]; thus, investors employ dividend-based methods. Additionally, some elaborated on the methods utilised under this approach, as shown in Fig. 4.2:

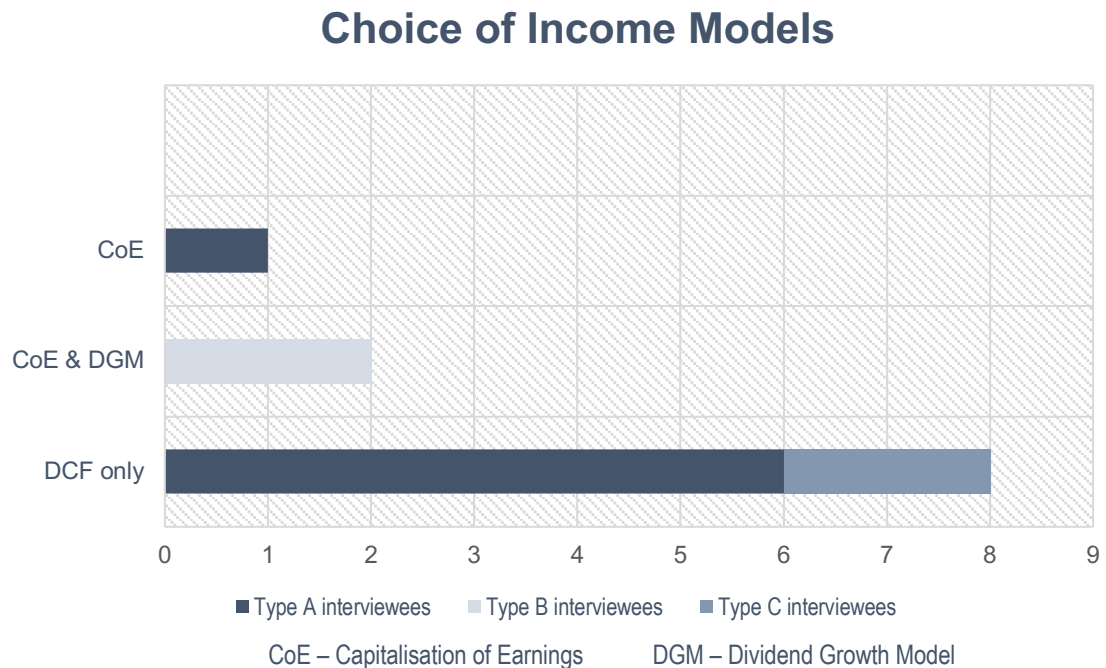


Fig. 4.2: Respondents' Choice of Income Models

V02 accentuates its popularity due to “its theoretical credentials and universality across different industries”[V02]. Accordingly, two_(2/12) asserted this consensus, underscoring that it permits analysts to display an entity's cash flow characteristics and inherent attributes across a pre-defined projected period instead of a “view of one point in time”[V01].

Nevertheless, all interviewees_(12/12) still apply a market and/or asset-based method in their company valuations. Conforming with Bonello’s (2018)⁴¹ study, four participants_(4/12) explained that applying a multi-method approach serves as a cross-verification exercise, corroborating the computed value using the income model. They emphasised that undertaking only one approach represents a

⁴¹ Vide Sn2.3.2

“limitation of scope”[V08], impeding the analysts’ ability to broaden the appraisal’s objective by considering distinct valuation dimensions.

Locally, the adoption rate of an asset-based valuation is underwhelming, with only some_(5/12) actively employing the method in their profession. Hence, of those, four analysts_(4/5) contend that an asset-intensive view is applied when the subject company’s business model depends on its assets to generate earnings, such as banks and property-centric entities. One respondent_(1/5) described the method as a *“benchmark”*[S10] to establish the lowest possible price in transactions, while another_(1/5) noted its mandated use in share transfers under the local tax rules. Additionally, F12 asserts that the method’s utilisation depends on the difficulty of deriving underlying cash flows, with complex appraisals often shifting towards a replacement cost approach. Similarly, when enduring an RV framework, an earnings-based multiple prevails among local professionals_(11/12) with book value metrics selected based on industry norms, analogous to the NAV.

When reciting local valuation challenges, V02 recounts that the RV model *“can’t be used as the main method”*[V02], despite two participants_(2/12) highlighting the simplicity and ease of accessing the necessary information. Several limitations were indicated, with the lack of comparability emerging as the prevalent factor_(8/12). They argued that Malta’s small stock market hinders their ability to extract comparable and timely data, regardless of the efforts made through the European Single Electronic Format (ESEF) as implied by F12. Most_(10/12) agreed that the EV calculated with an income model is typically retained despite considering a market-oriented evaluation. Herein, V06 declared that:

“...given the differences in accounting policies, the term and the liquidity of the shares, the control procedures, and the size of the firm, I think it’s more common that one would revert back to the income approach.”[V06]

Notwithstanding this, most_(8/12) commented on the nuisance in obtaining all the necessary information to execute an income-based approach. One analyst_(1/8) describes that Malta’s business landscape, comprised of small-to-medium-sized

family businesses with no professional corporate finance teams, exacerbates this issue. Others_(3/12) further added that the subjectivity surrounding the discount rate analysis adds layers of complexity in estimating and explaining it to clients, with its computation perceived as akin to a *“lottery”*[V02]. Moreover, several respondents_(3/12) mentioned the corporate tax regime, the client’s lack of knowledge regarding valuations and the embedded assumptions, including *“inflation rates, the pandemic and the view of difficulties in the supply chain”*[V06] augment the challenges endured.

4.5 The Interplay between Economic Recessions and Corporate Valuations

Primarily, the interviewees were questioned on the correlation between economic parameters and the corporate valuation process to introduce this association. All respondents_(12/12) articulated that economic theory is integral to all appraisals. During the pandemic, *“economic fundamentals was the primary step in the whole valuation process”*[V08]. However, the extent of significance varied among the participants. In fact, one_(1/12) emphasised that *“economics took centre stage”*[V02], while another_(1/12) downsized the exogenous shock, stating that *“COVID was just one of many cycles in the economy”*[V07]. Thus, many_(8/12) expected the pandemic to be a short-term destabilising economic event with a marginal effect on firms' long-term prospects.

Additionally, most_(9/12) denoted that inflation and interest rates represented the most pertinent elements for valuations. The former was envisaged_(6/9) as a critical driver of an entity’s growth prospects, while others_(2/9) commented on its effect on growth and interest rates. While some respondents_(7/12) ponder the need for more inflationary-adjusted accounting information, others_(5/12) oppose this notion. Moreover, the latter was correlated_(9/9) to the cost of capital computation, which was noted as shaping valuations.

4.5.1 The Asset-Based Approach

In reply to the question brought forward⁴², most_(9/12) opined that “*most companies were impairing goodwill and also their PPE*”[V01], while some_(3/12) abstained due to its irrelevance within their appraisals. Essentially, analysts contemplated that the major challenge was ascertaining whether the components on a company’s balance sheets reflected “*what’s in reality*”[V08]. Therefore, since there was a lot of “*professional judgement to be scrutinised*”[V06], it was crucial to base one’s NAV on audited figures, possibly by a “*big-four audit firm*”[V01]. Nevertheless, one_(1/12) demonstrated that the analyst could not shift models to provide accurate valuation figures due to the current tax regime’s rigidity.

Interestingly, one stockbroker_(1/2) pondered that since the NAV is predominantly employed in the financial sector, the main impact was alluded to the higher interest rate environment, causing credit institutions’ financial assets to inflate, reflecting higher company valuations.

4.5.2 The Relative Model

The participants_(12/12) were asked whether they faced the challenges outlined by Damodaran (2009) and Mellen and Evans (2010)⁴³. All interviewees_(12/12) acknowledged the deteriorating credibility of a market-oriented valuation caused by irrational movements in market metrics, with financial statements being limited in offering valuable information, especially when “*everyone tries to withhold information*”[F11] on the pandemic’s impact. However, only a handful_(4/12) assumed a proactive attitude towards arranging components of the peer group selection. Most respondents_(8/12) approached the reduced viability of the relative method through a sceptical lens instead of adjusting pandemic-induced inferences on comparable entities. Some analysts_(2/8) asserted that as the recessionary environment was similar among European states, one should not

⁴² Vide ApxA3.6 Q9 , ApxA3.7 Q7, ApxA3.8 Q6

⁴³ Vide 2.3.2.2

observe “*significant differences across European countries*”[V01], and thus, the selected multiple could still be extrapolated to the local market. Local valuers^(4/12) also pondered using specialised computer software to extract peer groups but failed to mention whether this technology was adapted to adjust for economic fundamentals in dissimilar firms.

Nevertheless, others^(4/12) proposed that it is imperative to approach an uncertain environment by critically analysing the economic impact by directly assessing and investigating the “*root cause of the volatility*”[V02]. This has been envisaged^(4/12) as consisting of knowledge gathering of the states incorporated within the peer group, such that elements of government assistance, sector-specific synergies and consumer behaviour were collated.

Furthermore, opinions regarding the choice of multiples were more equivocal. While most respondents^(8/12) opined using forward multiples, several^(4/12) alluded to applying historical multiples. The preferred parameter stirred quite a debate, with two participants^(2/4) claiming that by emphasising “*past readings*”[V03], a prudential approach is adopted. Others^(4/8) commented on the enhanced feasibility of comprehending the projections such that “*relying on a multiple which is not maintainable because it is heavily impacted by the pandemic*”[V06], such as trailing multiples, was depicted as illogical. Some analysts^(2/12) implemented both multiples and selected one aligned with the value computed from other models.

Additionally, most^(9/12) underscored that the dilemma between earnings or book value-based multiples stems from the “*nature of operations*”[V06] rather than the economic climate. Thus, the participants were unwilling to shift to a book value metric due to underperforming earnings figures.

4.5.3 The Income-Based Model

When the participants_(12/12) were asked to comment on the pandemic's influence, all respondents_(12/12) argued that the method endured significant difficulties in estimating free cash flows and embedded risk. Primarily, cash flow forecasts were deemed to contain elevated levels of "*suspicion with a lot of prudence to be applied*"[V03]. Predominantly, four respondents_(4/12) articulated that revenue, profit margins and firms' capital expenditures were the value drivers requiring significant questioning. One_(1/4) contended that valuers had to interpret the components holistically aside from predictive challenges, indicating that companies could not claim that their investment strategy had been halted due to the pandemic but simultaneously expected revenues to expand exponentially. Furthermore, the discount rate analysis suffered from fundamental fluctuations in its constituents. Half_(6/12) mentioned that the pandemic stimulated a rise in the equity risk premium, others_(5/12) noted a decline in the risk-free rate, and some_(5/12) revealed a surge in company betas. Conversely, several participants_(4/12) expressed a relatively stable risk-free rate environment where authorities were a "*bit tight*" and, thus, were not "*playing around too much*"[V05] with it. Notably, two respondents_(2/12) were unable to provide a reasonable answer.

Concerning company betas, several interviewees_(4/12) advised caution regarding its use and interaction with other WACC formula components. According to the V04, the beta was calculated on a shorter forecast period despite most components within the analysis requiring a long-term perspective. Furthermore, when constructing the applicable discount rate, V06 noted that it is fundamental to investigate the origins of the extracted parameter. The analyst elaborated that adding an "*arbitrary premium*"[V06] to the discount rate would have been erroneous if the beta already reflects idiosyncratic risks from the pandemic.

Most_(6/12) favoured adjusting free cash flows to model risk within the valuation. Half_(6/12) underlined that distinct scenarios were configured, delineating different

free cash flow estimates upon which a *“probability weight”*[V01] was assigned to each scenario. V01 articulated that this approach was executed because increasing discount rates *“is not that reliable and it's very subjective at the same time”*[V01] and *“it is easier to assign probabilities to those cash flows”*[V01]. Contrarily, several interviewees_(4/12) elected to present macroeconomic risks within the cost of capital, stating its simplicity and consistency. However, while most_(7/12) noted that nominal discount rates were applied, only a few_(4/12) could appropriately distinguish where inflation was being accounted for. V06 clarified that there is no standard approach as it depends on the ability to project future cash flows. Notably, two respondents_(2/12) employed a combination of the two, with S09 commenting that in the:

“...short term, you would employ a high discount rate to factor in the uncertainty and the risk until getting back to a normal state, and for sure, forecast lower revenues and lower bottom line.”[S09]

Moreover, a few analysts_(3/12) posited that they would *“add a specific valuation”*[S10] to enrich the traditional DCF estimation amidst significant uncertainty. One_(1/12) pondered that this method is proper when the entity has separate and identifiable cash flow streams, for example, firms with certain *“fully employed”*[S9] assets alongside others not yet generating income. Consequently, all three analysts elaborated on applying project-specific discount rates owing to the pandemic's different *“sensitivities”*[V07] on an organisation's divisions. Nevertheless, two valuers_(2/12) commented that such analysis demanded additional information.

Interestingly, one_(1/12) discussed using an Adjusted Present Value (APV) approach to specific firms' *“fluctuating capital structure”*[V03] during the economic crisis, which hindered the appropriate application of the WACC.

When questioned regarding the pandemic's impact on the terminal value calculation, most_(8/12) attributed the lion's share of the challenge towards choosing the inflexion point, at which the entity shall reach a stable and continuous growth

trajectory. They advocated extending the sample period as *“one could not have a normalised year dependent on a year affected by the pandemic”*[V02]. Others_(4/12) abstained or did not encounter significant difficulties in their appraisals.

4.5.4 Selection of Valuation Model

All interviewees_(12/12) accentuated the value of leveraging various approaches and avoiding a single-method dependency, while several_(5/12) stressed the significance of the income approach during these difficult times. Additionally, all participants_(12/12) asserted the significance of communication with management, and based on that confidence level, one would select the appropriate methodology.

4.6 Adoption of Supplementary Valuation Instruments in Uncertain Times

4.6.1 The Utilisation of Real Options Valuation

In response to their familiarity with the ROA, most_(7/12) were unable to comprehend the term and how it differs from traditional valuation methods. Conversely, others_(5/12) outlined similar interpretations which are consistent with its definition, with one_(1/5) stating that it is employed to *“understand the different options that the client potentially has for not pursuing a specific project”*[V06], and is crucial when *“an upside or downside to a transaction”*[V04] exists. Essentially, only two respondents_(2/5) adequately mentioned the correlation between an ROA and assets' embedded uncertainty, exemplifying its use for structures with cash cessation risks where *“you get all the cash flow, or you don't get nothing”*[V01]. Hence, the link between the application of ROV for all companies and uncertainty was further accentuated by only one of the two analysts_(1/2).

Moreover, seven interviewees_(7/12) have never applied it quantitatively in practice, including amidst the pandemic, implying that *“it’s harder to incorporate”*[V05] into valuations. Consequently, some participants_(4/12), predominantly CFOs and valuers, alluded towards a qualitative and conceptual idea of real options in practice. Therefore, analysts_(2/12) would capture management flexibility during the pandemic after discussing with management and disclosing the adaptability of alternative investments. Additionally, the model is highly appreciated by CFOs, as the heightened flexibility aligns with their perception of investment value. Hence, it was recalled as an *“alternative approach”*[F11] due to conventional models’ perceived underestimation of the true value because of variations in asset utility and returns. F11 noted that specific property prices may not be captured simply by residential rental rates. However, considering the possibility of property conversion provides a broader and more holistic estimate.

Accordingly, only one_(1/12) correctly applied the method according to its theoretical foundations, integrating elements of *“decision trees and variants of the Black Scholes model”*[V04]. Moreover, despite the analyst acknowledging an increase in its usage during the pandemic, it was asserted_(1/12) that executing ROV on a day-to-day basis was deemed rather challenging since it is *“not very well understood in our local market”*[S09]. Therefore, regardless of the application of ROV to eschew undue complexity, clients were handed *“simplified formats”*[V04] of the methodology used, typically by only conferring the foundational figures.

Additionally, the latter expressed that while the approach applies to binary options, its application was undermined as the pandemic unveiled multiple alternatives companies could have confronted, leading V04 to favour a simulations-based valuation often.

4.6.2 The Implementation of Stress Testing

All participants_(12/12) reported leveraging “*straightforward*”[V08] stress testing mechanisms, with one analyst_(1/12) describing the exercise as the “*bottom line*”[V05] for all valuation appraisals with an emphasis on the “*negative scenarios*”[S10] as the crisis unfolded. Despite this, two respondents_(2/12) illustrated that the task suffers from “*vagueness*”[V03], as its quality is contingent on the analyst’s comprehension of the integrated assumptions. Accordingly, most_(10/12) claimed to have employed a scenario analysis more frequently during the crisis than sensitivity testing. Nevertheless, some_(4/12) used both methods in their appraisals, while a few analysts_(2/12) only implemented sensitivities. Correspondingly, practitioner V07 explained that sensitivity analysis aided in determining the execution risk to be discharged within the engagement, such that:

“...the number of sensitivities is then examined, and according to the outputs, we would select the base case with all others being offloaded in execution risk.”[V07]

Half _(6/12) pondered a post-recessionary shift, indicating that scenario analysis is “*less common*” nowadays, considering that businesses have reverted to a normalised situation. In this context, one valuer added that the practice is ultimately a tool to be used when necessary and not applied universally along the business cycle since it is counterintuitive to endow the valuation with an enhanced degree of complication “*just for the sake of complexity*”[V01].

Notably, one_(1/12) described the presentation of a diverse spectrum of future states as “*very useful in helping our clients and our auditors*”[V04] to comprehend the underlying essence of the estimated intrinsic value. Furthermore, it was characterised_(1/12) as a “*fun exercise for management*”[V02] that stimulated reasoning and contemplation, facilitating decision-making. In this context, given the intensity of media directed towards pandemic-related material:

“...by tying in fundamental questions of what's happening to COVID to what that translates to valuations, the impact on the value of assets via scenarios was a key bridge of communication to help assess and risk manage the situation”[V04]

Moreover, despite most interviewees_(8/12) introducing “*triangular distributions*”[S10] consisting of a best, base and worst-case scenario, others_(4/12) mentioned the incorporation of “*intermediary scenarios*”[F12]. Furthermore, of those, one CFO_(1/4) highlighted that “*quite a few scenarios were created*”[F11,] including those relating to the stabilisation of the economy. Therefore, future states were drawn regarding the return to a normalised entity performance such that scenarios for “*6 months, a year, 18 months, 2 years, and so on*”[F11] were constructed.

4.6.3 The Application of Monte Carlo Simulations

Most respondents_(10/12) revealed that Monte Carlo simulations were not employed within their appraisals during the pandemic. Most_(8/10) mentioned that their reluctance originates from the complexity of the methodology, some_(2/10) alluded towards resource constraints to perform it, while others_(2/10) displayed a lack of understanding of the method within valuations. Nevertheless, some_(3/10) mistrust simulations since Monte Carlo is “*not going to predict COVID for you*”[V05] as it is highly sensitive to the embedded assumptions. Essentially, S09, proceeds by describing simulations would be rendered invaluable amidst the pandemic as:

“...Monte Carlo simulation is for something that's statistically normal, whereas this was such a statistic abnormality that putting something which has a normal distribution in something abnormal with so many unknowns just doesn't make sense to me.”[S09]

Consequently, some_(3/12) favour a scenario-based valuation. Another stockbroker, S10, accentuated this and recommended that scenario analysis has a higher informational value given a specified level of uncertainty as it depicts the “*margin of safety*”[S10] associated with the difference between a base and a worst-case scenario.

Remarkably, solely two big-four advisors_(2/12) implemented the technique with only one analyst_(1/2) frequently using simulations to extract a set of risk-adjusted cash flows among a *“huge amount of scenarios”*[V01]. In fact, according to V04, Monte Carlo simulations helped extract standard deviations to compare with expected cash flow values, yielding a more robust forecast. The other practitioner_(1/2) recounted that the method was employed only when clients demanded it or to value contingent claims or business combinations.

4.6.4 The Significance of Verbal Reporting

When asked⁴⁴ for their opinion concerning the comments elicited by Thorne (2021)⁴⁵, participants_(10/12) affirmed this notion. Correspondingly, all respondents_(10/10) articulated that a numerical measure establishes the baseline to carry out one’s obligations, but *“it’s not just about the numbers”*[F12]. The interviewee_(1/10) added that when inspecting an asset’s worth, one would consider elements not intrinsically reflected in the computed value but still relevant for decision-making, such as planning permits and disagreement with non-profit organisations. Additionally, qualitative disclosures are deemed crucial as they *“help guide the forecasting process”* by providing the necessary supplementary data, enhancing the comprehension of the forecasted figures and justifying and corroborating the computed value. Accordingly, most_(9/10) concur with this perspective, such that V05 ponders that:

“...if it were just the number without a bit of explanation of where the chaos and uncertainties are, where the key elements of judgement were, the ultimate figure would not carry weight.”[V05]

However, some interviewees_(2/12) are generally dissatisfied with the level of importance of such statements, owing to the *“influence of the preparers”*[V08]. In essence, the technicalities of these disclosures hinder their understandability

⁴⁴ Vide ApxA3.6 Q21-22, ApxA3.7 Q17-18, ApxA3.8 Q15-16

⁴⁵ Vide Sn2.4.4

among the less financially literate client base, reducing their significance to “almost nothing”[V07]. One_(1/2) also cited this lack of comprehension among CPAs themselves, highlighting disagreements between valuers and accountants.

Moreover, the pandemic has been perceived by most_(9/12) to have augmented the degree of importance users attach to these disclosures. In this context, S09 recounts that “investor anxiety” provoked a sense of suspicion, hence requiring more information. The stockbroker added that as a result, management was caught in a “fire-fighting situation where they had to explain what they were actively doing as opposed to a business-as-usual approach”. Therefore, some_(4/12) explained that a greater level of data was supplemented, including information on the assumptions, the different scenarios and the macroeconomic environment, with the latter being delineated first within reports as implied by V02. In essence, the latter declared that valuation reports mimicked the arranged valuation process, where now economics took “centre stage”[V02], with the company’s value being treated as a “side effect”[V02] rather than the contrary. However, two analysts_(2/12) cautioned that these disclosures could not “fully compensate for uncertainty”[V06].

4.7 Influence of External Factors on the Valuation Practice amid Economic Downturns

4.7.1 Due Diligence

Interviewees_(8/12) were asked whether the enhanced level of valuation uncertainty that unfolded increased the relative significance of due diligence exercises. All respondents_(8/8) acknowledge this amplified importance, being described as the “name in the game”[V05]. Essentially, two participants_(2/8) recounted that the heightened susceptibility to engage in “creative accounting”[V07] persuaded risk-averse clients to partake in a due diligence exercise alongside a valuation appraisal. Nonetheless, half_(4/8) stated that despite its benefits, financial due diligence would not detect the shortcomings in a valuation engagement, even

more so during a pandemic. Consequently, a “*broader due diligence*”[V05] exercise would suffice to cover aspects beyond what is conveyed in the statements. Ultimately, financial due diligence alone scrutinises only “*past financials*”[V02], which addresses some issues regarding the “*quality of information*”[V04] and thus, V06 articulates that:

“..at least having a financial due diligence...gives you comfort that the projections are based on something where the quality is not compromised. But other types of due diligence were incorporated”[V06]

4.7.2 Valuation Committee

In reply to the perceived guidance, most_(7/12) argued that an underwhelming amount of assistance was issued during the pandemic. They noted that the extent of advice was scarce, such that V06 expressed that it was “*not as much I (one) would have liked*”[V06] and that “*direction*”[V06] was lacking. Additionally, two of those participants_(2/7) declared that amidst the pandemic, their judgements were composed of their “*own personal experiences and individual research*”[V08]. This contrasts somewhat with the comments elicited by one stockbroker_(1/2), illustrating that although no information was provided, stockbrokers, collectively, still engaged in networking during the crisis:

“...guidance in the sense that you have conference calls with other analysts where you discuss, but there was no authoritative figure that aided the investor community battle the inferences during the pandemic.”[S09]

Notably, big-four advisors_(4/4) and those who had connections with them, including one listed entity_(1/2), secured some form of guidance through analysts’ “*centres of excellence*”[V01]. However, one_(1/4) advocated that regardless of the issued reports, ultimately, “*it’s just guidance*”[V01], contemplating that it is still up to the valuer to apply it. Additionally, the role of external auditors and the extent of knowledge of finance teams on key valuation issues were noted by F11, accentuating the unnecessary demand for guidance during a turbulent economic period.

Despite this, mixed responses were opined regarding developing a committee, handling valuation issues to address this information-deficient environment. Several interviewees^(6/12) agreed with this solution, considering it *“interesting to explore”*[V05] within the local valuation industry. Consequently, such a committee serves as a *“measure to consolidate different perspectives into one authority”*[V08], preempting the potential convergence of standard practice. It would also contribute towards culminating different academic literature and research, studying *“local issues that are affecting Malta and maybe not affecting other parts of the world”*[V01], transpiring into a central education source for practitioners, which *“would give, sort of an interpretation of how certain areas need to be tackled”*[F12].

Conversely, several participants^(5/12) expressed scepticism, pondering that *“deficient demand”*[S09] may disrupt its establishment since *“a very small community of people can actually understand the proper guidance”*[S09]. Moreover, one^(1/5) raised concerns regarding the harmonisation of valuation practices as a direct consequence of this development, suggesting that one cannot *“standardise valuations because every asset has its own intricacies”*[F11]. Therefore, some respondents strictly advocate that the role of the erected forum should be restricted towards being educational and not assuming a *“policing”*[F12] function *“providing specific regulations to handle these issues”*[V07].

4.8 Conclusion

This chapter summarises the study's quantitative and qualitative findings. The succeeding chapter will delve into these, drawing upon empirical literature to substantiate their alignment with the stated aims.

Chapter 5

Discussion of Findings

5.1 Introduction

This chapter shall extract value from the findings delineated in Chapter 4 by critically analysing them considering the literature brought forward in Chapter 2. The chapter's structure shall symbolically illustrate the valuation practice as "*part art and part science*" (Larrabee, Voss 2013, p. 295), analogous to the artistic process⁴⁶, conveyed in Fig. 5.1. Hence, the chapter shall follow the sequence outlined in Fig. 5.2 and be discussed corresponding to Fig. 5.1.

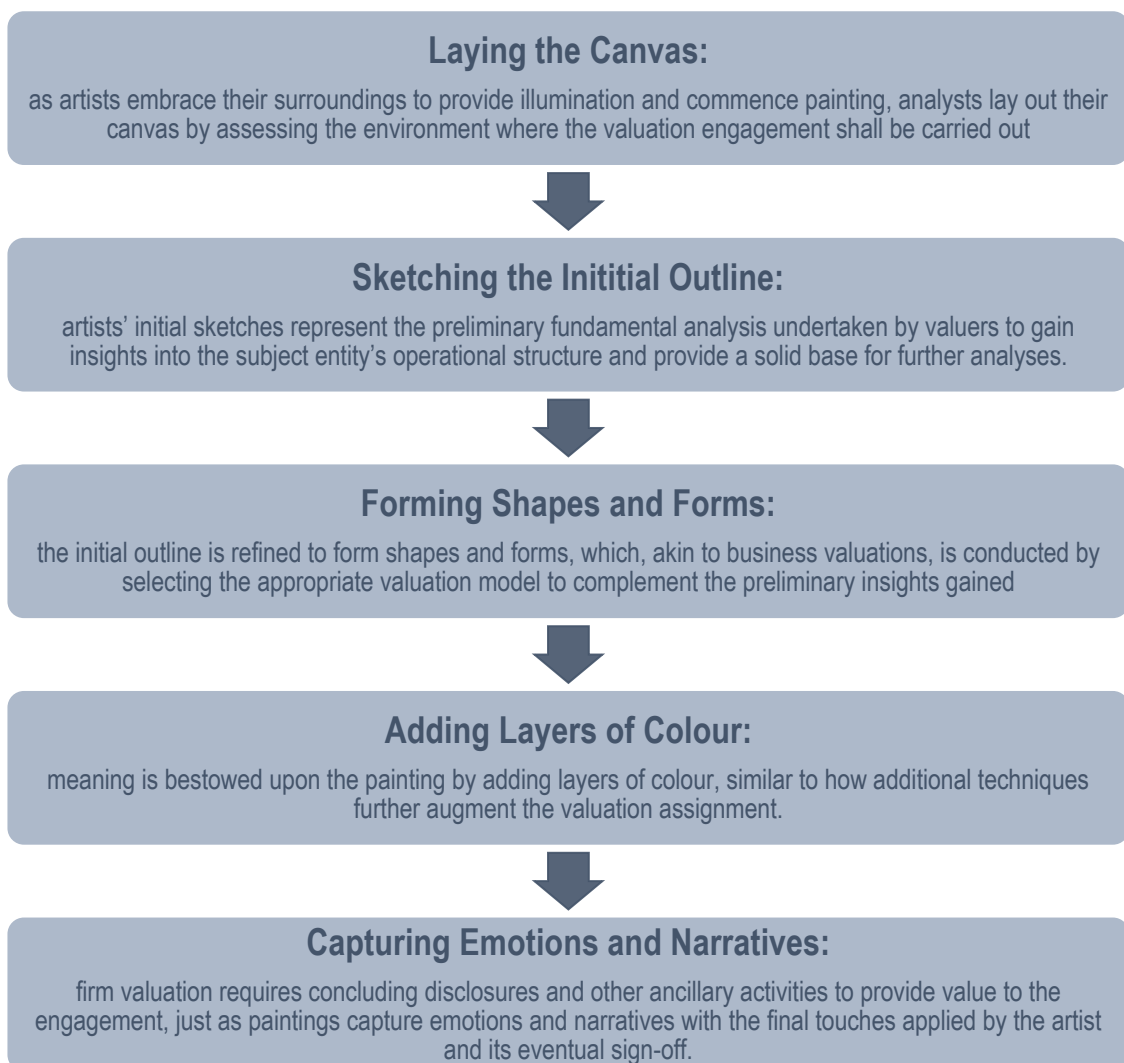


Fig. 5.1: How the Artistic & Valuation Process Align

⁴⁶ Although valuation experts implement predetermined models to disseminate a firm's worth, reflecting a scientific thought process, the practice hinges on the valuer's perception, akin to an artistic dimension

5.1 Introduction
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5.3 Sketching the Initial Outline: The Usefulness of Accounting Numbers
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• 5.7.1 Due Diligence: A Derivative of Valuation Uncertainty? • 5.7.2 Enhancing the Process: Is there a Need to Establish a Valuation Committee?
5.8 Conclusion

Fig. 5.2: Outline of Chapter 5

5.2 Laying the Canvas: The Influence of the Macro-Environment

The interview responses⁴⁷ depict that macroeconomic landscape elements are fundamental to valuing assets, primarily when economies are underperforming, aligning with Damodaran's (2013) views. Participants identified interest rates and inflation as critical economic influencers in valuations.

5.2.1 Interest Rates: A Shift in Stakeholders' Expected Returns?

The findings⁴⁸ confirm the accredited significance of interest rates in corporate valuations within the macroeconomic framework. Notwithstanding, local practitioners consider interest rates in their discount rate analysis, overlooking their broader implications. Although changing investors' opportunity costs and higher borrowing costs are coherent with this notion, analysts must still have a predictive mentality to better model forecasted cash flows and possible future capital cost fluctuations, especially when revenues are interest-sensitive. Despite interviewees' silence, shifts in interest rates, possibly due to an expansionary monetary policy⁴⁹ during economic recessions, indicate fluctuations in investment returns, necessitating a deeper level of analysis in corporate valuations. Hence, professionals should adjust capital expenditure levels in appraisals to account for future borrowing costs and reflect the expected profitability of the entity's assets.

5.2.2 Inflationary Pressures: A Misunderstood Phenomena in Valuations?

According to Cornell, Gerger et al. (2021), current and expected inflation determines the subject entity's expected growth trajectory during the forecast

⁴⁷ Vide Sn4.5

⁴⁸ Vide Sn4.5

⁴⁹ A policy initiated by Central Banks, by influencing interest rates to stimulate aggregate demand.

period. In conformity with some responses⁵⁰, analysts must gauge the inflation enigma to disentangle the entity's growth prospects, which could be driven by either rising prices or improvements in economic performance. This distinction is crucial for projecting cash flows, factoring in short- and long-run price-adjusted earnings potential and determining its market dominance in passing on inflation-induced price increases to its client base. Consequently, failure to consider inflationary elements translates to erroneous valuations, as suggested by Cornell, Gerger et al. (2021), indicating that some local professionals deduce inaccurate estimates by unknowingly disregarding this critical component due to its complexity and unfamiliarity, as Konchitchki (2011) highlighted.

Moreover, this could stem from the financial statements' inelasticity in incorporating inflationary effects, concurring with the need for supplementary inflation-consistent data (Kirkulak, Balsari 2009). However, some interviewees oppose this⁵¹, possibly due to the added cost, complexity and information overload. Instead, they acknowledge the importance of inflationary-adjusted financial numbers but restrict them to appraisals, not the whole financial reporting regime.

5.3 Sketching the Initial Outline: The Usefulness of Accounting Numbers

5.3.1 Earnings vs Book Values – An Earnings-Driven Market?

Evidently, during business cycle upswings, earnings are perceived by Maltese investors to contain value-relevant information⁵². This is consistent with foreign literature⁵³, suggesting that the local market's association between earnings and

⁵⁰ Vide Sn4.5

⁵¹ Vide Sn4.5

⁵² Vide Sn4.2.2

⁵³ Johnson (1999) and Kane et al. (2015)

share prices is not abnormal. Specifically, the research reveals⁵⁴ that the motive behind this correlation stems from earnings' ability to signal company performance to users through the expectation of dividend payouts. This conforms with the conceptual association delineated by Hail (2013)⁵⁵ and Freihat (2019)⁵⁶. Additionally, as per Paolone (2020) earnings' value relevance also emanates from the Input-to-equity valuation theory (ITEVT), since local valuers predominantly employ earnings-based valuation models⁵⁷.

Despite earnings' significance, book equity values fail to exert their usefulness to Maltese investors, highlighting their value irrelevance⁵⁸. Although Puspa, Nazaruddin et al. (2023)⁵⁹ have evidenced this limited utility, many scholars, such as Feltham and Ohlson (1995)⁶⁰, Gee-Junga and Kwon (2009) and Mostafa (2016), posit that book values tend to comprise sufficient forecasting ability for decision-making. This revelation highlights that local investors overlook book values as indicators of intrinsic worth despite property-intensive firms dominating the stock market, where book values often align with their market values due to fair value accounting, as Hail (2013) implied. Nonetheless, given the general dissatisfaction with MLE's reporting of intangible assets (Lee Apap 2023), Maltese investors may perceive them as burdensome rather than informative, further eroding the value relevance of book values.

The discrepancy between the relevance of earnings and book values partly results from poor education levels among local investors⁶¹, fostering an asymmetric information environment. Therefore, local investors conform with Sharma, Kumar et al.'s (2012) conclusions, revealing that their long-term economic decisions reflect irrationality and short-termism, seeking immediate

⁵⁴ Vide Sn4.4

⁵⁵ Vide Sn2.2.2

⁵⁶ Vide Sn2.3.2.2

⁵⁷ Vide Sn4.2.2

⁵⁸ Vide Sn4.2.2

⁵⁹ Vide Sn2.2.3

⁶⁰ Vide Sn2.2.3

⁶¹ Vide Sn4.3.1

dividend payouts over fundamental analysis. However, dividend payments' relevance may be illusional. Despite being a practical mechanism for reducing agency costs by signalling an entity's stewardship, they cannot yield the entity's future performance, as advocated by H. Chowdhury, Maung et al. (2014).

Notwithstanding the statistical significance of earnings, both income statement and balance sheet components appear to lack prevalent value relevance in Malta⁶². Critique of financial statement structure and content further validates the underwhelming performance among practitioners⁶³. This limited explanatory capacity illustrates how stock price oscillations are captured by only marginal variations in reported accounting data, inconsistent with El Shamy and Kayed (2005). The different outcomes demonstrate that country-specific variables significantly influence value relevance dynamics. Essentially, financial statements' functionality is contingent on stakeholders' intended purpose, thereby underscoring the importance of identifying the main users of accounting data when rationalising the statistical results⁶⁴. Cutajar (2021) expresses that the primary users locally have been discerned as the banking sector. This bank-oriented financial system contemplates that the degree of association between accounting data and stock prices is weaker, as the intensity of capital injections is granted by financial institutions as opposed to institutional investors, consistent with Ali and Hwang's (2000) results.

5.3.2 Earnings vs Book Values - How do Recessionary Periods Impact this Relevance?

Notably, economic turmoil severely influenced the association prescribed⁶⁵ and failed to maintain the status quo, in which accounting earnings were unsuccessful in offering a stable avenue to examine future firm potential⁶⁶. Thus, this study

⁶² Vide Sn4.2.2

⁶³ Vide Sn4.3.1

⁶⁴ Vide Sn4.2.1 - 4.2.4

⁶⁵ That between earnings and stock prices

⁶⁶ Vide Sn4.2.3

contradicts Bepari's (2015)⁶⁷ research and contends with Kane, Leece et al.'s (2015) and Liu and Sun's (2022)⁶⁸ outcomes that during heightened economic uncertainty and diminishing firm profitability, earnings experience a decline in their value relevance⁶⁹. The augmented earnings volatility in MLEs caused by economic inferences draws parallels to Clout and Willett's (2016) results. Nonetheless, this research unveiled a complete shift from value-relevant to irrelevant earnings rather than just a weakening of the correlation. However, a complete reversal from a direct to an inverse causality did not emerge, in contrast with Filip and Raffournier (2010) and Hellstrom (2006). Despite most respondents anticipating the pandemic to be transitory⁷⁰, partially concurring with the latter, the persistent positive coefficient implies that local investors did not expect earnings to recoup in the next accounting period, contradicting Hellstrom's (2006) claims.⁷¹

Alternatively, Maltese investors may be overly sceptical regarding noise embedded within reported earnings. Respondents⁷², Wang and Huang (2014) and Trombetta and Imperatore (2014) articulate that firms are incentivised to engage in opportunistic earnings management practices when enduring distressed economic situations, such as earnings smoothing and manipulation. Consequently, the results⁷³ infer that investors become more pessimistic due to concerns about the reduced validity and reliability of positive earnings to truly depict entity performance, contributing towards its decline, in conformity with the findings corroborated by Feltham and Pae (2000) and Habib (2004)⁷⁴.

⁶⁷ Vide Sn2.2.4

⁶⁸ Vide Sn2.2.4

⁶⁹ Vide Sn4.2.3

⁷⁰ Vide Sn4.5

⁷¹ Contradicting Bonello (2018), Malta's concept of a developing nation is negated by the absence of a turnaround.

⁷² Vide Sn4.5.2

⁷³ Vide Sn4.2.3

⁷⁴ Vide Sn2.2.4

Surprisingly, book values remained consistently irrelevant⁷⁵, pondering no temporal shifts in their significance. This suggests that users did not leverage them to compensate for abnormal reported earnings. Contrary to the views of Collins, Pincus et al. (1999) and Barth, Beaver et al. (1998)⁷⁶, book values are deemed insufficient to reflect value creation locally. This, in turn, violates the FHH claimed by Barth, Beaver et al. (1998) despite book values representing liquidation values and maintaining consistency when earnings include transitory components. This has also been validated by analysts' lack of interchanging PE ratios for PBV ratios during the crisis period⁷⁷.

Furthermore, the statistical insignificance of earnings and book values⁷⁸ questions accounting information's utility in investors' equity decisions during economic uncertainty, contrary to Benhabib, Liu et al. (2019)⁷⁹. Therefore, during recessionary periods, investment decisions in Malta are driven by randomness or non-information-based trading, as suggested by Dontoh, Radhakrishnan et al. (2004). Nevertheless, the findings of Benhabib, Liu et al. (2019) may still hold precedence locally, but one cannot conclude this through this study's analysis. The reason is that given Malta's restricted size, investors and management are far more inclined to be acquainted, granting users better access to internal information outside the public domain. In effect, local equity valuations could be driven by information gathered from interpersonal relationships, offering more enriched data regarding the truth of entities' operations than annual reports' general opaqueness.

⁷⁵ Vide Sn4.2.3

⁷⁶ Vide Sn2.2.4

⁷⁷ Vide Sn4.5.2

⁷⁸ Vide Sn4.2.3

⁷⁹ Vide Sn2.2.4

5.3.3 The Usefulness of Earnings & Book Values – Are Analysts Influenced by Economic Uncertainty?

Analysts apply greater caution during macroeconomic imbalances while undertaking fundamental analysis. The responses⁸⁰ indicate that value estimation is hinged on annual report data despite the procyclicality of accounting information. In agreement with Koller, Goedhart et al. (2015), an entity's reported historical performance should be interpreted within the business cycle framework. Thus, practitioners gauge deteriorating accounting transparency, such as the susceptibility of earnings management and the cyclical element of its interpretation, mainly by prioritising management discussions, embracing Koller, Goedhart et al.'s (2015) perspectives. This communication channel is strengthened to uncover the firm's truth and align financial data with management's plans and strategies during economic turmoil.

5.4 Forming Shapes and Forms: Choosing an Appropriate Valuation Model

Although practitioners implemented specific adjustments amidst a depressed economic environment, most interviewees⁸¹ recounted their prudential ideology of model consistency, similar to that uncovered by Bancel and Mittoo (2014) during the Global Financial Crisis.

5.4.1 Asset-Based Approach: A Reliable Indicator of Liquidation Value?

The findings⁸² portray that the NAV method was not commonly applied as a substitute for the reduced reliability of market and income-based methodologies. This endorses this study's statistical outcome of a lack of a value relevance

⁸⁰ Vide Sn4.5.4

⁸¹ Vide Sn4.5.4

⁸² Vide Sn4.5.1

turnaround in book values⁸³. Despite offering a snapshot of a company's wealth position, macroeconomic imbalances diminish its stability and reliability since assets' reduced cash-generating ability necessitated the performance of impairment testing. This task's subjectivity further undermined the method's consistency. Furthermore, other valuation models would have been required to adjust reported book estimates to reflect their standard of value, such as their liquidation or replacement cost value. Analysts were tasked with assessing the assets' cash flow potential or comparable market prices, bearing further complications. Hence, the model's diminished appeal may stem from its static nature, which demanded the overlapping of alternative approaches.

Nevertheless, respondents failed to mention other NAV components that required reappraisal, such as the valuation and impairment of liabilities and intangible assets, as Gope and Mitra (2022) suggested. During the crisis period, renegotiating debt obligations and re-estimating expected credit losses altered the entity's liability value, indicating that recessionary periods dampened both sides of the balance sheet. Moreover, as the relative significance of intangibles, such as goodwill and brand value, increases in relation to the firm's total asset base, the subjective nature of intangibles valuation poses a greater difficulty in arriving at a precise enterprise value.

The limited availability of audited financial information, predictably on an annual or bi-annual basis, displays analysts' challenge in verifying whether balance sheet figures reflect the asset's intrinsic value. Since a company's value could change rapidly during economic recessions, timely data becomes crucial. Hence, a certain degree of scepticism must be exerted to ensure management accounts are free from misstatements and form a solid foundation for valuation analyses. Regardless, following Buttignon (2020)⁸⁴, some analysts still employed the NAV

⁸³ Vide Sn4.2.3

⁸⁴ Vide Sn2.3.1

method more frequently as a cross-check and an initial frame of reference when undertaking a DCF model, given the relative volatility in market indicators.

Furthermore, practitioners' discontent concerning the inflexibility of local tax legislation to employ NAV⁸⁵, conforms with Vanza, Wells et al.'s (2018) findings, demonstrating how asset write-downs do not hold a predictive ability about a firm's future returns. Thus, a company's value may deviate from its intrinsic, possibly over- or underestimating an entity's income tax liability in a share transfer scenario. This primarily impacts smaller firms as valuations are principally employed for taxation purposes.

5.4.2 Relative Valuation: Compromising Accounting Comparability for Convenience?

Damodaran (2009)⁸⁶ emphasises the nuisances of peer group selections in an unstable economic climate. The findings⁸⁷ partly agree with this but also contradict the obligation to adjust for differences in financial decline between the subject entity and the peer group. This unveils that some local practitioners perceive the fall in economic stability as uniform across the European market. Despite peer groups for local valuations being composed of foreign entities, given the scarcity of comparable local companies, valuers overlook these disparities, regardless of varying containment measures and government aid weakening accounting comparability (Arianpoor, Esmailzadeh Asali, 2023; Islam, Li et al. 2023). Thus, valuation experts in Malta tend to adopt a simplification strategy when appraising, opposing the incorporation of excessive layers of complexity. Analysts often gauge complexity by focusing on DCF valuations rather than finetuning the peer group.

⁸⁵ Vide Sn4.5.1

⁸⁶ Vide Sn2.3.2.2

⁸⁷ Vide Sn4.5.2

Confirming empirical literature articulated by Altman, Hotchkiss et al. (2019)⁸⁸, respondents⁸⁹ encountered additional issues in determining and selecting the appropriate multiple. Despite commonly utilising forward multiples for their accuracy, as Liu, Nissim et al. (2002) suggested, some local practitioners still employ historical multiples, opposing Hotchkiss and Wang's (2019) views. In a report compiled by KPMG (2020), trailing multiples were not perceived as invaluable but continued to be applicable during the recession period, granted that the reported parameters, such as EBITDA or Enterprise Value (EV), have consolidated the recessionary impact. Thus, historical multiples could be considered irrelevant during the preliminary phases of recessions, as reported figures may not yet reflect new realities. Nonetheless, as the downturn persists, the multiple becomes increasingly relevant. Forward multiples incorporate the current macroeconomic environment, rendering it more applicable during crises. Nevertheless, a few interviewees integrate the two within their appraisals, showcasing how such analysts leverage trailing and forward multiples to enhance the appraisal's accuracy, as Plenborg and Pimentel (2016) implied.

5.4.3 Income-Based Approach: A Recession-Proof Solution?

During heightened levels of uncertainty, the income-based approach emerged as the prevalent methodology across the valuation spectrum⁹⁰, consistent with Demirakos, Strong et al. (2010) and Huang, Tan et al. (2023)⁹¹. This choice underscores analysts' eagerness for more granular levels of analysis, facilitated through the method's enhanced flexibility, divisibility and decomposability into a firm's fundamental value-creating components. The rigidity of the market and asset-based approaches elevated the DCF model's appeal to company valuations amidst a turbulent economic period. Despite its popularity, distinct variants of the DCF model have been applied locally during the pandemic,

⁸⁸ Vide Sn2.3.2.2

⁸⁹ Vide Sn4.5.2

⁹⁰ Practitioners, CFOs & Stockbrokers

⁹¹ Vide Sn2.3.3.3

indicating a lack of consistency in the applied methodology as opposed to normal economic inferences, as evidenced by Bonello (2018). These variations include Certainty Equivalent (CE) DCF, Risk-adjusted Discount Rate (RADR) DCF, the WACC and the APV model.

Following Damodaran (2005)⁹², several respondents⁹³ favoured the conventional risk-adjusted approach due to its convenience for incorporating idiosyncratic risk factors in the discount rate. However, this practice misvalues cash flows by weakening the association between the earnings potential and its source of uncertainty, as RADR assumes that time and uncertainty are separate. Moreover, a discount rate-centric model may have caused significant inaccuracies in appraisals due to increased fluctuations in elements of the cost of capital, analogous to participants' responses⁹⁴ and corroborated by Ke (2022) and Hasan, Politsidis et al. (2021)⁹⁵. Divergent responses regarding how different discount rate components shifted confer a lack of understanding by analysts on the area, possibly leading to erroneous estimates. This limited comprehension, consistent with Bonello's (2018) results, may stem from the widespread use of software to generate company betas and capitalisation rates, thereby reducing one's grasp on the notion and its synergies.

Additionally, applying APV⁹⁶ bypasses discount rate estimation issues, incorporates financial distress costs, and better reflects the treatment of operating and financing cash flows. Capital structure concerns posed by distressed markets and supported by Prakash, Maheshwari et al. (2023) were also better controlled using this approach, achieving a lower analyst-inflicted bias.

⁹² Vide Sn2.3.3.3

⁹³ Vide Sn4.5.3

⁹⁴ Vide Sn4.5.3

⁹⁵ Vide Sn2.3.3.3

⁹⁶ Vide Sn4.5.3

Alternatively, the findings⁹⁷ indicate that most valuation experts prefer computing CE cash flow figures instead of adding subjective premia to the discount rate methodology. This approach requires enhanced conservatism by analysts to reflect valuation model risk. Given the volatility of the cost of capital, this approach could be considered a more stable avenue to convey a firm's intrinsic value. Essentially, it mitigates estimation biases by avoiding arbitrary discount rates and beta selections and relies on a forward-looking analysis, as historical data may not provide a solid foundation. However, a potential inefficiency could be attributed to precisely estimating the risk-free cash flows through management discussions since such valuable insights may not be obtained, as implied by Loderer, Long Jr et al. (2010). Fluctuations in the risk-free rate during the pandemic may have still posed significant problems during the discounting phase but may have been less pronounced due to the absence of more volatile components.

Interestingly, practitioners prefer the DCF method for its ability to dissect valuation into parts, improving risk allocation and illustration. Using a Sum-of-Parts valuation (SoPV) allows for greater adaptability, generating a deeper analysis of the entity's wealth creation activities (Koller, Goedhart et al. 2015), even more than that offered by conventional DCF models. The method's increase in attractiveness during the pandemic suggests that it adapts well to economic slowdowns, adding to the reasons articulated by Brotherson, Eades et al. (2014) regarding the timing of a SoPV. This signals the commitment of local analysts to achieve greater accuracy during periods of reduced economic stability. Several respondents contested⁹⁸ the universality of the WACC, as tailored discount rates better match valuations with specific departmental risk profiles. Hence, undervaluation is mitigated as the higher firm-wide cost of capital may not be justified for less severely impacted business ventures. Nevertheless, the need for segment-specific accounting information and the enhanced subjectivity required

⁹⁷ Vide Sn4.5.3

⁹⁸ Vide Sn4.5.3

impedes the broader applicability of tailored discount rates, coherent with the views of Krüger, Landier et al. (2015) and Pike and Neale (2009), respectively.

Moreover, an additional bias common to all DCF methods has been connoted⁹⁹ as the forecasted time horizon. Engagements relying on the firms' earnings potential amidst an unconventional economic anomaly may be considered irrational. Analysts extend the forecast period to attempt to normalise recession-inflicted cash flows and instil a sense of stability towards analysing and estimating the company's terminal value. Valuers that selected a RADR approach were more sensitive to the forecast period than those that endured on a CE approach, as longer periods amplify the effect of risk adjustment through the discount rate.

Additionally, the inflationary impact on the DCF valuation model adds further complexity by requiring analysts to extract the company's real growth¹⁰⁰. Similarly, adjusting the discount rate to reflect real figures is equally vital. In this context, using nominal and real discount rates hinges on the awareness and assessment of inflation and the entity's forecasted cash flows¹⁰¹. The findings¹⁰² support Schüler and Wünsche's (2023) preference for selecting nominal discount rates, possibly due to inflation's role in the cost of capital formulation, despite losing its company-specific position in the valuation. Consequently, several interviewees failed to reflect growth in real terms in the first place.

Notwithstanding DCF's popularity, its predictive accuracy cannot be deemed recession-proof. Hence, the interviewees align with Booth's (2003)¹⁰³ perspectives, suggesting amendments are essential for accurate valuations. However, one should avoid integrating two or more DCF variations, as combining different risk reflection approaches results in double-counting. Some analysts introduce significant bias by incorporating recession-induced risks into discount

⁹⁹ Vide Sn4.5.3

¹⁰⁰ Vide Sn5.2.2

¹⁰¹ Vide Sn4.5.3

¹⁰² Vide Sn4.5

¹⁰³ Vide Sn2.3.4

rates and cash flows, deviating from the equivalence principle outlined by Hüttche and Schmid (2024) and reducing the computed value's preciseness.

5.5 Adding Layers of Colour: Applying Additional Valuation Components & Risk Techniques

5.5.1 Valuing Flexibility: Is Real Options an Option?

While ROA literature is scarce on its full practical use in corporate valuations, the findings¹⁰⁴ reinforce the evidence disclosed by Graham and Harvey (2001) and Block (2007), regarding its sub-par usage in corporate finance. Local analysts and practitioners reveal their narrow intuition of the field, primarily from distinct terminologies and interpretations of the subject. This signifies the need for a standardised educational niche, as denoted in Section 5.7.2, that provides empirical literature and a harmonised language for novel valuation models. In essence, several interviewees employ the concepts of real options without being aware of their academic connotation, aligning with the findings collated by Howell and Jägle (1997) and Triantis and Borison (2001).

Moreover, economic instability did not shift practitioners' views on enhancing the usage of an ROA in corporate valuations¹⁰⁵, despite its applicability in uncertain environments, as implied by Koller, Goedhart et al. (2015)¹⁰⁶. Fundamentally, ROV requires significant levels of information to execute, even more than conventional methods. Data availability is inherently scarce in a small state, as expressed by the respondents¹⁰⁷ and validated by Bonello (2018)¹⁰⁸. This issue is further exacerbated by a nationwide uncertain environment, leading to reduced enthusiasm towards altering and shifting from conventional methods.

¹⁰⁴ Vide Sn4.6.1

¹⁰⁵ Vide Sn4.6.1

¹⁰⁶ Vide Sn2.4.1

¹⁰⁷ Vide Sn4.4

¹⁰⁸ Vide Sn2.3.2

Additionally, this data scarcity stems from a lack of organisational readiness to undertake this analysis, concurring with Triantis's (2005)¹⁰⁹ notions. Hence, as recessions hit quite unexpectedly, it is unlikely that firms can shift resources when cash conservation is the primary strategy.

Most interviewees¹¹⁰ highlighted that flexibility is better captured through qualitative descriptions specifying management's intentions and strategies. The information conundrum limits analysts' capabilities to employ a quantitatively robust analysis of real options, thereby allowing single-point valuation estimates to fluctuate based on the disclosed information about the firm's strategic options.

Notwithstanding these limitations, CFOs are far more inclined to adopt this valuation analysis, contemplating the need to focus on other valuation aspects rather than just crunching the numbers¹¹¹. One limitation that hinders firms from implementing this technique stems from a general resistance from valuers, who divert too much attention to the deterministic side of valuations.

5.5.2 Stress Testing: A Way to Unmask Risk?

In conformity with its broad application envisaged by Arnold and Hatzopoulos (2000) and Hüttche and Schmid (2024), stress testing ranks first¹¹² among the tools practitioners employ to gauge the opacity in valuation appraisals manifested by a distressed economic environment. The responses portray the induced demand effect for stress testing with clients and customers expecting this analysis, which gradually diminished as Malta emerged from the recession, with some professionals abandoning the method entirely. This highlights the impact that recessions instigated, revealing the direct causality between stress testing and valuations.

¹⁰⁹ Vide Sn2.4.1

¹¹⁰ Vide Sn4.6.1

¹¹¹ Vide Sn4.3.1

¹¹² Vide Sn4.6.2

Moreover, the study unveils that professionals implemented both sensitivity and scenario analysis within their engagements, with a predominant emphasis on scenarios. Sensitivity analysis may have been limited in addressing pandemic-related economic fallout, diverting stakeholders' attention to planning multiple future stress events. Besides being pertinent to locating the responsiveness of specific macroeconomic anomalies on firm value, the interconnectedness of economic conditions renders sensitivity analysis restricted and less significant amidst a recessionary period, concurring with Massari, Gianfrate et al.'s (2016) assertions.

Essentially, the instrument's simplicity represents a cost-effective measure of uncovering key uncertainties impacting the computed firm value. Moreover, integrating an unsophisticated risk identification strategy enables practitioners to communicate pertinent assumptions better, especially to non-experts. In agreement with Joos and Piotroski (2017), analysts' expected valuation forecasts, complemented by a subjective assessment of the distribution of possible outcomes¹¹³, convey value-relevant information for investors. This highlights that with professionals' increased attention towards pessimistic future states, as suggested by some participants, their biases become a subtle indicator of a company's expected performance, which may not be apparent in the raw numbers.

Moreover, as a clearer picture is presented to clients, disagreements due to divergent perspectives and disputes are mitigated, allowing for a superior client-consultant relationship. However, concerns about the complexity of integrated scenarios are significant despite their simplicity. A plausible rationalisation is that economic contractions require modelling more possible future states, disputing the optimal addition of two to three events as advised by Massari, Gianfrate et al.

¹¹³ referred to as the tilt (Joos, Piotroski 2017)

(2016)¹¹⁴. Consequently, the strength and credibility of the tool deteriorate with the inclusion of more scenarios, undermining its robustness as a risk communication device.

Nevertheless, several interviewees¹¹⁵ also recounted that the sensitivity of the modelled scenarios to the underlying assumptions poses a significant challenge in determining the best, base and worst-case scenarios. Given macroeconomic factors' broad nature and interconnectedness, correctly modelling these parameters requires an extensive knowledge base of fundamental economic concepts. Consequently, if assumptions lack substantial economic backing, there is a risk of a 'garbage in, garbage out' situation, aligning with Damodaran's (2012) perspective. Concerns arise over whether apprehensions have been applied in appraisals due to the limited comprehension¹¹⁶ of the challenges associated with these techniques. However, the mere trade-off between the assumptions yielded and the methodology's accuracy does not alter practitioners' views on its usefulness compared to other instruments such as simulations.

5.5.3 Simulation-Based Valuations: A Probabilistic Remedy for an Uncertain Future?

According to Ernst (2022)¹¹⁷, while simulation-based company valuations yield considerable gains to practitioners compared to traditional approaches, especially in times of crises, its methodological implementation is sparse, and uptake has been minimal. Consequently, this is akin to participants' feedback¹¹⁸, with only a handful applying the technique during the pandemic. Many determinants drive the marginal uptake of a probabilistic dimension towards corporate valuations.

¹¹⁴ Vide Sn2.4.2

¹¹⁵ Vide Sn4.6.2

¹¹⁶ Vide Sn4.6.2

¹¹⁷ Vide Sn2.4.3

¹¹⁸ Vide Sn4.6.3

One primary barrier is the complexity and resource-intensive nature of the process, aligning with KPMG (2024)¹¹⁹. Simulation requires time and technical expertise to design, implement and interpret the results emanating from this instrument. The evidence¹²⁰ indicates that large resource-heavy audit firms are better equipped to embrace simulations than their smaller counterparts. This observation highlights a notable discrepancy in data readiness, posing a substantial obstacle to its widespread application. Interestingly, entities with sufficient resources are still not persuaded to leverage big data and advanced technologies to ease the adoption of a probabilistic approach.

Additionally, some interviewees mentioned the high opportunity cost of applying simulations, arguing that model sophistication does not improve valuation accuracy during recessions. Thus, practitioners acknowledge the requirement of preparing the model before applying simulations, as stipulated by Pascolo (2019)¹²¹, concurring with Ferson's (1996) suggestions regarding the highly subjective selection of input parameters and their associated probability distributions. These assumptions would be formulated from historical information, further eroding its applicability amidst an exogenous shock event, where past data becomes even more irrelevant. Fundamentally, a more cost-effective and resource-efficient scenario analysis would suffice during black swan events and better conform to Damodaran's (2006) principle of parsimony.

Furthermore, the limited comprehension of both analysts and clients impedes its eventual implementation. Hence, unlike scenario analysis, simulation results further erode the model's understandability rather than displaying the appraisal's ambiguity, contrasting Massari, Gianfrate et al.'s (2016) assertions¹²².

¹¹⁹ Vide Sn2.4.3

¹²⁰ Vide Sn4.6.3

¹²¹ Vide ApxA2.5

¹²² Vide Sn2.4.3

5.6 Capturing Emotions and Narratives: Providing Essence with Qualitative Disclosures

The responses¹²³ partially corroborate the significance of narrative disclosures in valuation reports, conforming with Thorne's (2021) and the IVSC's (2020)¹²⁴ assertions. Contrarily, some respondents accentuate their irrelevance, owing to intended users' lack of comprehension. Thus, the relative insignificance of accounting information prescribed in Section 5.3.2 extends towards the textual interpretation of the quantitative data provided. Notably, preparers of these narrative explanations, such as valuers, tend to harbour greater scepticism than stockbrokers, commenting on their usefulness solely to other analysts rather than the general public. The discrepancies in feedback exemplify the potential trade-off of additional information, as preparers' inherent bias might cause qualitative disclosures to be seen as intensifying the degree of subjectivity. Contrarily, stockbrokers may perceive their inclusion as broadening their understanding of the entity's environment while advising users of the firm's predicted route and value.

Despite their differences, the findings¹²⁵ concur with Mehnaz, Rahman et al.'s (2022) and Hao and Pham's (2022) evidence, implying that investors within a distressed market demand more exhaustive disclosures and, thus, description of the numerical valuation. The level of transparency is critical in reducing investors' decision opacity, in agreement with Bywater (2011)¹²⁶. Additionally, the supplementary information encapsulated within valuation reports is congruent with the guidance insinuated by RICS (2020), with an uncertainty clause attributed to the turbulent economic climate accompanying all appraisals. Nonetheless, the few respondents that oppose this consensus align with Bochkay and Levine's (2019) findings, where the utility of the information provided by

¹²³ Vide Sn4.6.4

¹²⁴ Vide Sn2.4.4

¹²⁵ Vide Sn4.6.4

¹²⁶ Vide Sn2.4.4

analysts is dubious when they themselves do not have the necessary data or are incentivised to withhold it.

5.7 Brushstrokes of Improvement: A Way Forward for the Valuation Practice

5.7.1 Due Diligence: A Derivative of Valuation Uncertainty?

The findings¹²⁷ elicit that financial due diligence occupied a much more prominent role in acquisitions during the pandemic. Thus, nationwide economic recessions directly correlate to the demand and significance of financial due diligence, consistent with Kooli and Lock Son's (2021) assertions. With valuations hindered by uncontrollable uncertainty, due diligence served as a conclusive technique to address value disparities by thoroughly examining an entity's short-term defence strategies and long-term viability. As a result, due diligence findings validate practitioners' estimated value, strengthening the relationship between the two practices during the crisis. However, an overreliance on the due diligence results may be undesirable. While the appraisal does assess information quality, it fails to capture other aspects of valuation uncertainty that are challenging to comprehend. Furthermore, given that due diligence is limited to merger and acquisition activities, many other valuers were unable to close the loop, leaving behind solely unruly uncertainty on the computed value.

5.7.2 Enhancing the Process: Does the Industry need to establish a Valuation Committee?

Several respondents outlined the shortage and disproportionate issuance of guidance towards large and small firms during the pandemic. Therefore, recessionary periods expose local structural deficiencies within the valuation profession, reflecting resource and network support disparities among business

¹²⁷ Vide Sn4.7.1

valuation providers. Enterprises with superior market share leverage economies of scale to access a greater knowledge repository, enabling them to exercise professional judgment based on more timely and accurate data. Consequently, Big-4 analysts can better model economic affairs and uncertainty into valuations, allowing them to strengthen their market dominance by providing a more comprehensive, transparent and accurate valuation. This knowledge-based and quality divide fosters increased valuation inaccuracies among smaller service providers during macroeconomic imbalances. Consequently, this homogenises the industry landscape and hinders smaller firms' growth and resilience, as Wilkinson, Antoniadou et al. (2017) implied, exacerbated amidst troubled economic times.

Similarly, stockbrokers and CFOs carried on with their operations without professional support. Nevertheless, the two distinct users of valuation models were less supportive of developing a committee¹²⁸. Despite this, support that does not directly affect MLEs or stockbrokers might still be necessary. Unifying communication links among stockbrokers would ensure equitable information circulation, while auditors and finance teams require assistance to maintain parity with industry knowledge and prevent asset misvaluation in MLEs.

This has sparked the debate regarding establishing a unanimous industry body that democratises the valuation profession through industry knowledge, as accentuated by Amidu, Boyd et al. (2019). Information exchanges become crucial during macroeconomic shocks to ensure that appraisals are conducted using the industry's best practices, mitigating the occurrence of erroneous valuations and eliminating the use of idiosyncratic methods. Notably, its inauguration would emit significant benefits within the valuation field, akin to the accounting profession, including defining a professional identity (Greenwood, Suddaby et al. 2002), education, transfers of intellectual capital and professional development (Wilkinson, Halvitigala et al. 2018). However, interviewees disagree on its

¹²⁸ Vide Sn4.7.2

development¹²⁹, citing demand concerns and reluctance towards uniform appraisals.

Deficient demand poses a significant barrier to establishing an industry forum dedicated to valuation affairs. With only 32% of the 87 registered accounting firms comprising more than three principals (The Accountancy Board 2024), there is a limited capacity to offer advanced valuations. This raises a contentious issue regarding its feasibility and long-term profitability. Moreover, local analysts' resistance towards a governing authority enforcing and harmonising valuation methods contrasts with the call from overseas professionals who perceive a global system towards valuation as necessary due to globalisation and entities' complex economic activities (Gonnella, Talarico 2018). Notwithstanding increased technical support during economic downturns, local valuation experts remain divided.

5.8 Conclusion

The present chapter addresses the primary contentious matters and inquiries arising from the research findings. The subsequent chapter will serve as the concluding section of this dissertation.

¹²⁹ Vide Sn4.7.2

Chapter 6

Conclusion

6.1 Introduction

The last chapter shall conclude this research by summarising key findings, proposing feasible recommendations and recommending adequate avenues for further research based on the empirical results. The structure of this chapter is outlined in Fig. 6.1 below:

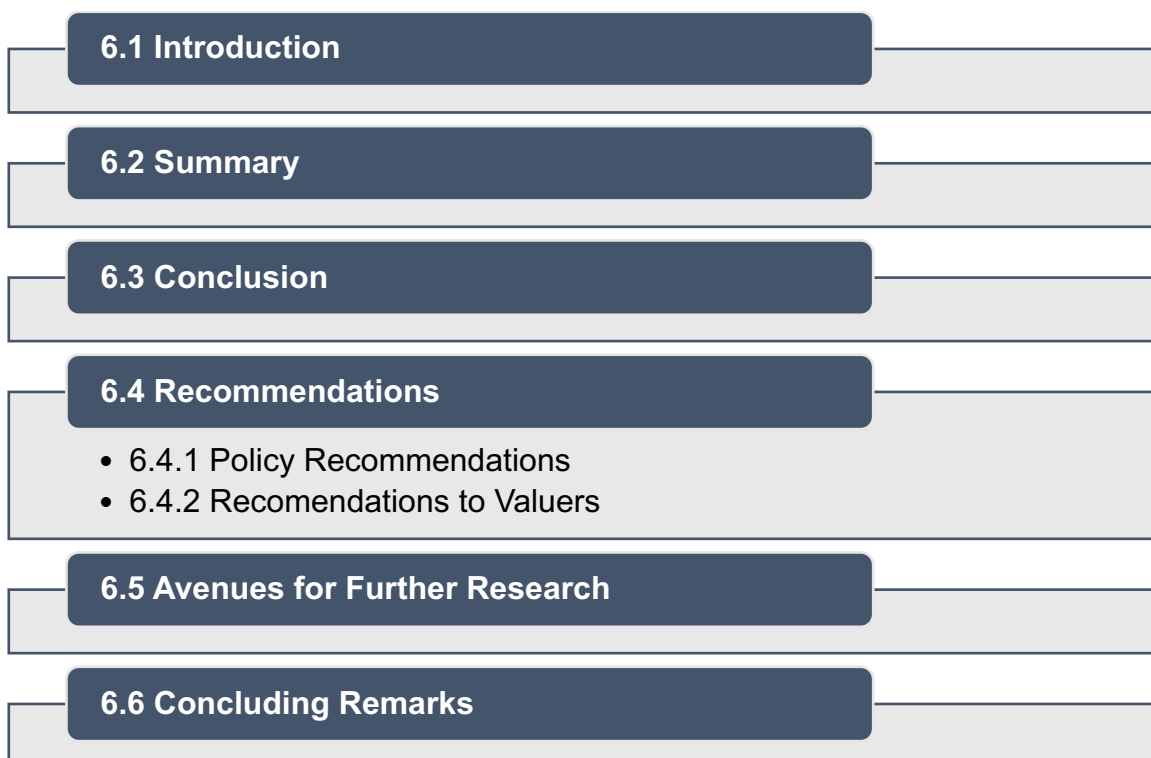


Fig. 6.1: Outline of Chapter 6

6.2 Summary

The scope of this study was to unravel the intricacies that the macroeconomic climate in Malta exerts on corporate valuation models. The pandemic was taken as a proxy for an economic destabilisation event. The objectives of this research are threefold¹³⁰, displayed in F6.2.

¹³⁰ Vide Sn1.5

This research embarked on a mixed methods approach to achieve the three objectives prescribed. A regression analysis was executed to uncover shifts in the relevance of accounting fundamentals, essentially the income statement and balance sheet, at the onset of the pandemic. Share prices of MLEs were associated with earnings and book value figures. Furthermore, twelve (12) semi-structured interviews were held with valuers, stockbrokers and CFOs to substantiate the regression analysis and augment this study by providing a comprehension of the ramifications of the macroeconomic environment on the use of valuation methods through a pandemic-inflicted lens. Taking a multi-faceted approach captured an array of insights amongst the users of valuation models. The study's quantitative component deals with the first objective, while the qualitative facet covers all objectives.

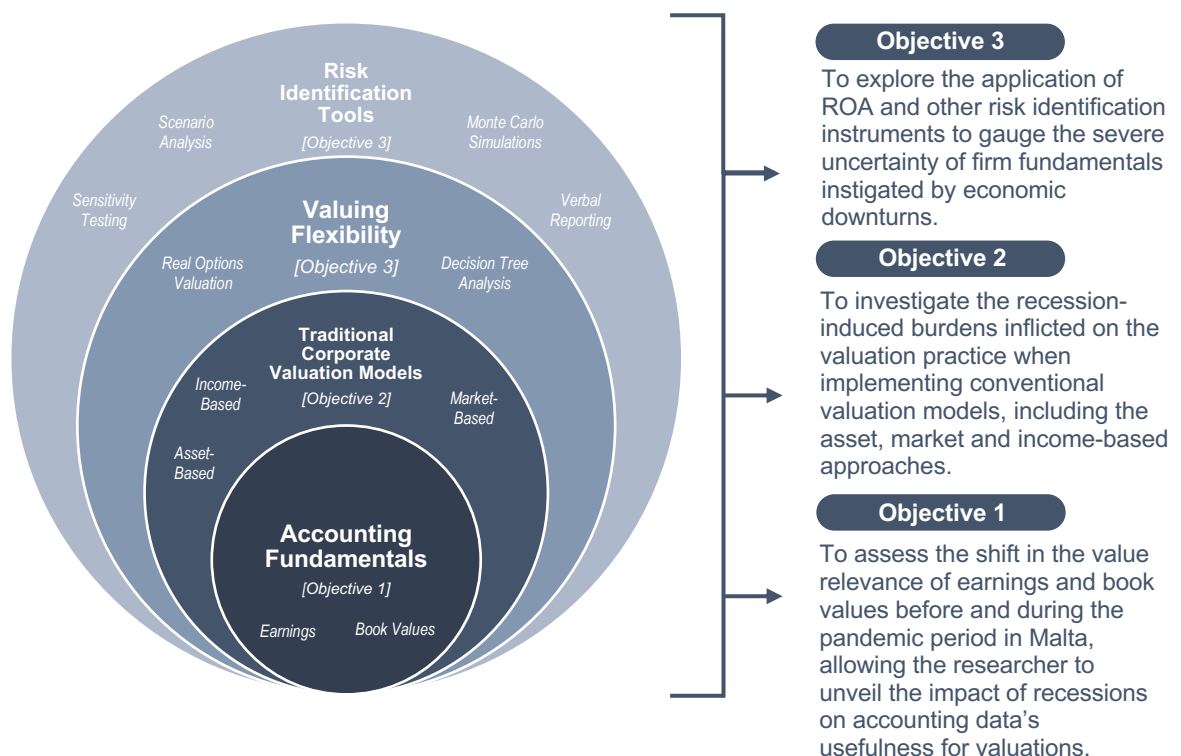


Fig. 6.2: Overview & Relationship between Research Objectives

Source: Author

6.3 Conclusion

In addressing the **initial objective**, the study deduces that economic recessions result in a decline in the usefulness of earnings and book values. Interestingly, it was observed that local investors do not shift from earnings to book values in their investment decision-making processes when enduring a macroeconomic shock, indicating that book values' incapacity of predicting future firm performance. The regression outcome was corroborated by the perceptions elicited by the interviewees, such that valuers tend to maintain their earnings-based value drivers contingent on the industry in which the subject company operates. Moreover, analysts cited a lack of knowledge by local retail investors, information gathered through personal networks, negative earnings and the risks of earnings manipulation as factors influencing the utility of accounting data when making their economic decisions.

In light of the **second objective**, the research unveils that all conventional valuation models encountered severe shifts in their fundamental constituents due to economic instability. A wave of asset and liability impairments hampered the asset-based approach, reducing its reliability and consistency amid an economic upheaval. Moreover, reduced accounting comparability led to material distortions and fluctuations in the relative model, rendering accounting ratios misleading. The method became ineffective in capturing assets' intrinsic value despite efforts invested in peer group selection and the application of forward-looking multiples. Lastly, this research concludes that the income-based approach becomes increasingly arduous during economic recessions. Predominantly, determining the firm's earnings potential through cash flow forecasting becomes strenuous as enhanced ambiguity regarding an entity's growth prospects, cost inflation, and risk factors render the exercise highly judgmental. Similarly, the cost of capital computation comprises enhanced levels of subjectivity adjoined with the shifts in its market determinants, such as company betas and risk-free rates.

Consequently, the findings delineate that two major approaches are employed locally: adjusting the risk element within the free cash flows or the discount rate.

Finally, in addressing the **third objective**, the study infers that valuers favour conservatism by adhering to the principle of parsimony in valuation appraisals. Thus, professionals attempt to estimate value from the “*simplest possible explanation*” (Damodaran 2006, p.34). The local valuation practice prefers to maintain the computed model's credibility without the amalgamation of inferences attributed to overcomplicated factors that may enhance inaccuracies rather than mitigate them. Thus, while there is a growing interest in assessing strategic options during recessions, local practitioners perceive statistically valuing management flexibility through a real options lens as theoretical. Conversely, they depend on narrative disclosures to comprehend strategic decisions.

Furthermore, the findings unearth that stress testing, primarily scenario analysis, and qualitative disclosures emerged as valuers' fundamental risk identification techniques, owing to their simplicity, universality and understandability among clients and practitioners. Conversely, local valuers perceive a simulation-based appraisal as overly complex and inadequate to factor abnormal economic shocks such as the pandemic into their models. Resource inequality has been critical in deterring small-to-medium-sized valuers from successfully implementing and championing the instrument.

Interestingly, the study also uncovered that the valuation process is impacted by several external factors, which, amidst an economic downturn, are exacerbated by the loss of assurance in the computed intrinsic value. Consequently, the need for a professional arm handling issues, research and educational insights in the valuation practice and the effect that the due diligence market endured displays the lengths investors would go to empower their decision-making ability with a more confident representation of value.

6.4 Recommendations

Following the research findings and discussion presented in the previous two chapters, several recommendations were delineated:

6.4.1 Policy Recommendations

- i. **Provide education to investors and introduce finance in Maltese education curricula** (*Section 5.3.1*)

Tailored education programmes could better equip institutional investors with the appropriate tools to undertake sound economic decisions based on accounting information. This should reduce non-information-based trading, increasing financial statement usability in equity trading. Introducing elementary finance, accounting, and economics concepts would boost trading volumes, empowering retail investors to become active stock market players. As a result, the local stock market efficiency would improve, augmenting the relevance of financial information.

- ii. **Improve disclosure quality by strengthening audit committees' role, streamlining regulatory procedures, and promoting transparency in financial reporting** (*Section 5.3.2*)

By raising disclosure quality, investor confidence regarding reported accounting figures increases as firms' susceptibility to earnings management manoeuvres is reduced. Consequently, investors become far more inclined to use financial statements in their investment decisions if they commonly understand that accounting numbers reveal firms' future prospects.

- iii. **Improve economic analysis via enhancing communication between accounting and economic functions, recruiting economic advisors, or emphasising economic thought in the accountancy curriculum.**
(Section 5.2)

Valuation appraisals can incorporate economic indicators if practitioners are accustomed to the economic principles that could significantly influence firms' intrinsic value. By strengthening economic thought and mitigating data silos, analysts may construct models that are enhanced predictors of firms' expected growth potential and reinforce appraisals' initial preparation phase with an additional paradigm beyond the narrow company lens.

- iv. **Expand current training and education to valuation analysts regarding more advanced valuation techniques** (Section 5.5)

This study unveils that distinct economic and information environments necessitate differing valuation instruments. However, their implementation within real-world engagements would be infrequent without practitioners' awareness of ancillary instruments or novel techniques. Therefore, expanding current education and training programmes to embrace other research-based mechanisms could offer a more enriched and accurate selection of valuation models, benefitting the profession.

- v. **Revisit the standard on inflationary accounting and facilitate its adoption** (Section 5.2.2)

Adopting inflationary accounting practices could enhance accounting information's comparability, timeliness and relevance as valuation practitioners would receive an enriched pool of price-adjusted information. This disentanglement between nominal and real growth could aid

practitioners in obtaining a superior understanding of the firm's intrinsic value. This adoption could only be accelerated if the standard governing inflationary accounting is updated and reconfigured to meet the demands of the current commercial climate.

6.4.2 Recommendations to Valuers

i. Triangulate models, favour income approach during recessions
(Section 5.4)

The income model's enhanced granularity should be leveraged for greater flexibility amidst a depressed economy. However, the estimate should be corroborated against other models by sceptically deliberating on the impact of recessions on these alternative approaches.

ii. Adopt a comprehensive and forward-looking perspective to account for cyclical recovery and long-term impacts (Section 5.4.3)

Recessionary-induced accounting information offers limited utility for valuations. Thus, broadening the valuation enigma and including non-financial elements, such as management flexibility, provides a more holistic estimate. Additionally, extending the forecasting of financial information reduces biasedness caused by depressed data and would alleviate concerns about erroneous valuations.

iii. Implement safeguards to eliminate the risk of double-counting in valuation models (Section 5.4.3)

To ensure that cyclical risks are not incorporated more than once in valuation models, valuers should implement safeguards such as clear and proper documentation and independent reviews of the valuation process.

6.5 Avenues for Future Research

Throughout this study, an array of related avenues for further research have emerged which include the following:

a) Unlocking Strategic Flexibility: A Real Options Valuation Case Study
(Section 5.5.1)

With several valuation analysts unaware of the concept, a case study approach implementing real options could enable such a technique in a practical, real-world scenario. This study could elevate the valuation community's comprehension of the instrument, indicating which methods and how those tools could be employed locally, adding another dimension to their appraisals.

b) Value Relevance of Non-Financial Information: Assessing the Impact of Auxiliary Information for Maltese Investors (Section 4.3.1)

With newly introduced non-financial reporting requirements¹³¹ and the growing significance of sustainability investing, factors such as sustainability performance (Thompson, Ashimwe et al. 2022), corporate governance quality (Whelan 2008), brand valuation (Bagna, Dicuonzo et al. 2017) and financial disclosure levels (Shamki, Abdul Rahman 2013) are increasingly expounding company values beyond earnings and book values. A study assessing the value relevance of non-financial information could broaden our understanding of their significance.

¹³¹ Such as the newly introduced European Sustainability Reporting Standards (ESRSs)

c) The Introduction of IFRS 18: An Assessment of the Local Investor Perspective *(Section 4.3.1)*

An analysis of the current difficulties, expectations, knowledge and effect of IFRS 18 on Maltese investors may provide insights into the benefits and challenges that the primary users of financial statements expect to endure locally with its introduction.

d) Examining Economic Literacy Among Certified Public Accountants (CPAs) in Malta: Bridging Accounting and Economic Ideologies *(Section 5.4.3)*

Optimising financial data hinges on CPAs' awareness of economic concepts, enabling varied conclusions based on distinct economic environments. Koshal, Gupta et al. (2008) report a 64.1% overall economic literacy score among MBA students in India. Thus, a similar study of CPAs' extent of economic literacy in Malta could unearth the magnitude to which the accounting profession has a deep knowledge of economic principles. This research can also be seen as a signal for incorporating economic principles into the educational curriculum of the accountancy course.

e) Assessing the Feasibility of Establishing a Valuation Committee in Malta: A Way Forward *(Section 5.7.2)*

During the pandemic, one of the main difficulties encountered by Malta's valuation community was the need for more technical guidelines. Wilkinson, Halvitigala et al. (2018) advocate for a professional body to assist valuers' skill development, expand practitioners' knowledge base, provide educators with adequate tools and integrate technology within the community. Hence, a feasibility study on developing a valuation committee

and acknowledging valuation standards could provide insights into the demands and obstacles encountered during this process.

6.6 Concluding Remarks

This study exemplifies the materiality of the economic climate within which accounting-based corporate valuations are conducted, where the two disciplines of economics and accounting become interwoven to assist corporate participants in making rational business decisions. Economics, as the science that examines people's behaviour with objects of value, relies on metrics to determine that value for further scientific, in-depth analysis of one's decisions. Accounting bridges the usability of information for examining firm valuation by seamlessly complementing such an assessment with the provision of accounting-based valuation models. Hence, the two are interdependent and not mutually exclusive, as economic decisions must be anchored by appropriate accounting data, and the latter must be complemented with an enriched evaluation of economic fundamentals. In essence, as Ross (1983) suggests:

“...if economics is to be useful it must be through some analysis that provides a link between the accounting numbers and the market's assessment of them in its valuation of the assets of the firms”

(Ross, 1983, p.377)

List of References

General References

- ABRAMS, J.B., 2010. *Quantitative Business Valuation: A Mathematical Approach for Today's Professionals*. 2; 2nd ed.; 2nd edn. Newark: Newark: John Wiley & Sons, Incorporated.
- ACAP, 2012. Qualitative and quantitative research techniques for humanitarian needs assessment. *Phys Rev*, **47**, pp. 777-780.
- ADAMS, J., KHAN, H.T.A. and RAESIDE, R., 2014. *Research Methods for Business and Social Science Students*. 2nd edn. New Delhi: New Delhi: SAGE Publications India Pvt, Ltd.
- ALEXANDRIDIS, A.K. and HASAN, M.S., 2020. Global financial crisis and multiscale systematic risk: Evidence from selected European stock markets. *International Journal of Finance and Economics*, **25**(4), pp. 518-546.
- ALI, A. and HWANG, L., 2000. Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research*, **38**(1), pp. 1-21.
- ALLEN, F., BHATTACHARYA, S., RAJAN, R. and SCHOAR, A., 2008. The contributions of Stewart Myers to the theory and practice of corporate finance. *Journal of Applied Corporate Finance*, **20**(4), pp. 8-19.
- ALSHENQEETI, H., 2014. Interviewing as a data collection method: A critical review. *English linguistics research*, **3**(1), pp. 39-45.
- ALTMAN, E.I., HOTCHKISS, E. and WANG, W., 2019. *Valuation of Distressed Firms*. Hoboken, NJ, USA: Hoboken, NJ, USA: John Wiley & Sons, Inc, pp. 91-115.
- ALUKO, B.T. and AMIDU, A., 2005. Corporate business valuation for mergers and acquisitions. *International Journal of Strategic Property Management*, **9**(3), pp. 173-189.

- AMIDU, A., BOYD, D. and AGBOOLA, A.O., 2019. The role of knowledge in valuation practice: expert valuers' perceptions. *Journal of Property Investment & Finance*, **37**(6), pp. 524-540.
- AMRAM, M. and KULATILAKA, N., 2000. Strategy and shareholder value creation: The real options frontier. *Journal of Applied Corporate Finance*, **13**(2), pp. 15-28.
- ANDERSON, P.L., 2012. *The economics of business valuation towards a value functional approach*. Stanford, California: Stanford Economics and Finance, an imprint of Stanford University Press.
- APAP, L.L., 2023. *Reporting on intangibles : an analysis*, University of Malta; Faculty of Economics, Management and Accountancy.
- ARIANPOOR, A. and ESMAILZADEH ASALI, F., 2023. The impact of earnings volatility, environmental uncertainty and COVID-19 pandemic on accounting comparability in an emerging economy. *Asian Review of Accounting*, **31**(4), pp. 612-630.
- ARMANTIER, O., KOŞAR, G., POMERANTZ, R., SKANDALIS, D., SMITH, K., TOPA, G. and VAN DER KLAUW, W., 2021. How economic crises affect inflation beliefs: Evidence from the Covid-19 pandemic. *Journal of Economic Behavior & Organization*, **189**, pp. 443-469.
- ARNOLD, G., 2005. *Handbook of Corporate Finance: A Business Companion to Financial Markets, Decisions and Techniques*. Financial Times Prentice Hall.
- ARNOLD, G.C. and HATZOPOULOS, P.D., 2000. The theory-practice gap in capital budgeting: evidence from the United Kingdom. *Journal of Business Finance & Accounting*, **27**(5-6), pp. 603-626.
- ARONSOHN, A., 2020. *Dealing with valuation uncertainty at times of market unrest*. International Valuation Standards Council.
- ARRIOLA, C., KOWALSKI, P. and TONGEREN, F.V., 2022. *Understanding structural effects of COVID-19 on the global economy*.

- ASPERS, P. and CORTE, U., 2019. What is qualitative in qualitative research. *Qualitative sociology*, **42**, pp. 139-160.
- BAGNA, E., DICUONZO, G., PERRONE, A. and DELL'ATTI, V., 2017. The value relevance of brand valuation. *Applied Economics*, **49**(58), pp. 5865-5876.
- BAJPAI, N., 2011. *Business research methods*. Pearson Education India.
- BALL, R. and BROWN, P., 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, **6**(2), pp. 159-178.
- BANCEL, F. and MITTOO, U.R., 2014. The gap between the theory and practice of corporate valuation: Survey of European experts. *Journal of Applied Corporate Finance*, **26**(4), pp. 106-117.
- BARTH, M.E., BEAVER, W.H. and LANDSMAN, W.R., 1998. Relative valuation roles of equity book value and net income as a function of financial health. *Journal of Accounting and Economics*, **25**(1), pp. 1-34.
- BARTH, M.E., BEAVER, W.H. and LANDSMAN, W.R., 2001. The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics*, **31**(1-3), pp. 77-104.
- BARTH, M.E. and CLINCH, G., 2009. Scale effects in capital markets-based accounting research. *Journal of Business Finance & Accounting*, **36**(3-4), pp. 253-288.
- BARTH, M.E., LI, K. and MCCLURE, C.G., 2023. Evolution in value relevance of accounting information. *The Accounting Review*, **98**(1), pp. 1-28.
- BEAVER, W.H., 2002. Perspectives on recent capital market research. *The Accounting Review*, **77**(2), pp. 453-474.
- BEAVER, W.H., 1998. *Financial Reporting: An Accounting Revolution*. 3rd edn. Upper Saddle River, NJ: Prentice Hall.

- BEAVER, W.H., 1968. The Information Content of Annual Earnings Announcements. *Journal of Accounting Research*, **6**, pp. 67-92.
- BEEST, F.V., BRAAM, G. and BOELEN, S., 2009. Quality of Financial Reporting: measuring qualitative characteristics. *NiCE Working Paper 09-108*, .
- BEISLAND, L.A., 2009. A review of the value relevance literature. *The Open Business Journal*, **2**(1), pp. 7-27.
- BEISLAND, L.A. and HAMBERG, M., 2013. Earnings sustainability, economic conditions and the value relevance of accounting information. *Scandinavian Journal of Management*, **29**(3), pp. 314-324.
- BELESIS, N.D., KAMPOURIS, C.G. and KARAGIORGOS, A.T., 2022. The effect of COVID-19 on the value relevance of European firms' financial statements. *International Journal of Applied Economics, Finance and Accounting*, **14**(1), pp. 91-99.
- BELTRAME, F. and SCLIP, A., 2023. Business Valuation Through Market Multiples. Cham: Cham: Springer Nature Switzerland, pp. 93-123.
- BENHABIB, J., LIU, X. and WANG, P., 2019. Financial Markets, the Real Economy, and Self-Fulfilling Uncertainties. *The Journal of finance (New York)*, **74**(3), pp. 1503-1557.
- BEPARI, M.K., 2015. Relative and incremental value relevance of book value and earnings during the global financial crisis. *International Journal of Commerce and Management*, **25**(4), pp. 531-556.
- BERK, J., DEMARZO, P. and HARFORD, J., 2022a. *Fundamentals of Corporate Finance, Global Edition*. 5th edn. Harlow: Harlow: Pearson Education, Limited.
- BERMPEI, T., KALYVAS, A.N., NERI, L. and RUSSO, A., 2022. Does economic policy uncertainty matter for financial reporting quality? Evidence from the United States. *Review of Quantitative Finance and Accounting*, **58**(2), pp. 795-845.

- BILGIC, F.A., HO, S., HODGSON, A. and XIONG, Z., 2018. Do Macro-economic Crises Determine Accounting Value Relevance? *Accounting in Europe*, **15**(3), pp. 402-422.
- BLOCK, S., 2007. Are “real options” actually used in the real world? *The Engineering Economist*, **52**(3), pp. 255-267.
- BOCHKAY, K. and LEVINE, C.B., 2019. Using MD&A to improve earnings forecasts. *Journal of Accounting, Auditing & Finance*, **34**(3), pp. 458-482.
- BONELLO, K., 2018. *Corporate Valuation Models and their Application to Selected Maltese Listed Companies: An Empirical Analysis*, University of Malta.
- BOONLERT-U-THAI, K. and SCHABERL, P., 2022. Value relevance of book values, earnings, and future earnings: evidence by time, life cycle stage, and market uncertainty. *Asian Review of Accounting*, **30**(5), pp. 648-668.
- BOOTH, L., 2003. Discounting expected values with parameter uncertainty. *Journal of Corporate Finance*, **9**(5), pp. 505-519.
- BROTHERSON, W.T., EADES, K.M., HARRIS, R.S. and HIGGINS, R.C., 2014. Company valuation in mergers and acquisitions: how is discounted cash flow applied by leading practitioners? *Journal of Applied Finance (Formerly Financial Practice and Education)*, **24**(2), pp. 43-51.
- BROWN, S., LO, K. and LYS, T., 1998. Use of R² in Accounting Research: Measuring Changes in Value Relevance over the Last Four Decades. *Journal of Accounting and Economics*, **28**(2),.
- BULAJIC, A., STAMATOVIC, M. and CVETANOVIC, S., 2012. The importance of defining the hypothesis in scientific research. *International Journal of Education Administration and Policy Studies*, **4**(8), pp. 170-176.
- BUSBY, J.S. and PITTS, C.G.C., 1997. Real options in practice: an exploratory survey of how finance officers deal with flexibility in capital appraisal. *Management Accounting Research*, **8**(2), pp. 169-186.

- BUTTIGNON, F., 2020. Distressed Firm Valuation: A Scenario Discounted Cash Flow Approach. *Journal of Business Valuation and Economic Loss Analysis*, **15**(1).
- BYWATER, N., 2011. Reflecting uncertainty in valuations for investment purposes: A brief guide for users of valuations. *RICS User Guide, Global*, .
- CAMERON, R., 2011. Mixed methods in business and management: A call to the 'first generation'. *Journal of Management & Organisation*, **17**(2), pp. 245-267.
- CAMILLERI, J., 2020. *The Usefulness of Financial Statements to the Institutional Investor*, University of Malta.
- CARMICHAEL, D.G., 2017. Adjustments within discount rates to cater for uncertainty-Guidelines. *The Engineering Economist*, **62**(4), pp. 322-335.
- CARUSO, G.R., 2020. *The Art of Business Valuation: Accurately Valuing a Small Business*. 1; 1st edn. Newark: Newark: Wiley.
- CASCINO, S., CLATWORTHY MARK, OSMA, B.G., GASSEN, J., IMAM, S. and JEANJEAN, T., 2016. *Professional investors and the decision usefulness of financial reporting*.
- CASCINO, S., CLATWORTHY, M., GARCÍA OSMA, B., GASSEN, J., IMAM, S. and JEANJEAN, T., 2014. Who uses financial reports and for what purpose? Evidence from capital providers. *Accounting in Europe*, **11**(2), pp. 185-209.
- CHOY, L.T., 2014. The strengths and weaknesses of research methodology: Comparison and complimentary between qualitative and quantitative approaches. *IOSR Journal of Humanities and Social Science*, **19**(4), pp. 99-104.
- CLEFF, T., 2019. *Applied Statistics and Multivariate Data Analysis for Business and Economics: A Modern Approach Using SPSS, Stata, and Excel*. 1st. edn. Cham: Cham: Springer Nature.

- CLOUT, V.J. and WILLETT, R.J., 2016. Earnings in firm valuation and their value relevance. *Journal of Contemporary Accounting & Economics*, **12**(3), pp. 223-240.
- COLLINS, D.W., PINCUS, M. and XIE, H., 1999. Equity Valuation and Negative Earnings: The Role of Book Value of Equity. *The Accounting Review*, **74**(1), pp. 29-61.
- COLLINS, D.W., MAYDEW, E.L. and WEISS, I.S., 1997. Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics*, **24**(1), pp. 39-67.
- CONSTAND, R.L., FREITAS, L.P. and SULLIVAN, M.J., 1991. Factors affecting price earnings ratios and market values of Japanes firms. *Financial Management*, **20**(4), pp. 68.
- CORNELL, B., GERGER, R., JARRELL, G.A. and CANESSA, J.L., 2021. Inflation, Investment and Valuation. *Journal of Business Valuation and Economic Loss Analysis*, **16**(1), pp. 1-13.
- COULON, Y., 2021. *Small Business Valuation Methods: How to Evaluate Small, Privately-Owned Businesses*. 1st edn. Cham: Cham: Springer International Publishing AG.
- CRESWELL, J.W., 2014. *Research design : qualitative, quantitative, and mixed methods approaches*. 4th edn. SAGE Publications, Inc.
- CUTAJAR, A., 2021. *Value Relevance of Accounting Information: An Interdisciplinary Analysis*, University of Malta.
- D O'GORMAN, K. and MACINTOSH, R., 2015. *Research Methods for Business and Management: A Guide to Writing Your Dissertation*. 2 edn. Oxford: Oxford: Goodfellow Publishers, Limited.
- D'AUGUSTA, C. and GROSSETTI, F., 2023. How did COVID-19 affect investors' interpretation of earnings news? The role of accounting conservatism. *Finance Research Letters*, **52**, pp. 103504.

- DAMODARAN, A., 2013. Living with noise: Valuation in the face of uncertainty. *Journal of Applied Finance (Formerly Financial Practice and Education)*, **23**(2),.
- DAMODARAN, A., 2012. *Investment valuation: Tools and techniques for determining the value of any asset*. John Wiley & Sons.
- DAMODARAN, A., 2009. Ups and downs: valuing cyclical and commodity companies. Available at SSRN 1466041, .
- DAMODARAN, A., 2007. Valuation approaches and metrics. *Foundations and Trends in Finance*, **1**(8), pp. 693-784.
- DAMODARAN, A., 2006. *Damodaran on Valuation : Security Analysis for Investment and Corporate Finance* . New York, USA: Wiley Inc.
- DAMODARAN, A., 2005a. The promise and peril of real options. *NYU Working Paper No. S-DRP-05-02*, .
- DAMODARAN, A., 2005b. Value and risk: beyond betas. *Financial Analysts Journal*, **61**(2), pp. 38-43.
- DAS, P., 2019. *Econometrics in Theory and Practice Analysis of Cross Section, Time Series and Panel Data with Stata 15.1*. 1st edn. Singapore : Springer Singapore : Imprint: Springer.
- DAVIS-FRIDAY, P.Y. and GORDON, E.A., 2005. Relative valuation roles of equity book value, net income, and cash flows during a macroeconomic shock: the case of Mexico and the 1994 currency crisis. *Journal of International Accounting Research*, **4**(1), pp. 1-21.
- DAVIS-FRIDAY, P.Y. and GORDON, E.A., 2002. The effect of macroeconomic changes on the value relevance of accounting information: The case of Mexico and the 1995 financial crisis. Available at SSRN 322762, .
- DE ANDRÉS-ALONSO, P., AZOFRA-PALENZUELA, V. and DE LA FUENTE-HERRERO, G., 2006. The real options component of firm market value: The case

of the technological corporation. *Journal of Business Finance & Accounting*, **33**(1-2), pp. 203-219.

DE LUCA, P., 2018. *Analytical Corporate Valuation: Fundamental Analysis, Asset Pricing, and Company Valuation*. Cham: Cham: Springer International Publishing.

DE REYCK, B., DEGRAEVE, Z. and VANDENBORRE, R., 2008. Project options valuation with net present value and decision tree analysis. *European Journal of Operational Research*, **184**(1), pp. 341-355.

DEFOND, M.L. and HUNG, M., 2003. An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics*, **35**(1), pp. 73-100.

DEMIRAKOS, E.G., STRONG, N.C. and WALKER, M., 2004. What valuation models do analysts use? *Accounting Horizons*, **18**(4), pp. 221-240.

DEMIRAKOS, E.G., STRONG, N.C. and WALKER, M., 2010. Does valuation model choice affect target price accuracy? *European Accounting Review*, **19**(1), pp. 35-72.

DEPAMPHILIS, D., 2015. *Mergers, Acquisitions, and Other Restructuring Activities*. 8th edn. San Diego: San Diego: Elsevier Science & Technology.

DIEBOLD, F.X., DOHERTY, N.A. and HERRING, R.J., 2010. *The known, the unknown, and the unknowable in financial risk management: measurement and theory advancing practice*. Princeton University Press.

DIMITRIOS, ANESTIS and CHRISTOS, 2010. Value Relevance of Accounting Information in the Pre- and Post-IFRS Accounting Periods. *European research studies*, **XIII**, pp. 143-152.

DONTOH, A., RADHAKRISHNAN, S. and RONEN, J., 2004. The declining value-relevance of accounting information and non-information-based trading: an empirical analysis. *Contemporary Accounting Research*, **21**(4), pp. 795-812.

- DRURY, C., 2018. *Management and Cost Accounting*. 10th edn. United Kingdom: Annabel Ainscow.
- DUNHAM, L.M. and GRANDSTAFF, J.L., 2022. The Value Relevance of Earnings, Book Values, and Other Accounting Information and the Role of Economic Conditions in Value Relevance: A Literature Review*. *Accounting Perspectives*, **21**(2), pp. 237-272.
- EASTON, P.D. and HARRIS, T.S., 1991. Earnings As an Explanatory Variable for Returns. *Journal of Accounting Research*, **29**(1), pp. 19-36.
- EL SHAMY, M.A. and KAYED, M.A., 2005. The value relevance of earnings and book values in equity valuation: An international perspective-The case of Kuwait. *International Journal of Commerce and Management*, **15**(1), pp. 68-79.
- EMOTT, D.T., 2011. *Practitioner's Complete Guide to MAs: An All-Inclusive Reference*. 1. Aufl.; 1 edn. Hoboken, N.J: Hoboken, N.J: Wiley.
- ERKILET, G., JANKE, G. and KASPERZAK, R., 2022. How valuation approach choice affects financial analysts' target price accuracy. *Zeitschrift für Betriebswirtschaft*, **92**(5), pp. 741-779.
- ERNST, D., 2022. Simulation-based business valuation: Methodical implementation in the valuation practice. *Journal of Risk and Financial Management*, **15**(5), pp. 200.
- FABOZZI, F.J. and MARKOWITZ, H.M., 2011. *Equity valuation and portfolio management*. John Wiley & Sons.
- FAIRHURST, D.S., 2015. *Using Excel for Business Analysis: A Guide to Financial Modelling Fundamentals*. 2; Revised edn. Newark: Newark: John Wiley & Sons, Incorporated.
- FAZZINI, M., 2018. *Business Valuation Theory and Practice*. 1st edn. Cham : Springer International Publishing : Imprint: Palgrave Macmillan.

- FELDMAN, S.J., 2005. *Principles of private firm valuation*. Hoboken, N.J.: Hoboken, N.J. : John Wiley & Sons.
- FELTHAM, G.A. and OHLSON, J.A., 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary accounting research*, **11**(2), pp. 689-731.
- FELTHAM, G.A. and PAE, J., 2000. Analysis of the impact of accounting accruals on earnings uncertainty and response coefficients. *Journal of Accounting, Auditing & Finance*, **15**(3), pp. 199-220.
- FERNANDEZ, P., 2002. *Valuation Methods and Shareholder Value Creation*. 1 edn. San Diego: San Diego: Elsevier Science & Technology.
- FERSON, S., 1996. What Monte Carlo methods cannot do. *Human and Ecological Risk Assessment: An International Journal*, **2**(4), pp. 990-1007.
- FETTERS, M.D., CURRY, L.A. and CRESWELL, J.W., 2013. Achieving Integration in Mixed Methods Designs-Principles and Practices. *Health services research*, **48**(6), pp. 2134-2156.
- FILIP, A. and RAFFOURNIER, B., 2010. The value relevance of earnings in a transition economy: The case of Romania. *The International Journal of Accounting*, **45**(1), pp. 77-103.
- FRANCIS, J. and SCHIPPER, K., 1999. Have financial statements lost their relevance? *Journal of Accounting Research*, **37**(2), pp. 319-352.
- FREIHAT, A.R.F., 2019. FACTORS AFFECTING PRICE TO EARNINGS RATIO (P/E): EVIDENCE FROM THE EMERGING MARKET. *Risk Governance & Control: Financial Markets & Institutions*, **9**(2),.
- GALLETTA, A., 2013. *Mastering the Semi-Structured Interview and Beyond : From Research Design to Analysis and Publication*. New York, NY : New York University Press.

- GARCÍA-SÁNCHEZ, J., PREVE, L. and SARRIA-ALLENDE, V., 2010. Valuation in emerging markets: A simulation approach. *Journal of Applied Corporate Finance*, **22**(2), pp. 100-108.
- GEE-JUNG, K. and KWON, E., 2009. The value relevance of book values, earnings and cash flows: evidence from Korea. *International journal of business and management*, **4**(10), pp. 28-42.
- GENNADY, L., 2008. Valuing Corporate Growth Using Real Options. *The Kyoto Economic Review*, **77**(2), pp. 173-205.
- GIBBS, G., 2008. *Analysing qualitative data*. London: SAGE Publications Ltd.
- GITMAN, L.J. and ZUTTER, C.J., 2015. *Principles of Managerial Finance*. 14th edn. Pearson Education Limited.
- GODET, M., 2000. The art of scenarios and strategic planning: tools and pitfalls. *Technological forecasting and social change*, **65**(1), pp. 3-22.
- GONNELLA, E. and TALARICO, L., 2018. Regulation in business valuation: the case of the International Valuation Standards Council. *Research Journal of Finance and Accounting*, **9**(16), pp. 102-115.
- GOPE, A. and MITRA, G., 2022. Expected Credit Loss Under IFRS-9 and Impact of COVID-19. *South Asian Journal of Management*, **29**(1), pp. 166-180.
- GRAHAM, J.R. and HARVEY, C.R., 2001. The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics*, **60**(2-3), pp. 187-243.
- GRAHAM, J.R., HARVEY, C.R. and RAJGOPAL, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, **40**(1-3), pp. 3-73.
- GRECH, O., 2012. *Valuation techniques used in valuing five-star hotels in Malta: Analysis and Assessment*, University of Malta.

- GREENWOOD, R., SUDDABY, R. and HININGS, C.R., 2002. Theorizing Change: The Role of Professional Associations in the Transformation of Institutionalized Fields. *Academy of Management journal*, **45**(1), pp. 58-80.
- GU, Z., 2007. Across-sample Incomparability of R2s and additional evidence on value relevance changes over time. *Journal of Business Finance & Accounting*, **34**(7-8), pp. 1073-1098.
- GUJARATI, D.N. and PORTER, D.C., 2010. *Essentials of Econometrics*. 4th edn. New York: McGraw-Hill Education.
- H. CHOWDHURY, R., MAUNG, M. and ZHANG, J., 2014. Information content of dividends: a case of an emerging financial market. *Studies in Economics and Finance*, **31**(3), pp. 272-290.
- HABIB, A., 2004. Impact of earnings management on value-relevance of accounting information: empirical evidence from Japan. *Managerial Finance*, **30**(11), pp. 1-15.
- HAIL, L., 2013. Financial reporting and firm valuation: relevance lost or relevance regained? *Accounting and Business Research*, **43**(4), pp. 329-358.
- HAO, J. and PHAM, V.T., 2022. COVID-19 disclosures and market uncertainty: evidence from 10-Q Filings. *Australian Accounting Review*, **32**(2), pp. 238-266.
- HASAN, I., POLITSIDIS, P.N. and SHARMA, Z., 2021. Global syndicated lending during the COVID-19 pandemic. *Journal of Banking & Finance; J Bank Finance*, **133**, pp. 106121.
- HAYN, C., 1995. The information content of losses. *Journal of Accounting and Economics*, **20**(2), pp. 125-153.
- HELLSTROM, K., 2006. The Value Relevance of Financial Accounting Information in a Transition Economy: The Case of the Czech Republic. *The European Accounting Review*, **15**(3), pp. 325-349.

- HELTZER, W. and MINDAK, M., 2021. COVID-19 and the Accounting Profession. *Journal of Accounting, Ethics and Public Policy*, **22**(2), pp. 151-205.
- HOFFMANN, C.H., 2017. Strengths and Weaknesses of Scenario Planning as a Risk Management Tool. Wiesbaden: Wiesbaden: Springer Fachmedien Wiesbaden, pp. 213-218.
- HOLTHAUSEN, R.W. and WATTS, R.L., 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics*, **31**(1-3), pp. 3-75.
- HOLTHAUSEN, R.W. and ZMIJEWSKI, M.E., 2012. Valuation with Market Multiples: How to Avoid Pitfalls When Identifying and Using Comparable Companies 1. *Journal of Applied Corporate Finance*, **24**(3), pp. 26-38.
- HORVATH, J. and LEUNG, C., 2010. The Use of the Market Approach to Valuation in Volatile Markets. In: J.L. HORVATH, ed, *Valuing a Business in Volatile Markets*. Toronto: Thomson Reuters Canada Limited, .
- HOWELL, S.D. and JÄGLE, A.J., 1997. Laboratory evidence on how managers intuitively value real growth options. *Journal of Business Finance & Accounting*, **24**(7-8), pp. 915-935.
- HUANG, S., TAN, H., WANG, X. and YU, C., 2023. Valuation uncertainty and analysts' use of DCF models. *Review of Accounting Studies*, **28**(2), pp. 827-861.
- HÜTTICHE, T. and SCHMID, F., 2024. Consideration of Uncertainties in Business Valuations. Cham: Cham: Springer Nature Switzerland, pp. 9-22.
- IMAM, S., BARKER, R. and CLUBB, C., 2008. The use of valuation models by UK investment analysts. *European Accounting Review*, **17**(3), pp. 503-535.
- ISLAM, M.N., LI, S. and WHEATLEY, C.M., 2023. Accounting comparability and financial distress. *Review of Accounting and Finance*, **22**(3), pp. 353-373.
- INTERNATIONAL ACCOUNTING STANDARDS BOARD, 2018. *Conceptual Framework*.

IVSC, 2022. *International Valuation Standards (IVS)*. London: IVSC.

INTERNATIONAL VALUATION STANDARDS COUNCIL [IVSC], 2020-last update, Dealing with valuation uncertainty at times of market unrest: A letter from the IVSC's technical standards boards. Available: https://www.ivsc.org/pdfviewer/dealing-with-valuation-uncertainty-at-times-of-market-unrest/?auto_viewer=true#page=&zoom=auto&pagemode=none [25 October, 2023].

JENKINS, D.S., KANE, G.D. and VELURY, U., 2009. Earnings Conservatism and Value Relevance Across the Business Cycle. *Journal of Business Finance & accounting*, **36**(9-10), pp. 1041-1058.

JOHNSON, M.F., 1999. Business cycles and the relation between security returns and earnings. *Review of Accounting Studies*, **4**, pp. 93-117.

JOOS, P.R. and PIOTROSKI, J.D., 2017. The best of all possible worlds: unravelling target price optimism using analysts' scenario-based valuations. *Review of Accounting Studies*, **22**(4), pp. 1492-1540.

JOOS, P., PIOTROSKI, J.D. and SRINIVASAN, S., 2016. Can analysts assess fundamental risk and valuation uncertainty? An empirical analysis of scenario-based value estimates. *Journal of Financial Economics*, **121**(3), pp. 645-663.

JOVANOVIĆ, P., 1999. Application of sensitivity analysis in investment project evaluation under uncertainty and risk. *International Journal of Project Management*, **17**(4), pp. 217-222.

KANE, A., MARCUS, A.J. and NOH, J., 1996. The P/E Multiple and Market Volatility. *Financial Analysts Journal*, **52**(4), pp. 16-24.

KANE, G.D., LEECE, R.D., RICHARDSON, F.M. and VELURY, U., 2015. The Impact of Recession on the Value-relevance of Accounting Information. *Australian Accounting Review; Australian Accounting Review*, **25**(2), pp. 185-191.

- KE, Y., 2022. The impact of COVID-19 on firms' cost of equity capital: Early evidence from U.S. public firms. *Finance research letters*, **46**, pp. 102242.
- KIM, J., KIM, J. and LEE, J.J., 2022. Earnings versus cash flows in equity valuation: evidence from the COVID-19 crisis. *Available at SSRN 4010173*, .
- KIM, Y. and LEE, K.Y., 2022. Impact of investor sentiment on stock returns. *Asia-Pacific Journal of Financial Studies*, **51**(1), pp. 132-162.
- KIRKULAK, B. and BALSARI, C.K., 2009. Value relevance of inflation-adjusted equity and income. *The International Journal of Accounting*, **44**(4), pp. 363-377.
- KOLLER, T., GOEDHART, M. and WESSELS, D., 2015. *Valuation: Measuring and Managing the Value of Companies*. 6th edition, University edition. Newark: Newark: Wiley.
- KONCHITCHKI, Y., 2011. Inflation and nominal financial reporting: Implications for performance and stock prices. *The Accounting Review*, **86**(3), pp. 1045-1085.
- KOOLI, C. and LOCK SON, M., 2021. Impact of COVID-19 on Mergers, Acquisitions & Corporate Restructurings. *Businesses*, **1**(2), pp. 102-114.
- KOSHAL, R.K., GUPTA, A.K., GOYAL, A. and NAVIN CHOUDHARY, V., 2008. Assessing economic literacy of Indian MBA students. *American Journal of Business*, **23**(2), pp. 43-52.
- KOTHARI, S.P. and ZIMMERMAN, J.L., 1995. Price and return models. *Journal of Accounting and Economics*, **20**(2), pp. 155-192.
- KPMG, 2020-last update, Valuations amidst the COVID-19 Pandemic & Significant Economic Uncertainties. Available: <https://assets.kpmg.com/content/dam/kpmg/sq/pdf/2020/07/valuation-s-amidst-the-covid-19-pandemic-and-significant-economic-uncertainties.pdf> [01 April, 2024].
- KPMG, 2024-last update, Beyond DCF: Enhancing Business Valuation in Emerging Markets through Monte Carlo Simulation Techniques.

Available: <https://assets.kpmg.com/content/dam/kpmg/gh/pdf/Thought%20Leadership%20-%20Monte%20Carlo.pdf> [12 April, 2024].

KRÜGER, P., LANDIER, A. and THESMAR, D., 2015. The WACC fallacy: The real effects of using a unique discount rate. *The Journal of Finance*, **70**(3), pp. 1253-1285.

KULWIZIRA LUKANIMA, B., 2023. *Corporate Valuation: A Practical Approach with Case Studies*. 1st edn. Cham: Cham: Springer International Publishing AG.

KUMAR, V. and SHARMA, P., 2019. Deal Valuation. Singapore: Singapore: Palgrave Macmillan, pp. 77-105.

KURNIAWATI, T. and ANGGRAINI, D.J., 2023. The Impact of Sales Growth and Profitability on Firm Value During The Covid-19 Pandemic, *Ninth Padang International Conference On Economics Education, Economics, Business and Management, Accounting and Entrepreneurship (PICEEBA 2022)* 2023, Atlantis Press, pp. 633-641.

LAGARDE, C., Mar 19, 2020-last update, Our response to the coronavirus emergency.

Available: <https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200319~11f421e25e.en.html> [27 October, 2023].

LANDSMAN, W.R. and MAGLIOLO, J., 1988. Cross-sectional capital market research and model specification. *Accounting Review*, , pp. 586-604.

LARRABEE, D.T. and VOSS, J.A., 2013. *Valuation techniques discounted cash flow, earnings quality, measures of value added, and real options*. 1st edn. Hoboken, N.J.: Hoboken, N.J. : John Wiley & Sons.

LEE, S., MAKHIJA, M. and PAIK, Y., 2008. The value of real options investments under abnormal uncertainty: The case of the Korean economic crisis. *Journal of World Business*, **43**(1), pp. 16-34.

LEV, B. and ZAROWIN, P., 1999. The Boundaries of Financial Reporting and How to Extend Them. *Journal of Accounting Research*, **37**(2), pp. 353-385.

- LIU, G. and SUN, J., 2022. The impact of COVID-19 pandemic on earnings management and the value relevance of earnings: US evidence. *Managerial Auditing Journal*, **37**(7),.
- LIU, J., NISSIM, D. and THOMAS, J., 2002. Equity valuation using multiples. *Journal of Accounting Research*, **40**(1), pp. 135-172.
- LIU, Y. and XU, D., 2021. The performances of Financial Models During COVID-19: Evidence from CAPM and Fama-French Five Factors Model, 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021) 2021, Atlantis Press, pp. 1796-1803.
- LODERER, C., LONG JR, J.B. and ROTH, L., 2010. Implementing Fischer Black's Simple Discounting Rule. *Journal of Applied Corporate Finance*, **22**(2), pp. 60-68.
- LYNN, S., 2020. *Valuation for Accountants: A Short Course Based on IFRS*. 1st edn. Singapore: Singapore: Springer Nature.
- MALMCRONA, A. and ANDERSSON, M., 2018. *Real Option Valuation of High Growth Tech Firms*, Copenhagen Business School.
- MANICOLO, S., 2010. *Valuation Analysis of HSBC Bank Malta p.l.c. and Bank of Valletta p.l.c. securities using the Free Cash Flow to Equity Technique*, University of Malta.
- MARIAPPAN, P., 2019. *Statistics for business*. Boca Raton, FL : CRC Press.
- MASSARI, M., GIANFRATE, G. and ZANETTI, L., 2016. *Corporate valuation: measuring the value of companies in turbulent times*. 1st edn. Hoboken: Hoboken: Wiley.
- MATHEWS, S., DATAR, V. and JOHNSON, B., 2007. A practical method for valuing real options: the Boeing approach. *Journal of Applied Corporate Finance*, **19**(2),.

- MEHNAZ, L., RAHMAN, A. and KABIR, H., 2022. Relevance of supplementary fair value disclosures under market uncertainty: effects on audit fees and investors' pricing. *Managerial Auditing Journal*, **37**(7), pp. 819-849.
- MEITNER, M. and STREITFERDT, F.G., 2014. DCF-valuations of companies in crisis: distress-related leverage, identification of risk positions, discounting techniques, and "beta flips". *Journal of Business Valuation and Economic Loss Analysis*, **9**(1), pp. 145-174.
- MELLEN, C.M. and EVANS, F.C., 2010. *Valuation for M&A: Building Value in Private Companies*. 2; 2nd edn. New York: New York: John Wiley & Sons, Incorporated.
- MERCER, Z.C., 2021. *Business valuation: an integrated theory*. Third edition.. edn. Hoboken, New Jersey : Wiley.
- MIFSUD, S., 2009. *Net Asset Value as a Business Valuation Technique: An Assessment*, University of Malta.
- MION, L., GEORGAKOPOULOS, G., KALANTONIS, P. and ERIOTIS, N., 2014. The Value Relevance of Accounting Information in Times of Crisis: An Empirical Study. *International Journal of Corporate Finance and Accounting (IJCFA)*, **1**(2), pp. 44-67.
- MITRA, S.K., 2011. Revisiting WACC. *Global Journal of Management and Business Research*, **11**(11), pp. 89-96.
- MIZZI, P.M., 2016. *Valuation and Turnaround of Distressed Firms: A Twin Case Study Analysis*, University of Malta.
- MOSTAFA, W., 2016. The value relevance of earnings, cash flows and book values in Egypt. *Management Research Review*, **39**(12), pp. 1752-1778.
- MUIR, B., 2021. *The Discount Rate in Business Valuations during the COVID-19 Pandemic*. Baltimore Business Review.

- MUN, J. and POMERING, R., 2010. *Modeling Risk: Applying Monte Carlo Risk Simulation, Strategic Real Options, Stochastic Forecasting, and Portfolio Optimization*. 2; 2nd edn. Chichester: Chichester: John Wiley & Sons, Incorporated.
- MYERS, S.C., 1977. Determinants of corporate borrowing. *Journal of Financial Economics*, **5**(2), pp. 147-175.
- NEGAKIS, C.J., 2005. Accounting and capital markets research: a review. *Managerial finance*, **31**(2), pp. 1.
- NENKOV, D., 2010. Relative company valuation methods and lessons of the global financial crisis. *Current Issues of Business and Law*, **5**, pp. 161-186.
- NEZLOBIN, A., RAJAN, M.V. and REICHELSTEIN, S., 2016. Structural properties of the price-to-earnings and price-to-book ratios. *Review of Accounting Studies*, **21**(2), pp. 438-472.
- NOWAK, O. and HNILICA, J., 2012. Improving Business Valuation with the Use of Simulation Techniques. *International Journal of Mathematical Models and Methods in Applied Sciences*, **5**(6), pp. 679-687.
- NSO, 2021-last update, Gross Domestic Product: 2020. Available: https://nso.gov.mt/wp-content/uploads/News2021_040.pdf [16 February, 2024].
- OBERHOLSTER, J.G., ZULU, M. and DE KLERK, M., 2017. A comparison of the value relevance of interim and annual financial statements. *South African Journal of Economic and Management Sciences*, **20**(1), pp. 1-11.
- OFOR, N., 2022. Value Relevance of Accounting Information in Pre-Post Covid-19 Pandemic. *Journal of Accounting and Financial Management*, **8**(7), pp. 235-251.
- OGEH FIADOR, V., 2013. Corporate governance and value relevance of financial information: evidence from the Ghana Stock Exchange. *Corporate governance (Bradford)*, **13**(2), pp. 208-217.

- OHLSON, J.A., 1995. Earnings, book values, and dividends in equity valuation. *Contemporary accounting research*, **11**(2), pp. 661-687.
- OHLSON, J.A., 1990. A synthesis of security valuation theory and the role of dividends, cash flows, and earnings. *Contemporary accounting research*, **6**(2), pp. 648-676.
- OTA, K., 2003. The impact of price and return models on value relevance studies: A review of theory and evidence. *Accounting Research Journal*, **16**(1), pp. 6-20.
- PAOLONE, F., 2020. *Accounting, Cash Flow and Value Relevance*. 1st edn. Cham: Cham: Springer International Publishing AG.
- PASCOLO, M., 2019. *Uncertainty in Valuation: Expansion of the DCF Model with Monte Carlo Simulations of Enterprise Value and Share Price*, Copenhagen Business School.
- PATERSON, A. and LEUNG, D., 2016. *Research Methods for Accounting and Finance*. 1st edn. Oxford: Oxford: Goodfellow Publishers, Limited.
- PENMAN, S.H., 1996. The articulation of price-earnings ratios and market-to-book ratios and the evaluation of growth. *Journal of Accounting Research*, **34**(2), pp. 235-259.
- PETERS, L., 2016. *Introduction to Real Options Analysis*. Switzerland: Switzerland: Springer International Publishing AG, pp. 1-15.
- PIKE, R. and NEALE, B., 2009. *Corporate Finance and Investment: Decisions and Strategies*. 6th edn. Pearson Education Limited.
- PIVORIENĖ, A., 2015. Flexibility valuation under uncertain economic conditions. *Procedia-Social and Behavioral Sciences*, **213**, pp. 436-441.
- PLENBORG, T. and PIMENTEL, R.C., 2016. Best practices in applying multiples for valuation purposes. *The Journal of Private Equity (Retired)*, **19**(3), pp. 55-64.

- PRAKASH, N., MAHESHWARI, A. and HAWALDAR, A., 2023. The impact of Covid-19 on the capital structure in emerging economies: evidence from India. *Asian Journal of Accounting Research*, **8**(3), pp. 236-249.
- PUSPA, D.F., NAZARUDDIN, I. and MINOVIA, A.F., 2023. Relevance of Earnings Value, Book Value, and Operating Cash Flow in Manufacturing Companies in Indonesia. *Journal of Accounting and Investment*, **24**(1), pp. 120-136.
- RAGOZZINO, R., REUER, J.J. and TRIGEORGIS, L., 2016. Real options in strategy and finance: Current gaps and future linkages. *Academy of Management Perspectives*, **30**(4), pp. 428-440.
- RICS, 2020. *Impact of COVID-19 on valuation*.
- RIGOPOULOS, G., 2015. Real Options valuation frameworks and adoption issues. *International journal of information, business and management*, **7**(4), pp. 1.
- RIZVI, S.K.A., YAROVAYA, L., MIRZA, N. and NAQVI, B., 2022. The impact of COVID-19 on the valuations of non-financial European firms. *Heliyon*, **8**(6),.
- ROSS, S.A., 1983. Accounting and Economics. *The Accounting Review*, **58**(2), pp. 375-380.
- ROSSI, E. and FORTE, G., 2016. *Assessing Relative Valuation in Equity Markets: Bridging Research and Practice*. 1st edn. London: London: Palgrave Macmillan UK.
- RUBIN, H.J. and RUBIN, I.S., 2004. *Qualitative Interviewing: The Art of Hearing Data*. 2nd edn. Los Angeles: Los Angeles: SAGE Publications Inc.
- RUSLIN, R., MASHURI, S., RASAK, M.S.A., ALHABSYI, F. and SYAM, H., 2022. Semi-structured Interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, **12**(1), pp. 22-29.

- SAMONAS, M., 2015. *Financial Forecasting, Analysis, and Modelling: A Framework for Long-Term Forecasting*. 1st edn. Newark: Newark: Wiley.
- SAUNDERS, M.N.K., LEWIS, P. and THORNHILL, A., 2023. *Research methods for business students*. Ninth edition.. 9th edn. Pearson Education Limited.
- SAVOLAINEN, J., 2016. Real options in metal mining project valuation: Review of literature. *Resources Policy*, **50**, pp. 49-65.
- SCHABERL, P.D., 2016. Beyond accounting and back: An empirical examination of the relative relevance of earnings and “other” information. *Advances in accounting*, **35**, pp. 98-113.
- SCHÜLER, A. and WÜNSCHE, S., 2023. Inflation and Valuation Practice: German Evidence. *Schmalenbach Journal of Business Research*, **75**(2), pp. 239-266.
- SCICLUNA, K., 2014. *The Valuation of Gozo Channel Company Limited for Potential Privatisation – An Analysis*, University of Malta.
- SHAMKI, D. and ABDUL RAHMAN, A., 2013. Does financial disclosure influence the value relevance of accounting information? *Education, Business and Society: Contemporary Middle Eastern Issues*, **6**(3/4), pp. 216-232.
- SHARMA, A.K., KUMAR, S. and SINGH, R., 2012. Value relevance of financial reporting and its impact on stock prices: evidence from India. *South Asian Journal of Management*, **19**(2), pp. 60-77.
- SHARMA, M. and PRASHAR, E., 2013. A Conceptual Framework for Relative Valuation. *The Journal of Private Equity*, **16**(3),.
- SHARMA, N. and PATTERSON, P.G., 1999. The impact of communication effectiveness and service quality on relationship commitment in consumer, professional services. *Journal of Services Marketing*, **13**(2), pp. 151-170.

- SLEVITCH, L., 2011. Qualitative and quantitative methodologies compared: Ontological and epistemological perspectives. *Journal of quality assurance in hospitality & tourism*, **12**(1), pp. 73-81.
- SLOMAN, J. and WRIDE, A., 2009. *Economics*. 7th edn. England: Pearson Education Limited.
- SMIT, H.T. and TRIGEORGIS, L., 2004. *Strategic investment: Real options and games*. Princeton University Press.
- STEIGER, F., 2010. The validity of company valuation using Discounted Cash Flow methods. *arXiv preprint arXiv:1003.4881*, .
- STUBELJ, I., PRIMOŽ, D. and JERMAN, M., 2014. Estimating WACC for Regulated Industries on Developing Financial Markets and in Times of Market Uncertainty. *Managing global transitions*, **12**(1), pp. 55-77.
- SZUMILO, N., GANTENBEIN, P., GLEISSNER, W. and WIEGELMANN, T., 2016. Predicting uncertainty: the impact of risk measurement on value of real estate portfolios. *Journal of Property Research*, **33**(1), pp. 1-17.
- TABONE, D., 2016. *Intrinsic Values, Market Values and Efficiency: An Analysis of MALTESE Bank Stocks*, University of Malta.
- TAHAT, Y.A. and ALHADAB, M., 2017. Have accounting numbers lost their value relevance during the recent financial credit crisis? *The Quarterly Review of Economics and Finance*, **66**, pp. 182-191.
- TAMAYO-TORRES, I., RUIZ-MORENO, A. and VERDÚ, A.J., 2010. The moderating effect of innovative capacity on the relationship between real options and strategic flexibility. *Industrial Marketing Management*, **39**(7), pp. 1120-1127.
- THE ACCOUNTANCY BOARD, 2024. *Annual Report 2023*. Malta: .
- THOMAS, R. and GUP, B.E., 2009. *The Valuation Handbook: Valuation Techniques from Today's Top Practitioners*. Hoboken, N.J: Hoboken, N.J: Wiley.

- THOMPSON, E.K., ASHIMWE, O., BUERTEY, S. and KIM, S., 2022. The value relevance of sustainability reporting: does assurance and the type of assurer matter? *Sustainability Accounting, Management and Policy Journal*, **13**(4), pp. 858-877.
- THORNE, C., 2021. Valuation uncertainty – when and why this is important. *Journal of Property Investment & finance*, **39**(5), pp. 500-508.
- TOLEDO, A.H., FLIKKEMA, R. and TOLEDO-PEREYRA, L.H., 2011. Developing the research hypothesis. *Journal of Investigative Surgery*, **24**(5), pp. 191-194.
- TREMOLIZZO, D., 2009. *Mis-Valuation of cyclical companies*, Erasmus University Rotterdam.
- TRIANANTIS, A. and BORISON, A., 2001. Real options: state of the practice. *Journal of Applied Corporate Finance*, **14**(2), pp. 8-24.
- TRIANANTIS, A., 2005. Realizing the potential of real options: does theory meet practice? *Journal of Applied Corporate Finance*, **17**(2), pp. 8-16.
- TRIGEORGIS, L. and REUER, J.J., 2017. Real options theory in strategic management. *Strategic Management Journal*, **38**(1), pp. 42-63.
- TRIVEDI, P. and BEHERA, S.R., 2012. Macroeconomic Fundamentals as Determinants of Equity Prices: An Empirical Analysis for India. *IUP Journal of Applied Finance*, **18**(3),.
- TROMBETTA, M. and IMPERATORE, C., 2014. The dynamic of financial crises and its non-monotonic effects on earnings quality. *Journal of Accounting and Public Policy*, **33**(3), pp. 205-232.
- TURNER, P., 2021. *Econometrics in Practice*. 1st edn. Dullas, Virginia: Mercury Learning and Information.
- VANZA, S., WELLS, P. and WRIGHT, A., 2018. Do asset impairments and the associated disclosures resolve uncertainty about future returns and reduce

- information asymmetry? *Journal of Contemporary Accounting & Economics*, **14**(1), pp. 22-40.
- WANG, Y.S. and HUANG, P.C., 2014. EARNINGS MANIPULATION AND PROFITABILITY. *Economic Computation & Economic Cybernetics Studies & Research*, **48**(1),.
- WEBER, E.U., SIEBENMORGEN, N. and WEBER, M., 2005. Communicating asset risk: How name recognition and the format of historic volatility information affect risk perception and investment decisions. *Risk Analysis: An International Journal*, **25**(3), pp. 597-609.
- WHELAN, C., 2008. The value-relevance of corporate governance: Australian evidence. *Corporate Ownership and Control*, **4**(4), pp. 292-300.
- WHITE, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica: journal of the Econometric Society*, , pp. 817-838.
- WHO, 2023-last update, Coronavirus disease (COVID-19) pandemic. Available: <https://www.who.int/europe/emergencies/situations/covid-19> [Oct 14, 2023].
- WILKINSON, S., ANTONIADES, H. and HALVITIGALA, D., 2017. The future of the valuation profession.
- WILKINSON, S., HALVITIGALA, D. and ANTONIADES, H., 2018. Educators, professional bodies and the future of the valuation profession. *Property Management*, **36**(4), pp. 389-399.
- YAUCH, C.A. and STEUDEL, H.J., 2003. Complementary Use of Qualitative and Quantitative Cultural Assessment Methods. *Organisational Research Methods*, **6**(4), pp. 465-481.
- YILMAZ, K., 2013. Comparison of Quantitative and Qualitative Research Traditions: epistemological, theoretical, and methodological differences. *European Journal of Education*, **48**(2), pp. 311-325.

YVONNE FEILZER, M., 2010. Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm. *Journal of mixed methods research*, 4(1), pp. 6-16

List of Legislative References

Income Tax Act. 1994. Laws of Malta Cap. 123

Appendices

Appendix A1.1: Purpose of Corporate Valuation

Damodaran (2006) classifies the role of valuation exercises in

1. *Portfolio Management* – Firm valuations enhance information symmetry and help reduce investors' information gaps while seeking optimal portfolios, guiding them to hold, sell or buy stocks to main such optimality (Fabozzi, Markowitz 2011). However, the relevance of corporate valuation towards the planning and control of portfolios is contingent upon the passiveness of the investor. Different investor philosophies require differing degrees of information, and hence the worth of particular assets. Damodaran (2006) distinguishes between active investors, market timers, information traders and chartists as requiring distinct degrees of information.
2. *Acquisition Analysis* – During mergers or takeovers, both bidders and potential vendors shall compute a fair estimate forming the basis of their willingness to transact. Aluko, Amidu (2005) indicate that institutional investors are unwilling to enter into a business combination based on an unsubstantiated value uttered by one party to the contract. Thus, corporate valuations play a central role during acquisitions as these theoretical models are widely understood and accepted by all parties, and they provide a baseline to critically assess the reasonableness of the offer, and whether to go through with the acquisition or cease further negotiations.
3. *Corporate Finance* – Strategic considerations require valuation information in order to understand the repercussions of significant investment and financial decisions undertaken by top management, on the value of the firm. Appropriate strategic decisions can only be accompanied by valuation assignments, in order to reveal the extent to which firm policies align with value-creation objectives (Kulwizira Lukanima 2023).

Henceforth, shareholder value and wealth can be monitored and assessed based on the results of valuation exercises.

4. *Legal & Tax* – Commercial and Tax legislation might mandate the valuation of undertakings to correctly compute the tax outflow to be paid to the relevant tax authorities and/or for fulfilling and satisfying legal and regulatory obligations. The Income Tax Act [Cap.123] of the Laws of Malta, contemplates a specific methodology in the computation of the market value of a company when estimating the tax charge, applicable further to a transfer of a company's shares.

Appendix A2.1: Further Insights on Value Relevance

From an institutional standpoint, the IASB affirms and emphasises the significance of the decision usefulness role of financial data in its Conceptual Framework, by inscribing that:

“The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity.”

(IASB 2018, p. 8)

Concerning the above, the IASB posits that financial information is useful to make decisions for the provision of *“resources to the entity”*. The latter is further explained within the framework by eliciting that investors and potential investors utilise financial statements, prepared according to globalised standards, for *“buying, selling or holding equity and debt instruments”* (IASB 2018, p. 8), portraying the correlation between financial reporting and company valuations, through the consideration of investment strategies (i.e the acquisition and sale of shares). It is not only essential to evaluate whether financial statement items are useful in influencing decisions, but the extent of such usefulness of accounting information is imperative and widens the current scope of academic literature between financial reporting and corporate valuations.

Appendix A2.2: Conventional Valuation Method Process

Relative Valuation

Damodaran (2007) discloses the procedure of undertaking this method, by highlighting how analysts must primarily search for comparable firms in an active market, these comparable assets are subdued to an assessment to extract standardised performance measures, such as EBITDA multiples, PE ratios and PBV ratio, which are subsequently applied to estimate the value of the subject entity. Lastly, the author explains that adjustments should be performed to modify the value achieved with the standardised variables, to reflect the intrinsic attributes of the entity distinct from the comparable company, such as inherent risks, growth opportunities and the ability to generate cash flows.

DCF Valuation

The DCF approach is described as consisting of a sequential process where the analyst must first estimate the value of the firm's operating free cash flows discounted using the applicable WACC. Thereafter, the enterprise value is computed by evaluating the value of non-operating cash flows and summing them to the DCFs above. Finally, to value the common equity to extract the share price, all debt and non-equity claims against the enterprise value are subtracted from the computed estimate (Koller, Goedhart et al. 2015).

Appendix A2.3: Factors Affecting PE and PBV Ratios

Price-Earnings (PE) Ratio

Constand, Constand, Freitas et al. (1991) ponder that the share price is determined by the Gordon Growth Model, which disseminates the PE ratio into its fundamentals: the expected growth rate in earnings, the cost of equity and the payout ratio. Consequently, one delineates that the metric is negatively correlated to the cost of equity and positively associated with the payout ratio and the firm's growth potential. Henceforth, firms are valued at higher multiples of earnings with higher growth rates and payout ratios, and lower embedded risk, contributing to higher PE ratios, *ceteris paribus* (Damodaran 2007). Conversely, in a study executed by Freihat (2019), the dividend payout ratio and firm size were discovered to be the only relevant factor influencing the PE ratio, disregarding earnings growth, and the interest rate (as a proxy for the cost of equity) as having no significant impact.

Price-Book Value (PBV) Ratio

The PBV ratio is based upon the same parameters as the PE ratio, albeit an additional variable: the return on equity (ROE). The ratio is contingent upon the correlation between the return on equity and the opportunity cost of capital, such that the value of an entity's equity must match its book value when the return on equity equates to the expected return of the market (Massari, Gianfrate et al. 2016). Penman (1996) compares the PE and PBV ratios to uncover the association between these ratios and the ROE, upon which the PBV ratio was found to bear a stronger correlation.

Appendix A2.4: Classification of Real Options

Given that the business world is characterized by an endless permutation of decisions, the underpinning theory summarizes the key strategic options into three categories, known as 'simple options'. Complex strategic considerations are a variation of the simple options enlisted below. Larrabee & Voss (2013), Damodaran (2005a) and Smit & Trigeorgis (2004) consolidate them into the following:

1. Option to Abandon: This strategic option is exercised to salvage the remaining value of an investment, by defaulting and halting any successive cash outflows (Larrabee, Voss 2013). The underlying asset in an abandonment option is given by the expected value of cash outflows, while the exercise price is the liquidation value less abandonment costs. (Smith Trigeorgis, 2004).
2. Option to Expand or Grow: The option to grow encompasses expansionary decisions of the business or investment. Larrabee & Voss (2013) disclose that this option is applicable when an investment has the potential to be given additional funds to grow in scale. Smit & Trigeorgis (2004) depict expansionary options as call options with the value emanating from firm expansion as the underlying asset and the exercise price equal to the cost of crafting further business activity.
3. Option to Defer or Delay: Smit & Trigeorgis (2004) and Damodaran (2005) articulate that the real-options method determines the profitability of delaying an investment, unlike traditional approaches. The latter recounts that investments with negative DCFs in the immediate term might generate positive cash flows in the longer-term horizon. The option to delay option is applicable in the simultaneous presence of uncertainty and irreversibility of the investment (Smit, Trigeorgis 2004).

Appendix A2.5: Process of Simulation-based Valuation

Prior to commencing a simulation-based valuation, analysts and practitioners must prepare the model for the eventual incorporation of probabilistic distributions (Pascolo, 2019). Damodaran (2012) enlists the procedure required to conduct a simulation-based valuation effectively.

1. A Monte Carlo approach should commence with identifying the probabilistic variables. During this step, analysts must properly determine the value drivers that exert an impact on the entity's value and evaluate the significance between those inputs to dilute the probabilistic variables into an adequate and time-manageable amount (Massari, Gianfrate et al. 2016).
2. Secondly, Damodaran (2012) expounds that probabilistic distributions must be defined for each selected input, based on either historical data, cross-sectional data and/or statistical distributions and parameters. Correlations between the input variables themselves are investigated to reduce distortions, as high inflation could be associated with high-interest rates (Damodaran 2012).
3. Finally, the simulations are run according to the defined assumptions factored into the model. Stakeholders should be able to appraise the expected firm value and the likelihood that the value will deviate from those expectations, using the output from the simulations. Nowak & Hnilica (2012) contemplate that the degree of probability should not be interpreted as the likelihood of occurrence but rather a distribution of uncertainty regarding the output.

Appendix A3.1: Test for Normality Assumption

In estimating the applicability of the OLS regression model and its statistical inferences, the normality assumption of the dependent variable was examined by employing the Shapiro-Wilk Test. Cleff (2019) describes the latter as an objective means for checking the normal distribution of a variable.

In assessing this normality assumption, the null hypothesis (H_0) specifies that the price distribution is normal and is accepted if the p-value exceeds the 0.05 level of significance. The alternative hypothesis (H_1) specifies that the score distribution is skewed and is accepted if the p-value is less than the 0.05 criterion, as shown below:

H_0 : The Stock Price distribution follows a normal distribution

H_1 : The Stock Price distribution does not follow a normal distribution

The Shapiro-Wilk Test is illustrated below, together with a graphical representation of the frequency distribution of the stock price distribution, depicted in the form of a histogram, as the following:

Test for Normality – Shapiro-Wilk Test			
Non-Pandemic Period	<i>Statistic</i>	<i>df</i>	<i>p-Value</i>
<i>PRICE</i>	0.914	125	< 0.001
Pandemic Period	<i>Statistic</i>	<i>df</i>	<i>p-Value</i>
<i>PRICE</i>	0.883	37	0.001

Table A.1: Shapiro-Wilk Test Result

Unfortunately, the Shapiro-Wilk p-value (approx. 0) is smaller than the 0.05 level of significance for both periods, which indicates that the price distribution violates

the normality assumption. However, graphically the data signals only minimal skewness as depicted in Fig. A3.1 and Fig. A3.2. Consequently, in reference to the mixed normality depiction and given that neither Cleff (2019) nor Gujarati Porter (2010), denote that the normality of the dependent variables indicates a violation of the assumptions of the OLS regression model, the classical method is selected to conform with the objectives of the study and take a similar methodological route as Liu Sun (2022) and Bepari (2015).

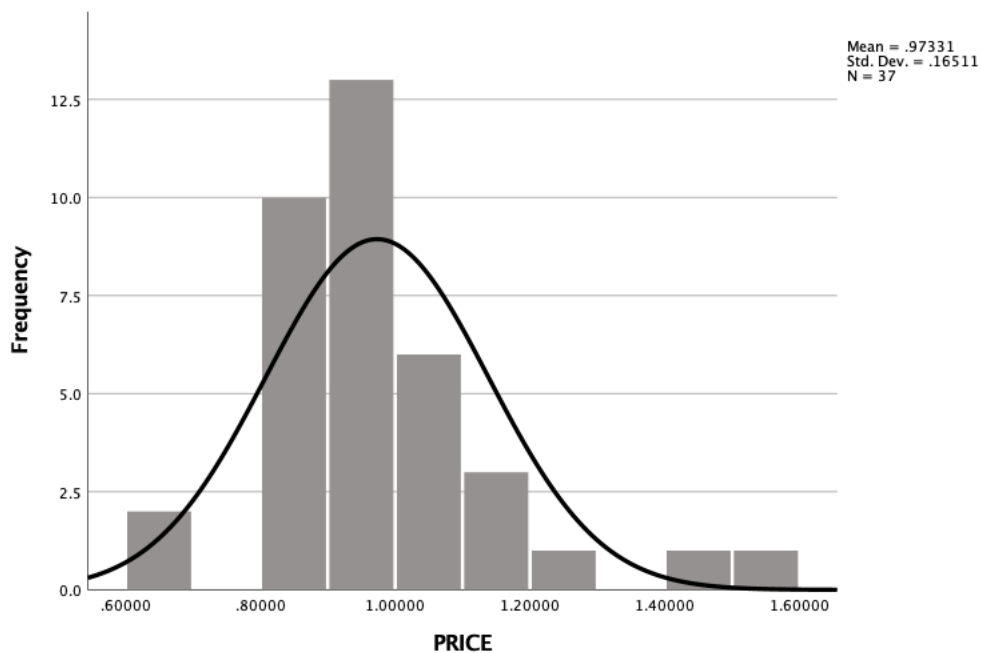
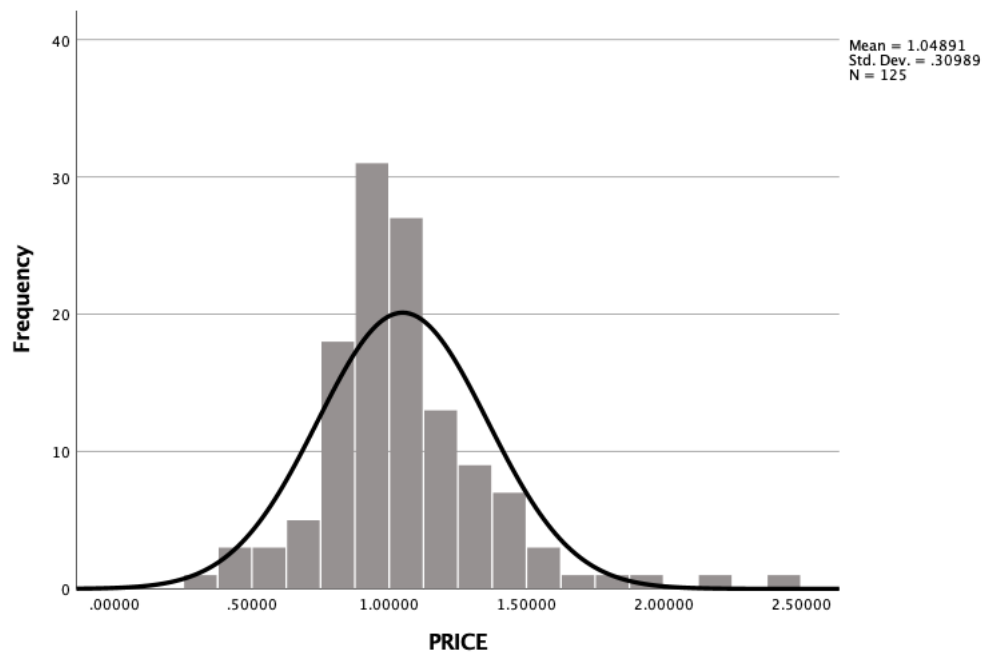


Fig. A.1: Histogram & Normality Distribution of Price Variable during Pandemic



FA.2: Histogram & Normality Distribution of Price Variable during Non-Pandemic

Appendix A3.2: The Nature of the Relationship – Linearity Assumption

The following scatter plots display that both independent variables, *EPS* and *BVPS*, are linearly related to the dependent variable, *PRICE*. Thus, the model fitted for the variables conforms with a multiple linear regression model, and thus no other transformation (such as logarithmic, inverse or square root) should be enabled, as this would alter the nature of the relationship between the dependent and independent variables.

For Model 1 – Pre-Pandemic:

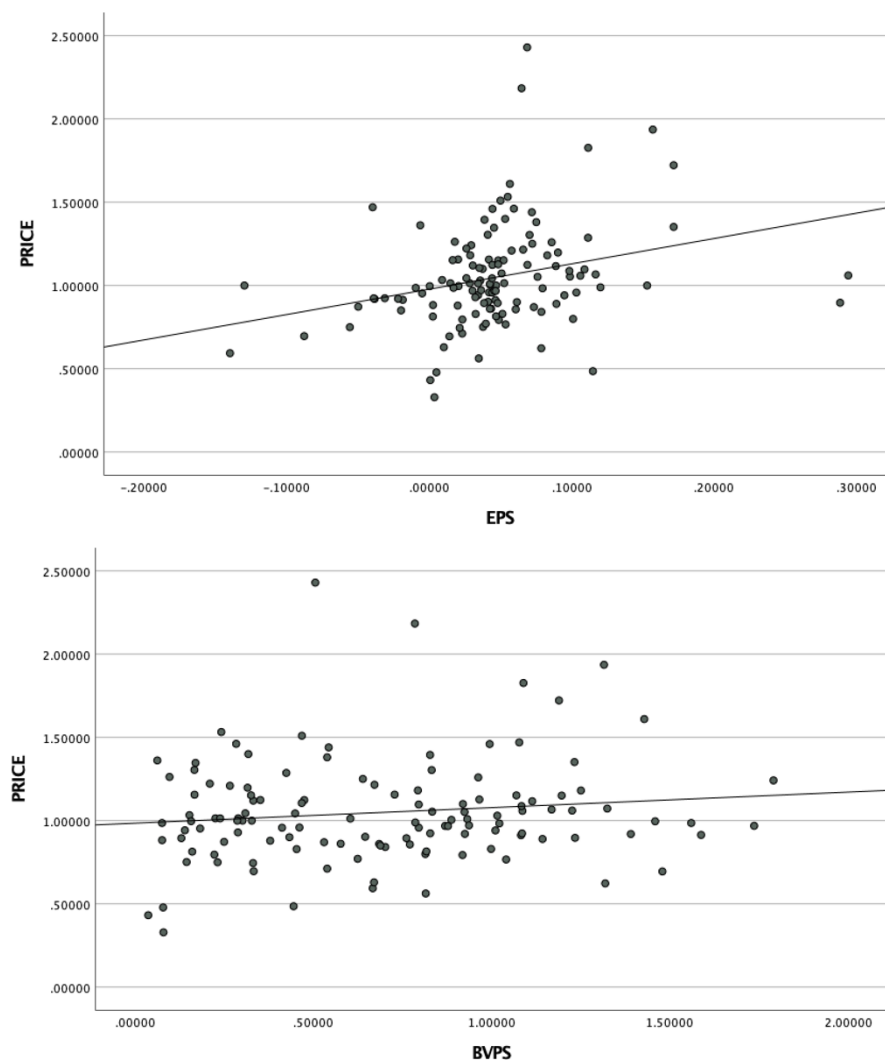


Fig. A.3: Linearity Assumption Scatterplots for Non-Pandemic Period

For Model (1) – Pandemic:

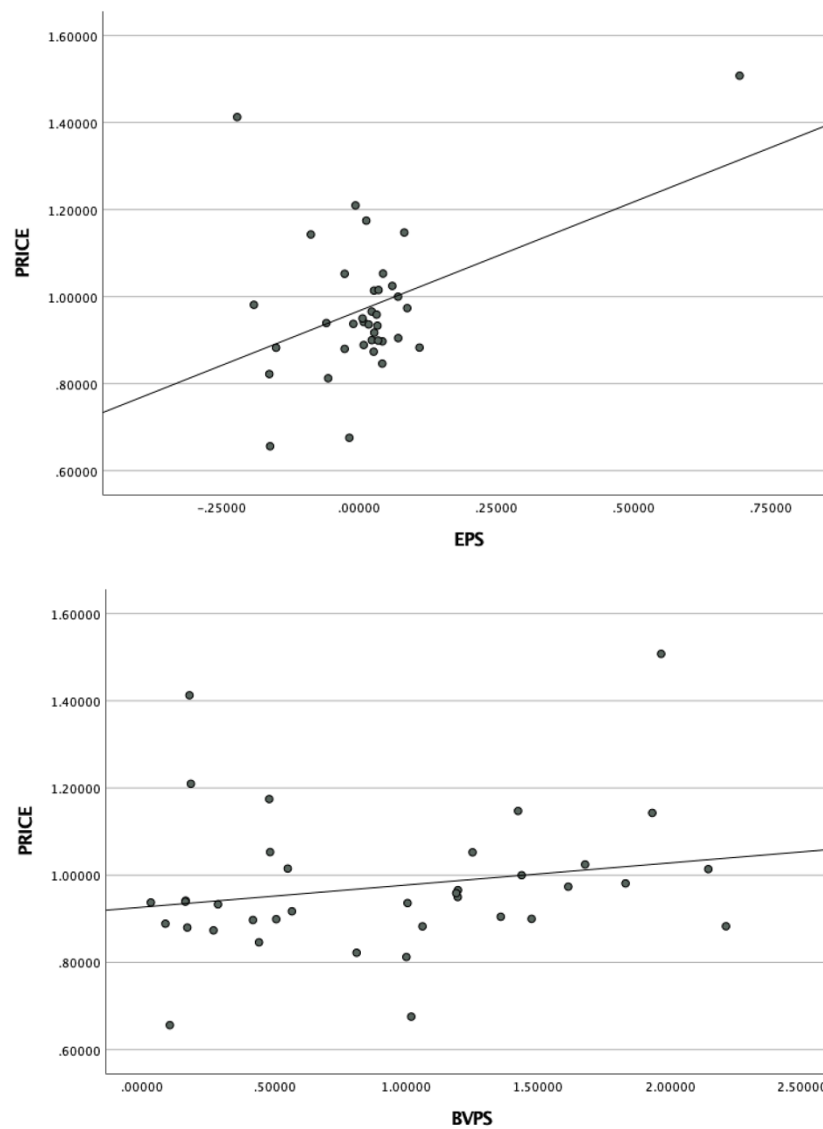


Fig. A.4: Linearity Assumption Scatterplots for Pandemic Period

Appendix A3.3: Testing for Heteroscedasticity

One of the underlying assumptions of the Classical Linear Regression Model (CLRM) is that the variance of the disturbances or error terms embedded within the model is constant, or homoscedastic (Das, 2019). In a situation of unequal variance of the residuals, one could denote the presence of heteroscedasticity (Gujarati, Porter 2010), expressed as the following:

$$E(u_i^2) = \sigma_i^2$$

Despite OLS estimators remaining unbiased and linear, with the occurrence of heteroscedasticity, those estimators no longer remain the Best Linear Unbiased Estimators (BLUE) (Gujarati, Porter 2010). This suggests that conventional hypothesis testing may portray incorrect statistical robustness, possibly drawing incorrect conclusions and statistical inferences (Gujarati, Porter 2010). Henceforth, given that value relevance studies draw conclusions based on the level of significance, it was imperative to carry out diagnostic tests to determine the presence of heteroscedasticity for each period. Additionally, the selected price model frequently contains difficulties pertaining to the presence of heteroscedasticity (Biesland 2009), hence detecting its existence could enable the researcher to modify the regression model to extract more robust results.

The White Test was employed to detect whether the variance of the disturbances is non-constant. This statistical analysis obtains the residuals from the original regression and runs an auxiliary regression incorporating the independent variables, the squared values of the independent variables and their cross-products. Consequently, the R-squared attained from the auxiliary regression multiplied by the number of observations delineates the critical value, approximating the value obtained from the chi-squared distribution, i.e. χ^2 with

degrees of freedom of $(k - 1)$ where k represents the number of explanatory variables. This relationship can be captured in the following equation:

$$n.R^2 \sim \chi_{k-1}^2$$

Thus, for all regressions estimated, the following null (H_0) and alternative hypotheses (H_1) were assumed:

H_0 : The critical value from auxiliary regression is lower than the χ_{k-1}^2 at the 0.05 level – Homoscedastic
 H_1 : The critical value from auxiliary regression is greater than the χ_{k-1}^2 at the 0.05 level – Heterscedastic

For Model (1)¹³², regarding the two timeframes, the output of the White test is illustrated in Table A.2 & A.3 below:

White Test for Heteroscedasticity		
Chi-Square	df	Sig.
3.018	5	0.697

Table A.2: White Test for Model (1) for Non-Pandemic Period

For Model (1), concerning the data for the non-crisis period, and at a 95% level of significance, the chi-squared distribution yields a value of 11.0705. Thus, as $3.018 < 11.0705$, we accept the null hypothesis (H_0) of no heteroscedasticity.

White Test for Heteroscedasticity		
Chi-Square	df	Sig.
24.926	5	< 0.001

Table A.3: White Test for Model (1) for Pandemic Period

¹³² Vide Sn3.7.2

For Model (1), concerning the data for the crisis period, and at a 95% level of significance, the chi-squared distribution yields a value of 11.0705. Thus, as $24.926 > 11.0705$, we reject the null hypothesis (H_0) of no heteroscedasticity, indicating that the variance of the residuals is non-constant. For this reason, White's (1980) robust standard error approach was employed to ascertain that hypothesis testing accounts for the heteroscedastic problem, similar to that applied by Bepari (2015). These robust standard errors were applied for both periods to ensure that consistency is applied upon comparison and to mitigate the possibility of drawing misleading conclusions caused by differing methodological approaches.

Additionally, the White test was run for Model (2)¹³³, highlighted by results in Table A.4 below:

White Test for Heteroscedasticity		
<i>Chi-Square</i>	<i>df</i>	<i>Sig.</i>
18.076	10	0.054

Table A.4: White Test for Model (2)

For Model (2) at a 95% level of significance, the chi-squared distribution yields a value of 18.3070. Thus, as $18.076 < 18.3070$, we accept the null hypothesis (H_0) of no heteroscedasticity.

¹³³ Vide Sn3.7.2

Appendix A3.4: Testing for Autocorrelation

According to Gujarati, Porter (2010), the CLRM should not have serially correlated disturbance terms, articulating that regression models should be hinged on the Gauss-Markov assumption of non-autocorrelation. This assumption implies that the residuals embedded within the model are independent, and uncorrelated, which is expressed as:

$$Cov(u_i, u_j) = 0 \quad i \neq j$$

The problem of autocorrelation manifests, predominantly, in time-series data (Turner 2021) rendering OLS estimators inefficient, despite being unbiased (Turner 2021). Moreover, without the presence of autocorrelation, the distribution of parameter estimates is less complex to derive, rendering hypothesis testing and other statistical readings, such as confidence intervals, less problematic (Turner 2021). Given that autocorrelation may occur due to inertia or sluggishness (Gujarati, Porter 2010), and that local stock prices tend to react with a lag caused by a lack of stock market efficiency in the local market (Bonello 2018), the researcher elected to perform diagnostic tests to negate the existence of autocorrelation to draw statistically robust findings from the regression analysis.

The Durbin-Watson Test was executed to detect autocorrelation in the regression models. This diagnostic metric computes the ratio of the sum of squared differences in successive residuals to the Residual Sum of Squares (RSS), expressed as:

$$d = \frac{\sum_{t=2}^n (e_t - e_{t-1})^2}{\sum_{t=1}^n e_t^2}$$

Based on the d -statistic obtained from the regression models, the decision regarding the existence of autocorrelation is apprehended according to the following decision rules outlined in Fig. A.5:

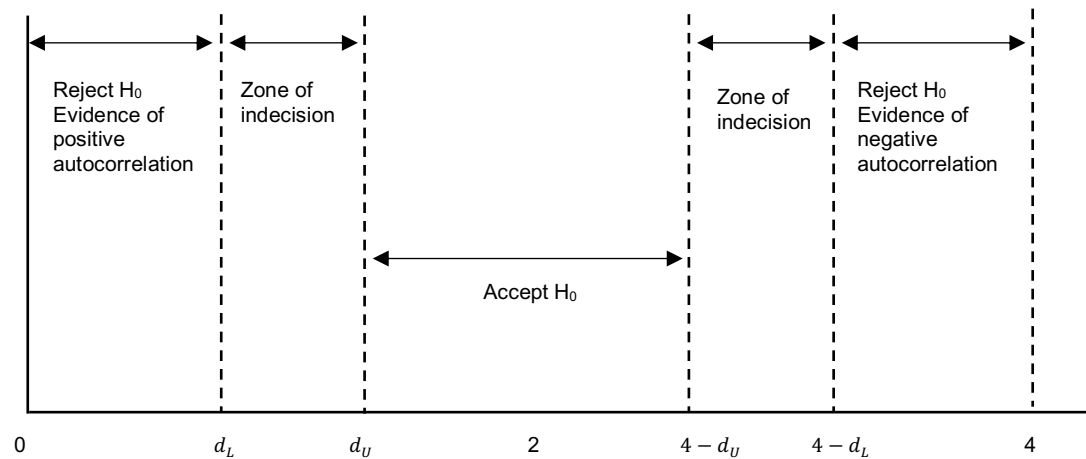


Fig. A.5: Decision Rules for Durbin-Watson Test

For Model (1)¹³⁴, the following d -statistic was extracted in Table A.5, for the pandemic and non-pandemic periods respectively;

Durbin-Watson Test for Autocorrelation	
	d-statistic
Non-Pandemic Period	1.954960
Pandemic Period	2.24837

Table A.5: Durbin-Watson Output for both Non-Pandemic and Pandemic Period

¹³⁴ Vide Sn3.7.2

The upper (d_U) and lower (d_L) boundaries for the non-pandemic period were 1.7375 and 1.67, respectively. Thus, with a value of 1.900720, such that $d > 1.7375$, we accept the null hypothesis of no positive autocorrelation. Similarly, the upper (d_U) and lower (d_L) boundaries for the pandemic period were 2.41 and 2.636, respectively. Thus, with a value of 2.24837, such that $d < 2.41$, we reject the alternative hypothesis of positive autocorrelation.

For Model (2)¹³⁵, the following d-statistic was extracted as depicted in Table A.6;

Durbin-Watson Test for Autocorrelation
d-statistic
1.975060

Table A.6: Durbin-Watson Output for Robustness Regression

The upper (d_U) and lower (d_L) boundaries for the regression to be carried out as a robustness assessment, were 1.764536 and 1.71608, respectively. Thus, with a value of 1.975060, such that $d > 1.764536$, we accept the null hypothesis of no positive autocorrelation.

¹³⁵ Vide Sn3.7.2

Appendix A3.5: Testing for Multicollinearity

Multicollinearity is a statistical phenomenon that occurs when two or more predictor variables in a multiple regression model are highly correlated (Gujarati, Porter 2010). This correlation creates problems because it undermines the statistical significance of an independent variable, violating one of the fundamental principles of the CLRM. As a result, the presence of very high levels of multicollinearity reduces the efficiency of the estimated regression (Turner 2021) with large variances of predictors, wider confidence intervals, insignificant t-ratios and reduced precision (Gujarati, Porter 2010) hindering the extraction of the individual statistical inferences of explanatory parameters.

For Model (1), a correlation matrix has been developed to assess the degree of strength of the association between BVPS and EPS.

	BVPS	EPS
BVPS	1.000000	0.273244
EPS	0.237344	1.000000

Table A.7 Correlation Matrix for Non-Pandemic Period

During the non-pandemic, as the relative correlation stands at 0.237344, the estimators are deemed as only marginally associated with each other, rejecting the presence of multicollinearity.

	BVPS	EPS
BVPS	1.000000	0.326882
EPS	0.326882	1.000000

Table A.8 Correlation Matrix for Pandemic Period

Similarly, during the pandemic, as the relative correlation stands at 0.326882, rejects the presence of multicollinearity due to only a marginal association.

Appendix A3.6: Type A Interview Schedule

This study shall aim to gather insights into how fluctuating economic conditions influence the valuation practice, by primarily turning our attention towards the pandemic to assess different economic phenomena that coincided.

Part A: Value Relevance

1. Could you explain the notion of decision usefulness of accounting information in the context of corporate valuation?
2. Are you aware of the concept of value relevance? If yes, could you explain its meaning and how it relates to the practice of business valuations?
3. In practice, do you expect earnings or book values to be more relevant in business valuations, and why?

Possible Prompts:

- a. *Is there any other more relevant accounting information (e.g. sustainability data), and why?*

4. Have you observed discrepancies in the relevance of earnings and book values during the pandemic, and how did you navigate these differences in your valuations?

Possible Prompts:

- a. *How did the market react to earnings announcements during the pandemic, and did this reaction align with your valuation expectations?*
- b. *Were there instances where market sentiment significantly deviated from the assessed value based on earnings?*
- c. *How did the uncertainties introduced by the pandemic affect the process of forecasting future earnings in business valuations?*
- d. *Were there adjustments made to earnings forecasts in response to changing market conditions?*
- e. *Did book values emerge as more predictive of future financial performance during the pandemic, and how did this influence your valuation models?*
- f. *To what extent did investor confidence in book values impact market dynamics, and how did you incorporate this into your valuations?*
- g. *Has the value relevance of intangible assets, such as brand valuation, increased during the Covid-19 crisis?*

5. From your experience, what lessons can be drawn from the pandemic regarding the use of earnings and book values in corporate valuations during times of economic uncertainty?

Part B: Overview of Corporate Valuation Models

6. What are the most commonly used valuation methods in Malta, such as the Income Approach, Market Approach, or Asset-Based Approach, and why?
7. What are some of the common challenges or obstacles that valuation experts face when conducting valuations in Malta, and how are these challenges addressed?

Part C: Corporate Valuation Models during the Covid-19 Pandemic

8. In your opinion, is the macro environment relevant in corporate valuations? Explain which aspects of the economy provide significant changes to these models (for example – interest rates, inflation, demand and supply shocks, consumer sentiment).
9. How has the asset-based approach been impacted by the pandemic?
10. Were there challenges in accurately valuing tangible and intangible assets during this period?
11. How were comparable company analyses affected by the pandemic, and what challenges did analysts face when selecting peer companies?

Possible prompts:

- a. *Could you recall whether the deteriorating quality of financial statements added a further layer of difficulty when choosing comparables?*
- b. *Were there challenges in finding relevant comparables, and how were these addressed?*

12. How did the pandemic influence the choice of multiples used in Relative Valuation? Were there any adjustments or modifications to the selection criteria?

Possible Prompts:

- a. *Which type of multiple (forward, historical, etc) alleviates as much as possible any distortions? Describe the challenges faced when using this type of multiples.*
- b. *What are the possible reasons why PE ratios were ineffective during the pandemic?*
- c. *Do you consider the PBV ratio as an alternative metric for company valuations during the pandemic?*
- d. *How did the pandemic influence decisions regarding liquidity discounts and control premiums in the market-based approach?*
- e. *How did you adjust market multiples to account for fluctuations in the conditions of local markets during the pandemic?*

13. Could you provide examples of industries or sectors where Relative Valuation became more or less reliable during the pandemic, and why?

14. How did increased market volatility and uncertainty triggered by the pandemic impact the forecasting of cash flows and the selection of discount rates?

Possible Prompts:

- a. How did you adjust cash flow forecasts to accommodate the uncertainties posed by the pandemic?*
- b. How did you adjust cash flow forecasts to account for potential disruptions in revenue streams and cost structures?*
- c. Given the economic uncertainties, how did you account for potential changes in debt service obligations and interest rates in cash flow projections?*
- d. Were there changes in cash flow patterns that required specific attention?*
- e. Were there challenges in assessing the risk-free rate, equity risk premium, and beta components of the discount rate?*
- f. Did the changing economic landscape prompt adjustments to the risk-free rate used in the discount rate calculation?*
- g. How did you assess and adjust the equity risk premium to reflect the increased uncertainties brought about by the pandemic?*
- h. In response to market volatility, how did you adjust beta values to capture changes in systematic risk for specific industries or companies?*

15. Were there explicit issues in estimating terminal values in DCF models during a period of economic uncertainty like the pandemic?

Possible Prompt:

- a. Were adjustments made to account for potential changes in perpetual growth rates and the timing of the terminal period?*

16. What were the key considerations and assumptions that valuation experts had to revisit when using the DCF method during the pandemic?

17. Comparatively, which method would you say provided the most sensible estimate given the elevated levels of uncertainty?

Possible Prompt:

- a. Did you find it necessary to integrate multiple valuation methodologies given the unique circumstances of the pandemic?*

Part C: The Use of Real Options and Risk Techniques

18. Could you provide an overview of what real options are in the context of business valuations, and how they differ from traditional valuation methods?

Possible Prompts:

- a. *Have you considered the use of real options to value flexibility, either qualitatively or quantitatively, especially in the event of an economic shock such as the pandemic?*
- b. *If yes, how have you applied real options in your valuation assignments, and what were the challenges associated with its use?*
- c. *If no, what factors and limitations deterred you from making use of real options?*
- d. *Do you believe that real options might have been a more suitable approach given the uncertainty around valuations?*
- e. *Can you provide specific examples of how real options were considered in your valuation process?*

19. Could you explain how scenario analysis and sensitivity testing were used to evaluate risks and uncertainties in corporate valuations specific to the Maltese market during the pandemic?

Possible Prompts:

- a. *What were the challenges associated with the use of each method?*
- b. *Which risk technique would you say is more applicable?*
- c. *How did you utilize scenario analysis in your business valuations during the pandemic?*
- d. *Were there specific scenarios that proved more challenging or insightful?*
- e. *To what extent did you employ sensitivity testing to assess the impact of different variables?*
- f. *Were there surprises or unexpected outcomes identified through sensitivity testing?*

20. Did you consider the use of Monte Carlo simulations in your valuation engagements given the ambiguity instigated by the Covid-19 crisis:

Possible Prompts:

- a. *If yes, could you share instances where the simulation provided valuable insights?*
- b. *If yes, what were the primary challenges and considerations when using Monte Carlo simulations for business valuations in Malta during the pandemic, especially in a highly uncertain economic environment?*
- c. *Were there specific elements of the simulations or assumptions that required adaptation to the Maltese context?*
- d. *If no, what were the reasons that discouraged its use?*

21. How important would you say are qualitative disclosures within valuation reports to the recipient of corporate valuations?

Possible Prompts:

- a. *What feedback have you received from clients regarding the impact of the pandemic on business valuations?*
- b. *Were clients receptive to adjustments made in response to pandemic-related uncertainties?*

22. Did the relative significance of these disclosures become more apparent as a result of the pandemic?

Possible Prompts:

- a. *What additional information was given to stakeholders?*
- b. *Do you think that qualitative descriptions compensate for the high level of uncertainty?*
- c. *Did these disclosures require rigorous assessments of economic fundamentals and their impact on the overall business landscape?*

23. Did you receive any guidance, either locally or internationally, as to how to navigate the economic uncertainty during this period in your valuation engagements?

Possible Prompts:

- a. If yes, do you believe that the amount of guidance provided was substantial enough?
- b. Do you believe that the MIA should have provided guidance during this period?
- c. Should Malta set up a committee to handle valuation issues?

24. Do you think that the shortcomings of valuation engagements could be detected when undertaking a Financial Due Diligence engagement?

Possible Prompts:

- a. Did the pandemic enhance the importance of financial due diligence?

Appendix A3.7: Type B Interview Schedule

This study shall aim to gather insights into how fluctuating economic conditions influence the valuation practice, by primarily turning our attention towards the pandemic to assess different economic phenomena that coincided.

Part A: Value Relevance

1. Are you aware of the concept of value relevance of accounting information? If yes, could you explain its meaning and how it relates to the practice of business valuations?
2. In practice, do you expect earnings or book values to be more relevant in business valuations? And why?

Possible Prompts:

- b. Is there any other more relevant accounting information, and why?*

3. Do you think that the pandemic has shifted the relevance of earnings or book values within the context of corporate valuations?

Possible Prompts:

- h. How did the market react to earnings announcements during the pandemic, and did this reaction align with your valuation expectations?*
- i. Were there instances where market sentiment significantly deviated from the assessed value based on earnings?*
- j. How did the uncertainties introduced by the pandemic affect the process of forecasting future earnings in business valuations?*
- k. Were there adjustments made to earnings forecasts in response to changing market conditions?*
- l. Did book values emerge as more predictive of future financial performance during the pandemic, and how did this influence your valuation models?*
- m. To what extent did investor confidence in book values impact market dynamics, and how did you incorporate this into your valuations?*
- n. Has the value relevance of intangible assets, such as brand valuation, increased during the Covid-19 crisis?*
- o. Did you observe any instances where market participants placed greater emphasis on non-financial metrics or qualitative factors when assessing stock valuations during the pandemic?*

Part B: Overview of Corporate Valuation Models

4. What are the most commonly used valuation methods in Malta, such as the Income Approach, Market Approach, Asset-Based Approach or any other technique?

5. What are some of the common challenges or obstacles that valuation experts face when conducting valuations in Malta, and how are these challenges addressed?

Part C: Corporate Valuation Models during the Covid-19 Pandemic

6. In your opinion, is the macro environment relevant in corporate valuations? Explain which aspects of the economy provide significant changes to these models (for example – interest rates, inflation, demand and supply shocks, consumer sentiment).
7. How has the asset-based approach been impacted by the pandemic?
8. How were comparable company analyses affected by the pandemic, and what challenges did analysts face when selecting peer companies?
Possible prompts:
 - a. *Could you recall whether the deteriorating quality of financial statements added a further layer of difficulty when choosing comparables?*
9. How did the pandemic influence the choice of multiples used in Relative Valuation? Were there any adjustments or modifications to the selection criteria?
Possible Prompts:
 - a. *Which type of multiple (forward, historical, etc) alleviates as much as possible any distortions? Describe the challenges faced when using this type of multiples.*
 - b. *What are the possible reasons why PE ratios were ineffective during the pandemic?*
 - c. *Do you consider the PBV ratio as an alternative metric for company valuations during the pandemic?*
10. Could you provide examples of industries or sectors where Relative Valuation became more or less reliable during the pandemic, and why?
11. How did increased market volatility and uncertainty triggered by the pandemic impact the forecasting of cash flows and the selection of discount rates?
Possible Prompts:
 - a. *What factors within the discount rate, drastically changed as the pandemic economic crisis deepened?*
 - b. *Were there changes in the market risk premium or the risk-free rate assumptions due to the pandemic's economic impact? Describe the extent within the Maltese Context.*
 - c. *Were there changes in cash flow patterns that required specific attention?*

- d. *Were there challenges in assessing the risk-free rate, equity risk premium, and beta components of the discount rate?*
 - e. *Did the changing economic landscape prompt adjustments to the risk-free rate used in the discount rate calculation?*
 - f. *How did you assess and adjust the equity risk premium to reflect the increased uncertainties brought about by the pandemic?*
 - g. *In response to market volatility, how did you adjust beta values to capture changes in systematic risk for specific industries or companies?*
12. Were there explicit issues in estimating terminal values in DCF models during a period of economic uncertainty like the pandemic?
13. Comparatively, which method would you say provided the most sensible estimate given the elevated levels of uncertainty?
- Possible Prompts:*
- a. *What possible factors influenced your decision to undertake which method?*
 - b. *What were the key considerations and assumptions that valuation experts had to revisit when using the DCF method during the pandemic?*

Part D: The Use of Real Options and Risk Techniques

14. Could you provide an overview of what real options are in the context of business valuations, and how they differ from traditional valuation methods?
- Possible Prompts:*
- f. *Have you considered the use of real options to value flexibility, especially in the event of an economic shock such as the pandemic?*
 - g. *If yes, how have you applied real options in your valuation assignments, and what were the challenges associated with its use?*
 - h. *If no, what factors and limitations deterred you from making use of real options?*
 - i. *Do you believe that real options might have been a more suitable approach given the uncertainty around valuations?*
15. Could you explain how scenario analysis and sensitivity testing were used to evaluate risks and uncertainties in corporate valuations specific to the Maltese market during the pandemic?
- Possible Prompts:*
- a. *What were the challenges associated with the use of each method?*
 - b. *Which risk technique would you say is more applicable?*

16. Did you consider the use of Monte Carlo simulations or other types of probabilistic modelling in your valuation engagements given the ambiguity instigated by the Covid-19 crisis:

Possible Prompts:

- a. *If yes, what were the primary challenges and considerations when using Monte Carlo simulations for business valuations in Malta during the pandemic, especially in a highly uncertain economic environment?*
- b. *Were there specific elements of the simulations or assumptions that required adaptation to the Maltese context?*
- c. *If no, what were the reasons that discouraged its use?*
- d. *What type of distributions were utilized?*
- e. *How was the analysis undertaken?*

17. How important would you say are qualitative disclosures within valuation reports to the recipient of corporate valuations?

18. Did the relative significance of these disclosures become more apparent as a result of the pandemic?

Possible Prompts:

- a. *What additional information was given to stakeholders?*
- b. *Do you think that qualitative descriptions compensate for the high level of uncertainty?*
- c. *Does such reporting provide an information overload rather than an actual tool for decision-making?*

19. What other possible remedies did you incorporate in your valuation engagements during the pandemic (e.g. risk scores of different values)?

20. Did you receive any guidance, either locally or internationally, as to how to navigate the economic uncertainty during this period in your valuation exercises?

Possible Prompts:

- a. *If yes, do you believe that the amount of guidance provided was substantial enough?*
- b. *Do you believe that the MIA should have provided guidance during this period?*
- c. *Should Malta set up a committee to handle valuation issues?*

Appendix A3.8: Type C Interview Schedule

This study shall aim to gather insights into how fluctuating economic conditions influence the valuation practice, by primarily turning our attention towards the pandemic to assess different economic phenomena that coincided.

Part 1: Overview of Corporate Valuation Models

1. As a CFO, why do you use valuation techniques in your role? Could you elaborate on the reasons why valuations are conducted in your role?
2. How would you rate the importance of accounting information in the valuation process for the firm?
Possible Prompts:
 - a. *In your opinion, are earnings or book values pertinent for investors to assess your company's performance?*
 - b. *Do you think that the pandemic shifted this relevance given the decreased level of earnings?*
 - c. *Has other non-financial information gained prominence to explain share prices, such as the level of disclosures, corporate governance, and sustainability issues?*
3. What are the most commonly used valuation methods in Malta, such as the Income Approach, Market Approach, Asset-Based Approach or any other technique? Which technique do you employ?
4. What are some of the common challenges or obstacles that you encounter when utilizing valuation techniques in Malta, and how are these challenges addressed?

Part 2: Corporate Valuation Models during the Covid-19 Pandemic

5. In your opinion, is the macro environment relevant in corporate valuations? Explain which aspects of the economy provide significant changes to these models (for example – interest rates, inflation, demand and supply shocks, and consumer sentiment).
6. How has the asset-based approach been impacted by the pandemic?
7. How were comparable company analyses affected by the pandemic, and what challenges did analysts face when selecting peer companies?
Possible prompts:
 - a. *Could you recall whether the deteriorating quality of financial statements added a further layer of difficulty when choosing comparables?*

8. How did the pandemic influence the choice of multiples used in Relative Valuation? Were there any adjustments or modifications to the selection criteria?

Possible Prompts:

- b. Which type of multiple (forward, historical, etc) alleviates as much as possible any distortions? Describe the challenges faced when using this type of multiples.*
- c. Did you adjust the selection criteria to include differences between peer companies?*
- d. What are the possible reasons why PE ratios were ineffective during the pandemic?*
- e. Do you consider the PBV ratio as an alternative metric for company valuations during the pandemic?*

9. How did increased market volatility and uncertainty triggered by the pandemic impact the forecasting of cash flows and the selection of discount rates?

Possible Prompts:

- f. What factors within the discount rate, drastically changed as the pandemic economic crisis deepened?*
- g. Did you consider a blanket discount for different segments within the firm, or different discount rates were utilized? Why?*
- h. Were there changes in the market risk premium or the risk-free rate assumptions due to the pandemic's economic impact? Describe the extent within the Maltese Context.*
- i. How did you assess the relative growth of the firm during periods of inflation?*
- j. Did you consider a Sum-of-Parts valuation approach during the pandemic?*

10. Were there explicit issues in estimating terminal values in DCF models during a period of economic uncertainty like the pandemic?

11. Comparatively, which method would you say provided the most sensible estimate given the elevated levels of uncertainty?

Possible Prompts:

- c. What possible factors influenced your decision to undertake which method?*
- d. What were the key considerations and assumptions that valuation experts had to revisit when using the DCF method during the pandemic?*

Part 3: The Use of Real Options and Risk Techniques

12. Could you provide an overview of what real options are in the context of business valuations, and how they differ from traditional valuation methods?

Possible Prompts:

- j. Have you considered the use of real options to value flexibility, especially in the event of an economic shock such as the pandemic?*
- k. If yes, how have you applied real options in your valuation assignments, and what were the challenges associated with its use?*
- l. If not, what factors and limitations deterred you from making use of real options?*
- m. Do you believe that real options might have been a more suitable approach given the uncertainty around valuations?*

13. Could you explain how scenario analysis and sensitivity testing were used to evaluate risks and uncertainties in corporate valuations specific to the Maltese market during the pandemic?

Possible Prompts:

- a. What were the challenges associated with the use of each method?*
- b. Which risk technique would you say is more applicable?*
- c. How many scenarios were employed in your evaluations?*

14. Did you consider the use of Monte Carlo simulations in your valuation engagements given the ambiguity instigated by the Covid-19 crisis:

Possible Prompts:

- a. If yes, what were the primary challenges and considerations when using Monte Carlo simulations for business valuations in Malta during the pandemic, especially in a highly uncertain economic environment?*
- b. Were there specific elements of the simulations or assumptions that required adaptation to the Maltese context?*
- c. If no, what were the reasons that discouraged its use?*

15. How important would you say are qualitative disclosures within valuation reports to the recipient of corporate valuations?

16. Did the relative significance of these disclosures become more apparent as a result of the pandemic?

Possible Prompts:

- a. What additional information was given to stakeholders?*
- b. Do you think that qualitative descriptions compensate for the high level of uncertainty?*
- c. Does such reporting provide an information overload rather than an actual tool for decision-making?*

17. What other possible remedies did you incorporate in your valuation engagements during the pandemic (e.g. risk scores of different values)?

18. Did you receive any guidance, either locally or internationally, as to how to navigate the economic uncertainty during this period in your valuation engagements?

Possible Prompts:

- a. If yes, do you believe that the amount of guidance provided was substantial enough?*
- b. Do you believe that the MIA should have provided guidance during this period?*
- c. Should Malta set up a committee to handle valuation issues?*

Appendix A3.9: Ethical Considerations

For the purpose of upholding moral philosophy and ethical guidelines, the researcher bears the responsibility and duty to perform research initiatives within the remits of ethical codes of conduct (Paterson, Leung 2016). The formal ethical procedure employed began with presenting participants with a signed letter¹³⁶ from the Supervisor, inviting the participants to partake in the study and introducing the researcher as a UoM student and the research area. Thereafter, all necessary ethical clearances were granted from the proposal stage to the FREC phase, upon which interviews were executed ex-post of such checks.

Moreover, research participants were handed a consent form¹³⁷, specifying their entitlement to withdraw from the study voluntarily, the obligations of the researcher to ensure confidentiality and anonymity and the general purpose of the information gathered that shall be restricted solely to this research.

¹³⁶ Vide ApxA3.10

¹³⁷ Vide ApxA3.11

Appendix A3.10: Letter of Introduction



**L-Università
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**DEPARTMENT OF
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LETTER OF INTRODUCTION AND INVITATION TO PARTICIPATE IN RESEARCH

5th March 2023

Dear Sir / Madam,

This is to introduce Kurt Zammit, a Master in Accountancy student at the Faculty of Economics, Management and Accountancy at the University of Malta.

The student is undertaking research within the Department of Accountancy regarding Corporate Finance. This research aims to explore the impact that the Covid-19 pandemic has had on Corporate Valuations.

In this regard, the said student would like to invite you to contribute on this research project by participating in an interview covering aspects of this topic at your convenience.

This research is important and valuable in enhancing understanding of the subject area and helping practicing professionals and practitioners like yourself, as well as informing policy and support initiatives. The student would be happy to share with you general findings ensuing from this research.

The student is to ensure that any information provided will be treated in confidence, also in line with general Faculty research requirements and ethical obligations. A consent form will be separately provided. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

While I thank you beforehand for your consideration as well as your possible kind support and involvement in this important research, should you have any queries on this research please feel free to contact me via email at: accountancy.fema@um.edu.mt.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'P. Baldacchino'.

Professor Peter J. Baldacchino

Appendix A3.11: Interview Consent Form

INTERVIEW CONSENT FORM

Title of research project: Corporate Valuations during an Uncertain Economic Climate in Malta: Evidence from COVID-19

Declaration by Participant:

- I confirm that I have been given a copy of the information sheet and consent form for the above-mentioned study. I have had the opportunity to read and consider the information provided, and to ask questions; any questions have been answered in a satisfactory manner.
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without any penalty.
- I understand that the data collected will be securely stored and accessible only to the researcher, and potentially to his supervisor, examiner, and reviewer/s. I have been informed that data will be erased/destroyed within 3-5 years of completion of the study.
- I understand that the data collected will be anonymised and that I will not be identifiable in any publications, reports, or presentations arising from this research.
- I understand that under the General Data Protection Regulation, I have the right to access, rectify and where applicable erase any data concerning me.

Please tick as appropriate:

- I consent to be interviewed for the purposes of this study.

☐

YES

☐

NO

Name of Participant: _____

Signature: _____

Date: _____

Name of Researcher: Kurt Zammit

UM email address: kurt.zammit.19@um.edu.mt

Phone Number/s: +356 99110811

Name of Supervisor: Miraine Vella

UM email address: mfalz06@um.edu.mt

Appendix A3.12: Statistical Dataset

No	Company Name	Symbol	Date of Financial Period End	Earnings (EUR)	BV of Equity (EUR)	Outstanding Shares based on Reported EPS	Outstanding Shares based on Annual Report	Reported EPS	EPS _{ij}	BVPS _{ij}	P _{ij}	P _{t-1}	DEFLATED EPS	DEFLATED BVPS	DEFLATED PRICE	CRISIS_PERIOD	CP*EPS	CP*BVPS
1	Malta International Airport	MIA	31-Dec-13	14587725.00	66983758.00	135322124.30	135322124.30	0.1078	0.1078	0.4950	2.2500	1.8600	0.0580	0.2661	1.2097	0	0.0000	0.0000
2	Malta International Airport	MIA	31-Dec-14	16828777.00	73623221.00	135279557.88	135279557.88	0.1244	0.1244	0.5442	3.4480	2.2500	0.0553	0.2419	1.5324	0	0.0000	0.0000
3	Malta International Airport	MIA	31-Dec-15	19271068.00	77689148.00	135330533.71	135330533.71	0.1424	0.1424	0.5741	4.4990	3.4480	0.0413	0.1665	1.3048	0	0.0000	0.0000
4	Malta International Airport	MIA	31-Dec-16	20981627.00	85097748.00	135278059.32	135278059.32	0.1551	0.1551	0.6291	4.2390	4.4990	0.0345	0.1398	0.9422	0	0.0000	0.0000
5	Malta International Airport	MIA	31-Dec-17	24150480.00	95748351.00	135296806.72	135296806.72	0.1785	0.1785	0.7077	4.9000	4.2390	0.0421	0.1669	1.1559	0	0.0000	0.0000
6	Malta International Airport	MIA	31-Dec-18	30335640.00	112611257.00	135426964.29	135426964.29	0.2240	0.2240	0.8315	6.6000	4.9000	0.0457	0.1697	1.3469	0	0.0000	0.0000
7	Malta International Airport	MIA	31-Dec-19	33933317.00	129043056.00	135192498.01	135192498.01	0.2510	0.2510	0.9545	4.9600	6.6000	0.0380	0.1446	0.7515	0	0.0000	0.0000
8	Malta International Airport	MIA	31-Dec-20	-4250430.00	124792626.00	137110645.16	137110645.16	-0.0310	-0.0310	0.9102	6.0000	4.9600	-0.0063	0.1635	1.2097	1	-0.0063	0.1835
9	Malta International Airport	MIA	31-Dec-21	6973954.00	131766580.00	134114500.00	134114500.00	0.0520	0.0520	0.9825	5.6500	6.0000	0.0087	0.1637	0.9417	1	0.0087	0.1637
10	Bank of Valletta	BOV	30-Sep-13	79055000.00	576344000.00	299450757.58	300000000.00	0.2640	0.2635	1.9211	2.6490	2.4150	0.1091	0.7955	1.0969	0	0.0000	0.0000
11	Bank of Valletta	BOV	30-Sep-14	68945000.00	613369000.00	32988382.78	330000000.00	0.2090	0.2089	1.8587	2.2300	2.6490	0.0789	0.7017	0.8418	0	0.0000	0.0000
12	Bank of Valletta	BOV	30-Sep-15	79378000.00	668918000.00	360809090.91	360000000.00	0.2200	0.2205	1.8581	2.3500	2.2300	0.0989	0.8332	1.0538	0	0.0000	0.0000
13	Bank of Valletta	BOV	30-Sep-16	94742000.00	729161000.00	389884773.66	390000000.00	0.2430	0.2429	1.8696	2.2510	2.3500	0.1034	0.7956	0.9579	0	0.0000	0.0000
14	Bank of Valletta	BOV	31-Dec-17	119498000.00	962087000.00	440952029.52	525000000.00	0.2710	0.2276	1.8325	1.8000	2.2510	0.1011	0.8141	0.7996	0	0.0000	0.0000
15	Bank of Valletta	BOV	31-Dec-18	51410000.00	994133000.00	530000000.00	530772064.00	0.0970	0.0969	1.8730	1.3800	1.8000	0.0538	1.0406	0.7667	0	0.0000	0.0000
16	Bank of Valletta	BOV	31-Dec-19	63492000.00	1062305000.00	582495412.84	583849270.00	0.1090	0.1087	1.8195	0.8600	1.3800	0.0788	1.3185	0.6232	0	0.0000	0.0000
17	Bank of Valletta	BOV	31-Dec-20	13802000.00	1077125000.00	57508333.33	583849270.00	0.0240	0.0236	1.8449	0.8720	0.8600	0.0275	2.1452	1.0140	1	0.0275	2.1452
18	Bank of Valletta	BOV	31-Dec-21	56191000.00	1126285000.00	585322916.67	583849270.00	0.0960	0.0962	1.9291	0.7700	0.8720	0.1104	2.2122	0.8830	1	0.1104	2.2122
19	HSBC	HSB	31-Dec-13	58717000.00	422984000.00	292124378.11	291840000.00	0.2010	0.2012	1.4494	2.3800	2.7340	0.0736	0.5301	0.8705	0	0.0000	0.0000
20	HSBC	HSB	31-Dec-14	33617000.00	445105000.00	323240384.62	324271380.00	0.1040	0.1037	1.3726	2.0500	2.3800	0.0436	0.5767	0.8613	0	0.0000	0.0000
21	HSBC	HSB	31-Dec-15	29480000.00	461116000.00	346823529.41	360306099.00	0.0850	0.0818	1.2798	1.5800	2.0500	0.0399	0.6243	0.7707	0	0.0000	0.0000
22	HSBC	HSB	31-Dec-16	40213000.00	473524000.00	359044642.86	360306099.00	0.1120	0.1116	1.3142	2.0600	1.5800	0.0706	0.8318	1.3038	0	0.0000	0.0000
23	HSBC	HSB	31-Dec-17	30855000.00	479038000.00	358779069.77	360306099.00	0.0860	0.0856	1.3295	1.8600	2.0600	0.0416	0.6454	0.9029	0	0.0000	0.0000
24	HSBC	HSB	31-Dec-18	28696000.00	458778000.00	358700000.00	360306099.00	0.0800	0.0796	1.2733	1.6000	1.8600	0.0428	0.6846	0.8602	0	0.0000	0.0000
25	HSBC	HSB	31-Dec-19	20168000.00	469966000.00	360142857.14	360306099.00	0.0560	0.0560	1.3044	0.9000	1.6000	0.0350	0.8152	0.5625	0	0.0000	0.0000
26	HSBC	HSB	31-Dec-20	7572000.00	478414000.00	360571428.57	360306099.00	0.0210	0.0210	1.3278	0.8100	0.9000	0.0234	1.4753	0.9000	1	0.0234	1.4753
27	HSBC	HSB	31-Dec-21	17755000.00	489737000.00	362346938.78	360306099.00	0.0490	0.0493	1.3592	0.8300	0.8100	0.0608	1.6781	1.0247	1	0.0608	1.6781
28	GO	GO	31-Dec-13	11750000.00	103495000.00	101293103.45	101310488.00	0.1160	0.1160	1.0216	2.0000	1.5990	0.0725	0.6389	1.2508	0	0.0000	0.0000
29	GO	GO	31-Dec-14	14626000.00	110017000.00	101569444.44	101310488.00	0.1440	0.1444	1.0859	2.8800	2.0000	0.0722	0.5430	1.4400	0	0.0000	0.0000
30	GO	GO	31-Dec-15	26411000.00	92097000.00	101191570.88	101310488.00	0.2610	0.2607	0.9091	3.4500	2.8800	0.0905	0.3156	1.1979	0	0.0000	0.0000
31	GO	GO	31-Dec-16	18444000.00	101103000.00	101340659.34	101310488.00	0.1820	0.1821	0.9980	3.4990	3.4500	0.0528	0.2893	1.0142	0	0.0000	0.0000
32	GO	GO	31-Dec-17	16694000.00	106887000.00	101175757.58	101310488.00	0.1650	0.1648	1.0550	3.5000	3.4990	0.0471	0.3015	1.0003	0	0.0000	0.0000
33	GO	GO	31-Dec-18	18971000.00	112638000.00	101449197.86	101310488.00	0.1870	0.1873	1.1118	4.9000	3.5000	0.0535	0.3177	1.4000	0	0.0000	0.0000
34	GO	GO	31-Dec-19	11660000.00	110395000.00	101391304.35	101310488.00	0.1150	0.1151	1.0897	3.9000	4.9000	0.0235	0.2224	0.7959	0	0.0000	0.0000

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35	GO	GO	31-Dec-20	13297000.00	113140000.00	99977443.61	101310488.00	0.1330	0.1312	1.1168	3.6400	3.9000	0.0337	0.2863	0.9333	1	0.0337	0.2863
36	GO	GO	31-Dec-21	9913000.00	99259000.00	101153061.22	101310488.00	0.0980	0.0978	0.9798	3.1800	3.6400	0.0269	0.2692	0.8736	1	0.0269	0.2692
37	Simond Farsons Cisk	SFC	31-Jan-14	6325000.00	95274000.00	29976303.32	30000000.00	0.2110	0.2108	3.1758	3.0000	2.5400	0.0830	1.2503	1.1811	0	0.0000	0.0000
38	Simond Farsons Cisk	SFC	31-Jan-15	8009000.00	100235000.00	29996254.68	30000000.00	0.2670	0.2670	3.3412	3.3500	3.0000	0.0890	1.1137	1.1167	0	0.0000	0.0000
39	Simond Farsons Cisk	SFC	31-Jan-16	11223000.00	109459000.00	30008021.39	30000000.00	0.3740	0.3741	3.6486	6.1200	3.3500	0.1117	1.0891	1.8269	0	0.0000	0.0000
40	Simond Farsons Cisk	SFC	31-Jan-17	12132000.00	123271000.00	30029702.97	30000000.00	0.4040	0.4044	4.1090	7.4400	6.1200	0.0661	0.6714	1.2157	0	0.0000	0.0000
41	Simond Farsons Cisk	SFC	31-Jan-18	13762000.00	96632000.00	29982570.81	30000000.00	0.4590	0.4587	3.2211	6.7000	7.4400	0.0617	0.4329	0.9005	0	0.0000	0.0000
42	Simond Farsons Cisk	SFC	31-Jan-19	15131000.00	108273000.00	30021825.40	30000000.00	0.5040	0.5044	3.6091	9.2500	6.7000	0.0753	0.5387	1.3806	0	0.0000	0.0000
43	Simond Farsons Cisk	SFC	31-Jan-20	11869000.00	116223000.00	29972222.22	30000000.00	0.3960	0.3956	3.8741	8.3000	9.2500	0.0428	0.4188	0.8973	0	0.0000	0.0000
44	Simond Farsons Cisk	SFC	31-Jan-21	3333000.00	119654000.00	30027027.03	30000000.00	0.1110	0.1111	3.9885	9.7500	8.3000	0.0134	0.4805	1.1747	1	0.0134	0.4805
45	Simond Farsons Cisk	SFC	31-Jan-22	12428000.00	129188000.00	29997586.29	30000000.00	0.4143	0.4143	4.3063	8.2500	9.7500	0.0425	0.4417	0.8462	1	0.0425	0.4417
46	International Hotel Investments	IHI	31-Dec-13	266000.00	626491000.00	554238573.00	554238573.00	0.0005	0.0005	1.1304	0.7720	0.7750	0.0006	1.4585	0.9961	0	0.0000	0.0000
47	International Hotel Investments	IHI	31-Dec-14	-16266000.00	594814000.00	542200000.00	554238573.00	-0.0300	-0.0293	1.0732	0.7100	0.7720	-0.0380	1.3902	0.9197	0	0.0000	0.0000
48	International Hotel Investments	IHI	31-Dec-15	-3728000.00	635201000.00	372800000.00	573626129.00	-0.0100	-0.0065	1.1073	0.7000	0.7100	-0.0092	1.5596	0.9859	0	0.0000	0.0000
49	International Hotel Investments	IHI	31-Dec-16	-7658000.00	664170000.00	765800000.00	597750646.00	-0.0100	-0.0128	1.1111	0.6400	0.7000	-0.0183	1.5873	0.9143	0	0.0000	0.0000
50	International Hotel Investments	IHI	31-Dec-17	12047000.00	684049000.00	602350000.00	615684920.00	0.0200	0.0196	1.1110	0.6200	0.6400	0.0306	1.7360	0.9688	0	0.0000	0.0000
51	International Hotel Investments	IHI	31-Dec-18	11350000.00	683374000.00	63055555.56	615684920.00	0.0180	0.0184	1.1099	0.7700	0.6200	0.0297	1.7902	1.2419	0	0.0000	0.0000
52	International Hotel Investments	IHI	31-Dec-19	6815000.00	701005000.00	61954545.55	615684920.00	0.0110	0.0111	1.1386	0.5350	0.7700	0.0144	1.4787	0.6948	0	0.0000	0.0000
53	International Hotel Investments	IHI	31-Dec-20	-63050000.00	603236000.00	630500000.00	615684920.00	-0.1000	-0.1024	0.9798	0.5250	0.5350	-0.1914	1.8314	0.9813	1	-0.1914	1.8314
54	International Hotel Investments	IHI	31-Dec-21	-28312000.00	624759000.00	566240000.00	615684920.00	-0.0500	-0.0460	1.0147	0.6000	0.5250	-0.0876	1.9328	1.1429	1	-0.0876	1.9328
55	FIMbank	FIM	31-Dec-13	-3058279.23	107922581.02	158474022.56	158438705.00	-0.0193	-0.0193	0.6812	0.8420	0.9900	-0.0195	0.6880	0.8505	0	0.0000	0.0000
56	FIMbank	FIM	31-Dec-14	-31849794.30	152312262.31	226818076.47	271396591.00	-0.1404	-0.1174	0.5612	0.5000	0.8420	-0.1394	0.6665	0.5938	0	0.0000	0.0000
57	FIMbank	FIM	31-Dec-15	-5874149.58	160803601.15	289131538.46	298536643.00	-0.0203	-0.0197	0.5386	0.7350	0.5000	-0.0394	1.0773	1.4700	0	0.0000	0.0000
58	FIMbank	FIM	31-Dec-16	4678214.75	166098901.80	305736894.41	310478525.00	0.0153	0.0151	0.5350	0.8500	0.7350	0.0205	0.7279	1.1565	0	0.0000	0.0000
59	FIMbank	FIM	31-Dec-17	6265357.38	144055579.09	313318000.00	314531123.00	0.0200	0.0199	0.4580	0.6050	0.8500	0.0234	0.5388	0.7118	0	0.0000	0.0000
60	FIMbank	FIM	31-Dec-18	8872641.87	242515881.36	443308478.26	505440214.00	0.0200	0.0176	0.4798	0.7150	0.6050	0.0290	0.7931	1.1818	0	0.0000	0.0000
61	FIMbank	FIM	31-Dec-19	3937016.28	250354127.12	513854069.77	522443763.00	0.0077	0.0075	0.4792	0.4500	0.7150	0.0105	0.6702	0.6294	0	0.0000	0.0000
62	FIMbank	FIM	31-Dec-20	-38391173.50	190863244.40	522255846.33	522443763.00	-0.0735	-0.0735	0.3653	0.3700	0.4500	-0.1633	0.8118	0.8222	1	-0.1633	0.8118
63	FIMbank	FIM	31-Dec-21	-3377514.22	196968172.93	519013918.92	522443763.00	-0.0065	-0.0065	0.3770	0.2500	0.3700	-0.0175	1.0190	0.6757	1	-0.0175	1.0190
64	Mapfre Middlesea	MMS	31-Dec-13	6028000.00	73102000.00	91333333.33	92000000.00	0.0660	0.0655	0.7946	0.9050	0.8600	0.0762	0.9239	1.0523	0	0.0000	0.0000
65	Mapfre Middlesea	MMS	31-Dec-14	7165000.00	80129000.00	91858974.36	92000000.00	0.0780	0.0779	0.8710	1.1400	0.9050	0.0861	0.9624	1.2597	0	0.0000	0.0000
66	Mapfre Middlesea	MMS	31-Dec-15	6821000.00	82297000.00	92175675.68	92000000.00	0.0740	0.0741	0.8945	2.4900	1.1400	0.0650	0.7847	2.1842	0	0.0000	0.0000
67	Mapfre Middlesea	MMS	31-Dec-16	4630000.00	86826000.00	92600000.00	92000000.00	0.0500	0.0503	0.9438	2.1900	2.4900	0.0202	0.3790	0.8795	0	0.0000	0.0000
68	Mapfre Middlesea	MMS	31-Dec-17	8510000.00	92876000.00	91505376.34	92000000.00	0.0930	0.0925	1.0095	2.1000	2.1900	0.0422	0.4610	0.9589	0	0.0000	0.0000
69	Mapfre Middlesea	MMS	31-Dec-18	8594000.00	91673000.00	92408602.15	92000000.00	0.0930	0.0934	0.9964	2.3600	2.1000	0.0445	0.4745	1.1238	0	0.0000	0.0000

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70	Mapfre Middlesea	MMS	31-Dec-19	9632000.00	89505000.00	91733333.33	92000000.00	0.1050	0.1047	0.9729	2.2600	2.3600	0.0444	0.4122	0.9576	0	0.0000	0.0000
71	Mapfre Middlesea	MMS	31-Dec-20	9123000.00	100603000.00	92151515.15	92000000.00	0.0990	0.0992	1.0935	2.3800	2.2600	0.0439	0.4839	1.0531	1	0.0439	0.4839
72	Mapfre Middlesea	MMS	31-Dec-21	7643000.00	111036000.00	92084337.35	92000000.00	0.0830	0.0831	1.2069	2.1400	2.3800	0.0349	0.5071	0.8992	1	0.0349	0.5071
73	Plaza Centres	PZC	31-Dec-13	792222.00	20569091.00	28192953.74	28242000.00	0.0281	0.0281	0.7283	0.5900	0.5500	0.0510	1.3242	1.0727	0	0.0000	0.0000
74	Plaza Centres	PZC	31-Dec-14	947039.00	23793318.00	28269820.90	28242000.00	0.0335	0.0335	0.8425	0.9500	0.5900	0.0568	1.4279	1.6102	0	0.0000	0.0000
75	Plaza Centres	PZC	31-Dec-15	1010891.00	24667074.00	28237178.77	28242000.00	0.0358	0.0358	0.8734	1.0450	0.9500	0.0377	0.9194	1.1000	0	0.0000	0.0000
76	Plaza Centres	PZC	31-Dec-16	1266780.00	26180082.00	28213363.03	28242000.00	0.0449	0.0449	0.9270	1.0500	1.0450	0.0429	0.8871	1.0048	0	0.0000	0.0000
77	Plaza Centres	PZC	31-Dec-17	1269072.00	27624854.00	28264409.80	28242000.00	0.0449	0.0449	0.9781	1.0600	1.0500	0.0428	0.9316	1.0095	0	0.0000	0.0000
78	Plaza Centres	PZC	31-Dec-18	1095349.00	28034949.00	28230644.33	28242000.00	0.0388	0.0388	0.9927	1.0300	1.0600	0.0366	0.9365	0.9717	0	0.0000	0.0000
79	Plaza Centres	PZC	31-Dec-19	1358161.00	31482271.00	28236195.43	28242000.00	0.0481	0.0481	1.1147	0.9400	1.0300	0.0467	1.0823	0.9126	0	0.0000	0.0000
80	Plaza Centres	PZC	31-Dec-20	469341.00	26677982.00	27936964.29	28242000.00	0.0168	0.0166	0.9446	0.8800	0.9400	0.0177	1.0049	0.9362	1	0.0177	1.0049
81	Plaza Centres	PZC	31-Dec-21	520936.00	26830004.00	25536078.43	25492000.00	0.0204	0.0204	1.0525	0.8500	0.8800	0.0232	1.1960	0.9659	1	0.0232	1.1960
82	Grand Harbour Marina	GHM	31-Dec-13	-89988.00	3488594.00	8998800.00	10000000.00	-0.0100	-0.0090	0.3489	1.8200	1.9100	-0.0047	0.1826	0.9529	0	0.0000	0.0000
83	Grand Harbour Marina	GHM	31-Dec-14	169956.00	2776563.00	8497800.00	10000000.00	0.0200	0.0170	0.2777	1.8800	1.8200	0.0093	0.1526	1.0330	0	0.0000	0.0000
84	Grand Harbour Marina	GHM	31-Dec-15	201000.00	2964000.00	20100000.00	20000000.00	0.0100	0.0101	0.1482	0.9000	1.8800	0.0053	0.0788	0.4787	0	0.0000	0.0000
85	Grand Harbour Marina	GHM	31-Dec-16	375000.00	2830000.00	22058823.53	20000000.00	0.0170	0.0188	0.1415	0.8970	0.9000	0.0208	0.1572	0.9967	0	0.0000	0.0000
86	Grand Harbour Marina	GHM	31-Dec-17	51000.00	2876000.00	25500000.00	20000000.00	0.0020	0.0026	0.1438	0.7300	0.8970	0.0028	0.1603	0.8138	0	0.0000	0.0000
87	Grand Harbour Marina	GHM	31-Dec-18	419000.00	3290000.00	20950000.00	20000000.00	0.0200	0.0210	0.1645	0.7400	0.7300	0.0287	0.2253	1.0137	0	0.0000	0.0000
88	Grand Harbour Marina	GHM	31-Dec-19	223000.00	3531000.00	20272727.27	20000000.00	0.0110	0.0112	0.1766	0.7500	0.7400	0.0151	0.2386	1.0135	0	0.0000	0.0000
89	Grand Harbour Marina	GHM	31-Dec-20	-390000.00	2549000.00	20526315.79	20000000.00	-0.0190	-0.0195	0.1275	0.6600	0.7500	-0.0260	0.1699	0.8800	1	-0.0260	0.1699
90	Grand Harbour Marina	GHM	31-Dec-21	-784000.00	2145000.00	20102564.10	20000000.00	-0.0390	-0.0392	0.1073	0.6200	0.6600	-0.0594	0.1625	0.9394	1	-0.0594	0.1625
91	Maltapost	MTP	30-Sep-13	1258000.00	16633000.00	31450000.00	34217549.00	0.0400	0.0368	0.4861	1.1500	1.0400	0.0354	0.4674	1.1058	0	0.0000	0.0000
92	Maltapost	MTP	30-Sep-14	1799000.00	18218000.00	35980000.00	35280410.00	0.0500	0.0510	0.5164	1.2000	1.1500	0.0443	0.4490	1.0435	0	0.0000	0.0000
93	Maltapost	MTP	30-Sep-15	2189000.00	20386000.00	36483333.33	36306728.00	0.0600	0.0603	0.5615	1.8120	1.2000	0.0502	0.4679	1.5100	0	0.0000	0.0000
94	Maltapost	MTP	30-Sep-16	2063000.00	22225000.00	34383333.33	36986600.00	0.0600	0.0558	0.6009	2.0300	1.8120	0.0308	0.3316	1.1203	0	0.0000	0.0000
95	Maltapost	MTP	30-Sep-17	2013000.00	23640000.00	40260000.00	37654720.00	0.0500	0.0535	0.6278	2.1200	2.0300	0.0263	0.3093	1.0443	0	0.0000	0.0000
96	Maltapost	MTP	30-Sep-18	1728000.00	26416000.00	34560000.00	37654720.00	0.0500	0.0459	0.7015	1.5800	2.1200	0.0216	0.3309	0.7453	0	0.0000	0.0000
97	Maltapost	MTP	30-Sep-19	1950000.00	26956000.00	39000000.00	37654720.00	0.0500	0.0518	0.7159	1.3100	1.5800	0.0328	0.4531	0.8291	0	0.0000	0.0000
98	Maltapost	MTP	30-Sep-20	1763000.00	27169000.00	35260000.00	37654720.00	0.0500	0.0468	0.7215	1.3300	1.3100	0.0357	0.5508	1.0153	1	0.0357	0.5508
99	Maltapost	MTP	30-Sep-21	1399000.00	28374000.00	34975000.00	37654720.00	0.0400	0.0372	0.7535	1.2200	1.3300	0.0279	0.5666	0.9173	1	0.0279	0.5666
100	RS2 Software	RS2	31-Dec-13	2928593.00	21484442.00	42443376.81	424999956.00	0.0690	0.0689	0.5055	2.4300	1.0000	0.0689	0.5055	2.4300	0	0.0000	0.0000
101	RS2 Software	RS2	31-Dec-14	2875403.00	22929844.00	44928171.88	449999956.00	0.0640	0.0639	0.5096	2.9700	2.4300	0.0263	0.2097	1.2222	0	0.0000	0.0000
102	RS2 Software	RS2	31-Dec-15	4866357.00	25852502.00	90117722.22	89999912.00	0.0540	0.0541	0.2873	3.7500	2.9700	0.0182	0.0967	1.2626	0	0.0000	0.0000
103	RS2 Software	RS2	31-Dec-16	576906.00	22007519.00	144226500.00	158333187.00	0.0040	0.0036	0.1390	1.6200	3.7500	0.0010	0.0371	0.4320	0	0.0000	0.0000
104	RS2 Software	RS2	31-Dec-17	793033.00	21078290.00	158606600.00	171527619.00	0.0050	0.0046	0.1229	1.4300	1.6200	0.0029	0.0759	0.8827	0	0.0000	0.0000

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105	RS2 Software	RS2	31-Dec-18	4247289.00	18568315.00	169891560.00	171527619.00	0.0250	0.0248	0.1083	1.4100	1.4300	0.0173	0.0757	0.9860	0	0.0000	0.0000
106	RS2 Software	RS2	31-Dec-19	-1633902.00	17012840.00	204237750.00	192968569.00	-0.0080	-0.0085	0.0882	1.9200	1.4100	-0.0060	0.0625	1.3617	0	0.0000	0.0000
107	RS2 Software	RS2	31-Dec-20	-3780178.00	11715386.00	189008900.00	192968569.00	-0.0200	-0.0196	0.0607	1.8000	1.9200	-0.0102	0.0316	0.9375	1	-0.0102	0.0316
108	RS2 Software	RS2	31-Dec-21	3011512.00	30219390.00	200767466.67	192968569.00	0.0150	0.0156	0.1566	1.6000	1.8000	0.0087	0.0870	0.8889	1	0.0087	0.0870
109	MIDI	MDI	31-Dec-13	-1460477.00	62394061.00	202844027.78	214159922.00	-0.0072	-0.0068	0.2913	0.2600	0.3150	-0.0216	0.9249	0.8254	0	0.0000	0.0000
110	MIDI	MDI	31-Dec-14	-2152487.00	60428218.00	215248700.00	214159922.00	-0.0100	-0.0101	0.2822	0.2700	0.2600	-0.0387	1.0852	1.0385	0	0.0000	0.0000
111	MIDI	MDI	31-Dec-15	9919574.00	71248062.00	215642913.04	214159922.00	0.0460	0.0463	0.3327	0.3800	0.2700	0.1716	1.2322	1.4074	0	0.0000	0.0000
112	MIDI	MDI	31-Dec-16	-2515580.00	67359306.00	209631666.67	214159922.00	-0.0120	-0.0117	0.3145	0.3300	0.3800	-0.0309	0.8277	0.8684	0	0.0000	0.0000
113	MIDI	MDI	31-Dec-17	20775013.00	86620786.00	214175391.75	214159922.00	0.0970	0.0970	0.4045	0.3460	0.3300	0.2940	1.2257	1.0485	0	0.0000	0.0000
114	MIDI	MDI	31-Dec-18	11634540.00	97440126.00	215454444.44	214159922.00	0.0540	0.0543	0.4550	0.6300	0.3460	0.1570	1.3150	1.8208	0	0.0000	0.0000
115	MIDI	MDI	31-Dec-19	8214380.00	103965733.00	216167894.74	214159922.00	0.0380	0.0384	0.4855	0.3800	0.6300	0.0609	0.7706	0.6032	0	0.0000	0.0000
116	MIDI	MDI	31-Dec-20	-2115725.00	101842250.00	211572500.00	214159922.00	-0.0100	-0.0099	0.4755	0.4000	0.3800	-0.0260	1.2514	1.0526	1	-0.0260	1.2514
117	MIDI	MDI	31-Dec-21	557620.00	102387532.00	185873333.33	214159922.00	0.0030	0.0026	0.4781	0.3800	0.4000	0.0065	1.1952	0.9500	1	0.0065	1.1952
118	Tigne Mall	TML	31-Dec-13	1014708.00	28645834.00	51770816.33	56400000.00	0.0196	0.0180	0.5079	0.5150	0.5000	0.0360	1.0158	1.0300	0	0.0000	0.0000
119	Tigne Mall	TML	31-Dec-14	1296539.00	28884173.00	56371260.87	56400000.00	0.0230	0.0230	0.5121	0.7520	0.5150	0.0446	0.9944	1.4602	0	0.0000	0.0000
120	Tigne Mall	TML	31-Dec-15	1653893.00	35086571.00	56446860.07	56400000.00	0.0293	0.0293	0.6221	1.0490	0.7520	0.0390	0.8273	1.3949	0	0.0000	0.0000
121	Tigne Mall	TML	31-Dec-16	2046451.00	35723022.00	56376060.61	56400000.00	0.0363	0.0363	0.6334	1.0620	1.0490	0.0346	0.6038	1.0124	0	0.0000	0.0000
122	Tigne Mall	TML	31-Dec-17	2318375.00	45580247.00	56408150.85	56400000.00	0.0411	0.0411	0.8082	0.9500	1.0620	0.0387	0.7610	0.8945	0	0.0000	0.0000
123	Tigne Mall	TML	31-Dec-18	2459586.00	46587533.00	56412522.94	56400000.00	0.0436	0.0436	0.8260	0.9200	0.9500	0.0459	0.8695	0.9684	0	0.0000	0.0000
124	Tigne Mall	TML	31-Dec-19	2542295.00	47648478.00	56370177.38	56400000.00	0.0451	0.0451	0.8448	0.7300	0.9200	0.0490	0.9183	0.7935	0	0.0000	0.0000
125	Tigne Mall	TML	31-Dec-20	1324080.00	48972558.00	56343829.79	56400000.00	0.0235	0.0235	0.8683	0.7000	0.7300	0.0322	1.1895	0.9589	1	0.0322	1.1895
126	Tigne Mall	TML	31-Dec-21	2814189.00	56754692.00	56396573.15	56400000.00	0.0499	0.0499	1.0063	0.7000	0.7000	0.0713	1.4376	1.0000	1	0.0713	1.4376
127	Medserv Regis	MDS	31-Dec-13	387278.00	7879204.00	25818533.33	25000000.00	0.0150	0.0155	0.3152	1.3000	3.9500	0.0039	0.0798	0.3291	0	0.0000	0.0000
128	Medserv Regis	MDS	31-Dec-14	1936620.00	9215824.00	25150909.09	25000000.00	0.0770	0.0775	0.3686	1.9000	1.3000	0.0596	0.2836	1.4615	0	0.0000	0.0000
129	Medserv Regis	MDS	31-Dec-15	4118156.00	11110417.00	44762565.22	45000006.00	0.0920	0.0915	0.2469	1.7000	1.9000	0.0482	0.1299	0.8947	0	0.0000	0.0000
130	Medserv Regis	MDS	31-Dec-16	2977095.00	26354406.00	50459237.29	53744405.00	0.0590	0.0554	0.4904	1.5800	1.7000	0.0326	0.2885	0.9294	0	0.0000	0.0000
131	Medserv Regis	MDS	31-Dec-17	-7421180.00	28250706.00	53776666.67	53744405.00	-0.1380	-0.1381	0.5256	1.1000	1.5800	-0.0874	0.3327	0.6962	0	0.0000	0.0000
132	Medserv Regis	MDS	31-Dec-18	9043058.00	19349641.00	-53827726.19	53744405.00	-0.1680	0.1683	0.3600	1.1000	1.1000	0.1530	0.3273	1.0000	0	0.0000	0.0000
133	Medserv Regis	MDS	31-Dec-19	-2924594.00	14768232.00	54159148.15	53744405.00	-0.0540	-0.0544	0.2748	0.9600	1.1000	-0.0495	0.2498	0.8727	0	0.0000	0.0000
134	Medserv Regis	MDS	31-Dec-20	-8353819.00	5343980.00	53895606.45	53744405.00	-0.1550	-0.1554	0.0994	0.6300	0.9600	-0.1619	0.1036	0.6563	1	-0.1619	0.1036
135	Medserv Regis	MDS	31-Dec-21	-7512179.00	6029568.00	5404453.24	53744405.00	-0.1390	-0.1398	0.1122	0.8900	0.6300	-0.2219	0.1781	1.4127	1	-0.2219	0.1781
136	Malita Investments	MLT	31-Dec-13	8023414.00	82043793.00	148033468.63	148108064.00	0.0542	0.0542	0.5539	0.5400	0.5100	0.1062	1.0862	1.0588	0	0.0000	0.0000
137	Malita Investments	MLT	31-Dec-14	13720630.00	95079251.00	148170950.32	148108064.00	0.0926	0.0926	0.6420	0.9300	0.5400	0.1716	1.1888	1.7222	0	0.0000	0.0000
138	Malita Investments	MLT	31-Dec-15	16577052.00	108248337.00	139302957.98	148108064.00	0.1190	0.1119	0.7309	0.9200	0.9300	0.1203	0.7859	0.9892	0	0.0000	0.0000
139	Malita Investments	MLT	31-Dec-16	6423805.00	111321938.00	148013940.09	148108064.00	0.0434	0.0434	0.7516	0.7500	0.9200	0.0471	0.8170	0.8152	0	0.0000	0.0000

Appendices

140	Malita Investments	MLT	31-Dec-17	12984114.00	129748496.00	148051470.92	148108064.00	0.0877	0.0877	0.8760	0.8000	0.7500	0.1169	1.1681	1.0667	0	0.0000	0.0000
141	Malita Investments	MLT	31-Dec-18	11674451.00	128407938.00	148152931.47	148108064.00	0.0788	0.0788	0.8670	0.8700	0.8000	0.0985	1.0837	1.0875	0	0.0000	0.0000
142	Malita Investments	MLT	31-Dec-19	37143205.00	158980547.00	148098903.51	148108064.00	0.2508	0.2508	1.0734	0.7800	0.8700	0.2883	1.2338	0.8966	0	0.0000	0.0000
143	Malita Investments	MLT	31-Dec-20	9541833.00	164507171.00	148165108.70	148108064.00	0.0644	0.0644	1.1107	0.8950	0.7800	0.0826	1.4240	1.1474	1	0.0826	1.4240
144	Malita Investments	MLT	31-Dec-21	-20022512.00	140724196.00	148095502.96	148108064.00	-0.1352	-0.1352	0.9501	0.7900	0.8950	-0.1510	1.0616	0.8827	1	-0.1510	1.0616
145	LOQUS Holdings	LQS	30-Jun-13	-577618.00	1281020.00	32089888.89	31899000.00	-0.0180	-0.0181	0.0402	0.1400	0.1400	-0.1293	0.2868	1.0000	0	0.0000	0.0000
146	LOQUS Holdings	LQS	30-Jun-14	-247225.00	1033795.00	30903125.00	31899000.00	-0.0080	-0.0078	0.0324	0.1050	0.1400	-0.0554	0.2315	0.7500	0	0.0000	0.0000
147	LOQUS Holdings	LQS	30-Jun-15	55815.00	1089610.00	27907500.00	31899000.00	0.0020	0.0017	0.0342	0.1210	0.1050	0.0167	0.3253	1.1524	0	0.0000	0.0000
148	LOQUS Holdings	LQS	30-Jun-16	266702.00	1356312.00	33337750.00	31899000.00	0.0080	0.0084	0.0425	0.1360	0.1210	0.0691	0.3514	1.1240	0	0.0000	0.0000
149	LOQUS Holdings	LQS	30-Jun-17	484014.00	1840326.00	32267600.00	31899000.00	0.0150	0.0152	0.0577	0.1750	0.1360	0.1116	0.4242	1.2868	0	0.0000	0.0000
150	LOQUS Holdings	LQS	30-Jun-18	642042.00	2482368.00	32102100.00	31899000.00	0.0200	0.0201	0.0778	0.0850	0.1750	0.1150	0.4447	0.4857	0	0.0000	0.0000
151	LOQUS Holdings	LQS	30-Jun-19	257689.00	2740057.00	32211125.00	31899000.00	0.0080	0.0081	0.0859	0.0800	0.0850	0.0950	1.0106	0.9412	0	0.0000	0.0000
152	LOQUS Holdings	LQS	30-Jun-20	-143140.00	2553160.00	35785000.00	31899000.00	-0.0040	-0.0045	0.0800	0.0650	0.0800	-0.0561	1.0005	0.8125	1	-0.0561	1.0005
153	LOQUS Holdings	LQS	30-Jun-21	1438317.00	4077230.00	31962600.00	31899000.00	0.0450	0.0451	0.1278	0.0980	0.0650	0.6937	1.9664	1.5077	1	0.6937	1.9664
154	Lombard Bank Malta	LOM	31-Dec-13	4094000.00	79274000.00	39747572.82	39701994.00	0.1030	0.1031	1.9967	1.6600	2.0000	0.0516	0.9984	0.8300	0	0.0000	0.0000
155	Lombard Bank Malta	LOM	31-Dec-14	3362000.00	82788000.00	41506172.84	41687174.00	0.0810	0.0806	1.9859	1.9100	1.6600	0.0486	1.1963	1.1506	0	0.0000	0.0000
156	Lombard Bank Malta	LOM	31-Dec-15	4382000.00	89397000.00	43820000.00	43771573.00	0.1000	0.1001	2.0424	2.2000	1.9100	0.0524	1.0693	1.1518	0	0.0000	0.0000
157	Lombard Bank Malta	LOM	31-Dec-16	4726000.00	93838000.00	44168224.30	44177914.00	0.1070	0.1070	2.1241	2.4800	2.2000	0.0486	0.9655	1.1273	0	0.0000	0.0000
158	Lombard Bank Malta	LOM	31-Dec-17	5129000.00	96140000.00	44215517.24	44177914.00	0.1160	0.1161	2.1762	2.4000	2.4800	0.0468	0.8775	0.9677	0	0.0000	0.0000
159	Lombard Bank Malta	LOM	31-Dec-18	8447000.00	108310000.00	44225130.89	44177914.00	0.1910	0.1912	2.4517	2.3600	2.4000	0.0797	1.0215	0.9833	0	0.0000	0.0000
160	Lombard Bank Malta	LOM	31-Dec-19	9320000.00	119128000.00	44170616.11	44177914.00	0.2110	0.2110	2.6966	2.1000	2.3600	0.0894	1.1426	0.8898	0	0.0000	0.0000
161	Lombard Bank Malta	LOM	31-Dec-20	6640000.00	126021000.00	44266666.67	44177914.00	0.1500	0.1503	2.8526	1.9000	2.1000	0.0716	1.3584	0.9048	1	0.0716	1.3584
162	Lombard Bank Malta	LOM	31-Dec-21	7481000.00	137300000.00	44529761.90	44766961.00	0.1680	0.1671	3.0670	1.8500	1.9000	0.0880	1.6142	0.9737	1	0.0880	1.6142

