

A STUDY ON THE POSSIBLE IMPACT OF CONSTRUCTIVE LEASE CAPITALISATION ON SELECTED LISTED SOUTH AFRICAN COMPANIES' FINANCIAL STATEMENTS, IN LIGHT OF IFRS 16 LEASES



JARED CAPE

CPXJAR001

Research dissertation presented for the approval of the University of Cape Town Senate in fulfilment of part of the requirements for the degree of Master of Commerce (Specialising in Financial Reporting, Analysis and Governance) in approved courses and a minor dissertation. The other part of the requirement for this qualification was the completion of a programme of courses.

I hereby declare that I have read and understood the regulations governing the submission of Master of Commerce dissertations, including those relating to length and plagiarism, as contained in the rules of the University, and that this dissertation conforms to those regulations.

SUPERVISOR: PROFESSOR GOOLAM MODACK

FEBRUARY 2019

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

ABSTRACT

This study analyses the possible effects of constructive lease capitalisation on all companies in four sectors of the Johannesburg Stock Exchange (JSE) namely Industrial Transportation, Food and Drug Retailers, General Retailers and Travel and Leisure, in light of the impending adoption of IFRS 16.¹ The capitalisation is performed using a model developed by Imhoff Jr., Lipe, & David, (1997) & Imhoff Jr., Lipe, & Wright, (1991) as well as further refinements in Dillon, (2014) & Fulbier, Silva, & Pferdehirt, (2006). The analysis looks at the effects of constructive capitalisation on key leverage and profitability ratios, and line items in the financial statements. The study also assesses the impact on disclosed loan covenants and whether constructive capitalisation will result in the breach of any covenants. The results show that the adoption of IFRS 16 has an impact on key ratios and line items specifically leverage ratios and earnings before interest, tax, depreciation and amortisation (EBITDA) margin. The sector most impacted is the Food and Drug Retailers. No loan covenants were breached as a result of constructive capitalisation, however the impact on the covenants was both positive and negative.

¹ International Financial Reporting Standard 16: Leases

TABLE OF CONTENTS

ABSTRACT	II
TABLE OF CONTENTS	III
LIST OF TABLES	VI
ILLUSTRATIVE EXAMPLES	VII
INTRODUCTION	1
LITERATURE REVIEW	6
IASB	6
DEVELOPMENT OF IFRS 16 FROM IAS 17	7
<i>Criticism of IAS 17</i>	7
<i>Discussion Paper and 2010 Exposure Draft</i>	7
<i>2013 Exposure Draft</i>	9
<i>Finalisation of IFRS 16</i>	10
REVIEW OF PRIOR RESEARCH INTO CONSTRUCTIVE CAPITALISATION	11
<i>Development of original model</i>	11
<i>Company Specific Discount Rates</i>	14
<i>Geometric Digression Model</i>	15
<i>Constructive Capitalisation: Global</i>	16
<i>United Kingdom and Europe</i>	17
<i>United States of America</i>	19
<i>Australia</i>	20
<i>Turkey</i>	21
<i>South Africa</i>	22

METHODOLOGY	25
SAMPLE	25
DATA SELECTION.....	26
DEVELOPMENT OF MODEL	28
<i>Extraction of Data.....</i>	<i>28</i>
<i>Interest Rate</i>	<i>30</i>
<i>Annual Lease Payment.....</i>	<i>33</i>
<i>Right-of-use Asset.....</i>	<i>35</i>
<i>Current Year Profit.....</i>	<i>36</i>
<i>Tax rate.....</i>	<i>37</i>
<i>Turnover-linked lease payments</i>	<i>38</i>
<i>Straight Line Operating Lease Assets or Liabilities, Onerous Contracts and Loan Covenants.....</i>	<i>38</i>
RESULTS AND ANALYSIS	39
FINAL SAMPLE	39
FINDINGS	40
<i>Sector Analysis</i>	<i>40</i>
<i>Interest Rate</i>	<i>42</i>
<i>What is the impact of constructive lease capitalisation on JSE listed companies in certain sectors, in light of IFRS 16 Leases?.....</i>	<i>43</i>
<i>Which specific companies are likely to be the most impacted and least impacted by constructive capitalisation, in terms of their financial statements, financial ratios and covenants?.....</i>	<i>49</i>
<i>Does changing the inputs into the model result in relevant information that would influence a financial statement user’s assessment of the impact of constructive</i>	

<i>capitalisation? Furthermore, do the original inputs into the model faithfully represent the impact of constructive capitalisation?.....</i>	<i>51</i>
<i>Loan covenants.....</i>	<i>53</i>
CONCLUSION	56
SUMMARY	56
<i>Statement of Financial Position vs. Statement of Comprehensive Income</i>	<i>56</i>
<i>Covenants.....</i>	<i>56</i>
<i>Sectors.....</i>	<i>57</i>
<i>Sensitivity Analysis.....</i>	<i>58</i>
LIMITATIONS.....	58
FURTHER RESEARCH	59
REFERENCES	61
APPENDICES	64
<i>Appendix 1: Data Capture Sheet</i>	<i>64</i>
<i>Appendix 2: Results for entire sample.....</i>	<i>65</i>
<i>Appendix 3: Results for each sector.....</i>	<i>66</i>
<i>Appendix 4: Key ratios defined</i>	<i>70</i>
<i>Appendix 5: Impact on ratios for each company</i>	<i>71</i>
<i>Appendix 6: Sensitivity analysis</i>	<i>78</i>

LIST OF TABLES

Table 1: The number of companies in each of the relevant JSE sectors.....	26
Table 2: The final number of companies in the sample by sector.....	39
Table 3: Companies excluded from the final sample	39
Table 4: Comparison of results among the different sectors.....	41
Table 5: Impact on loan covenants.....	55
Table 6: Impact on key ratios and line items for the entire sample	65
Table 7: Impact on key ratios and line items for Industrial Transportation.....	66
Table 8: Impact on key ratios and line items for Food & Drug Retailers	67
Table 9: Impact on key ratios and line items for General Retailers.....	68
Table 10: Impact on key ratios and line items for Travel & Leisure	69
Table 11: Increase of 2% p.a. in the interest rate	78
Table 12: Increase of 4% p.a. in the interest rate	79
Table 13: Lease expiration of 35%	80
Table 14: Lease expiration of 65%	81

ILLUSTRATIVE EXAMPLES

Example 1: Difference in accounting between IAS 17 and IFRS 16	2
Example 2: Illustration of “modified retrospective” transition approach.....	29
Example 3: Determination of interest rate from finance leases disclosure.....	32
Example 4: Calculation of annual lease payment using digression factor	34
Example 5: Effect on current year profit.....	36
Example 6: Impact of change in lease expiration on equity	52

Note: All illustrative examples included in this study are the author’s own examples.

INTRODUCTION

A lease is a contract that grants a lessee the right to use an asset for a period of time in exchange for consideration (Correia, Flynn, Uliana, & Wormald, 2015). The asset is legally owned by the lessor during the lease. There are many benefits associated with leasing an asset rather than buying the asset. Correia et al., (2015) sets out the following benefits of leasing an asset:

1. A company is more easily able to adapt to changing technology as a lease will generally be shorter than the useful life of the asset. If technology is rapidly advancing then the lessee can obtain a new lease for a newer, more updated asset.
2. If a lessee is in an assessed loss position and cannot benefit from the wear and tear deductions from owning the asset then the deductions can be transferred to a lessor who has taxable income and can benefit from the deductions.
3. There is no deposit required enabling an entity to obtain 100% debt financing.
4. Leases allow for more flexibility as customers can more easily adapt to changing business environments due to a lease term usually being shorter than the useful life of an asset.
5. Fewer restrictions than loans as the lessor understands its security (asset in the lease) and will therefore require less financial and credit information.

Leases can either be classified as a finance lease or an operating lease for accounting purposes (Correia et al., 2015). The definitions of finance and operating leases have remained the same in IAS 17 (International Accounting Standard) and IFRS 16 (International Financial Reporting Standard).² A finance lease is a lease where the lessor transfers substantially all the risks and rewards associated with ownership of an asset to the lessee. An operating lease is a lease where the risks and rewards of ownership are not transferred (IASB, 2016d). Under the previous accounting standard, IAS 17, lessees would only capitalise finance leases. Operating leases would be

² International Accounting Standards (IASs) were issued by the International Accounting Standards Committee (IASC) and International Financial Reporting Standards (IFRSs) are issued by the International Accounting Standards Board (IASB). The IASB replaced the IASC on 1 April 2001.

expensed on a straight-line basis with the same lease expense recognised every year. IFRS 16, released in January 2016, requires lessees to capitalise all leases unless the lease is a short term lease³ or a lease of a low value item⁴ (IASB, 2016d). The constructive capitalisation method aims to treat all leases as if they were finance leases. This requires the capitalisation of lease payments resulting in the inclusion of a right-of-use asset and lease liability in the statement of financial position (Correia et al., 2015).

The research questions for this study are noted below:

1. What is the impact of constructive lease capitalisation on JSE listed companies in certain sectors, in light of IFRS 16 Leases?
2. Which specific companies are likely to be the most impacted and least impacted by constructive capitalisation, in terms of their financial statements, financial ratios and covenants?
3. Does changing the inputs into the model result in relevant⁵ information that would influence a financial statement user's assessment of the impact of constructive capitalisation? Furthermore, do the original inputs into the model faithfully represent⁶ the impact of constructive capitalisation?

The example below illustrates the difference between IAS 17 and IFRS 16 in accounting for operating leases:

Example 1: Difference in accounting between IAS 17 and IFRS 16

Assume Company X enters into a four-year lease for the rental of office space in a building that is expected to have a useful life of 50 years. The lease stipulates annual payments of R60 000 to be made in arrears. Company X has an incremental borrowing rate in this lease of 11%.

³ A short-term lease is defined in Appendix A of IFRS 16 as a lease which is 12 months or less.

⁴ Low value is not defined however IFRS 16 provides examples of low value items such as office furniture or laptops. The Basis for Conclusions uses \$5 000 as a guide.

⁵ Relevant financial information is defined in the Conceptual Framework as information that is capable of making a difference in the decisions made by users (IASB, 2016a).

⁶ Faithful representation is defined in the Conceptual Framework as financial information that is complete, neutral and free from error (IASB, 2016a).

IAS 17: Company X would only have to present an annual operating lease expense of R60 000 in its statement of comprehensive income in each of the four years of the lease.

IFRS 16: Company X would discount the future lease payments of R60 000 by its incremental borrowing rate of 11% to obtain R186 147. Company X would recognise an annual depreciation expense of R46 537 (186 147/4) and the interest expense would become smaller every year.

LEASE LIABILITY

	Opening balance (A)	Interest (B)	Payment (C)	Closing balance (A+B-C)
YR1	186 147	20 476	60 000	146 623
YR2	146 623	16 129	60 000	102 751
YR3	102 751	11 303	60 000	54 054
YR4	54 054	5 946	60 000	0

RIGHT-OF-USE ASSET

	Opening balance (A)	Depreciation (B)	Closing balance (A-B)
YR1	186 147	46 537	139 610
YR2	139 610	46 537	93 073
YR3	93 073	46 537	46 537
YR4	46 537	46 537	0

SUMMARY AT END OF YR 1

	IAS 17	IFRS 16
STATEMENT OF FINANCIAL POSITION		
Right-of-use asset	-	R139 610
Lease liability	-	R146 623
STATEMENT OF COMPREHENSIVE INCOME		
Operating lease expense	R60 000	-
Depreciation expense (R186 147/4)	-	R45 537
Interest expense (R186 147 x 11%)	-	R20 476

The adoption of IFRS 16 means that lessees that make use of operating leases will now have to capitalise those leases onto their statements of financial position. This could impact on the total reported assets and liabilities as well as ratios that are calculated using those assets and liabilities. The adjustments to the ratios could affect loan covenants that are based on a company's debt levels or interest cover ratio. Companies may be able to absorb any potential negative impact from the adoption of IFRS 16 if covenants are renegotiated. This study aims to assess the impact of the new accounting standard dealing with leases on certain listed South African companies' financial statements. Previous research has been performed relating to constructive capitalisation of operating leases, however most of this research is focused outside of South Africa. The research that pertains to South African companies was performed based on the second Exposure Draft (ED) released in 2013 by the International Accounting Standards Board (IASB). In terms of the ED, lessees had to distinguish between a Type-A (non-property) lease and a Type-B (property) lease (Dillon, 2014). This study is based on the newly issued standard, IFRS 16, released in January 2016 while the Dillon, (2014) study is based on the ED released in 2013. This study attempts to capitalise the unrecorded operating lease liability for the sample of companies using a revised model based on the Imhoff Jr., Lipe, & Wright, (1991) paper and assess the impact of capitalisation on the companies' key ratios and covenants, if disclosed.

The global leasing industry experienced growth for five consecutive years since the 2008 economic crisis. The industry has grown in excess of \$1 trillion as of 2015 with the African continent making up 0.7% of that volume. The volume is calculated as the value of equipment leased out during the year, excluding property or real estate leases (Gleeson & White Clarke Group, 2017). South Africa is ranked 27th in the global leasing industry by volume. The volume of sales in the South African leasing industry in 2015 was \$3.1 billion (Gleeson & White Clarke Group, 2017). It has been estimated that in South Africa, lease financing makes up about 50% of equipment financing. The IASB conducted an effects analysis on 30 000 listed companies that use either US GAAP or IFRS and found that the total future minimum lease payments for off-balance sheet leases was \$2.86 trillion. The present value of those payments was \$2.18 trillion. Further analysis by the IASB showed that just under 4% of the sample of 30 000 companies

accounted for over 80% of the present value of total off-balance sheet lease payments i.e. \$1.83 trillion out of \$2.16 trillion (IASB, 2016c). This shows that a small portion of all companies (most likely concentrated in certain sectors) account for the majority of the global unreported lease liability.

This study could be useful to the following stakeholders of companies:

- Lenders – banks and other financial institutions such as insurance companies and investment banks could be able to gain a more accurate picture of the companies' debt and risk levels. This could impact the terms of loans as well whether investment banks want to enter into derivative contracts with companies.
- Credit rating agencies – these agencies provide sovereign credit ratings as well as credit ratings for individual companies and individual instruments. This study could provide a more accurate picture of a company's debt levels which may impact their credit rating. A downgrade in a credit rating will have far-reaching consequences as certain banks and bondholders will no longer be allowed to provide finance.
- Investors or shareholders – active shareholders constantly monitor a company's financial performance and key ratios. Under IAS 17, a company's total indebtedness is not faithfully represented resulting in shareholders not being able to make an appropriate decision of whether they are satisfied with the risk levels of the company. This study could be used to pre-empt the impact that IFRS 16 will have on selected JSE companies, resulting in better decision-making by shareholders and a better allocation of capital.

LITERATURE REVIEW

This chapter provides an introduction into the accounting for leases as well as the problems surrounding the previous leases standard, IAS 17. The development of the new standard, IFRS 16, is discussed, followed by a review of the literature on constructive lease capitalisation from various countries around the world, including South Africa.

IASB

The IASB ('Board') is an independent group of financial reporting experts with varying levels of experience in industry, education, auditing and setting standards. Members of the IASB are responsible for the development and issuance of new IFRS standards, subsequent amendments as well as the approval of interpretation standards developed by the Interpretations Committee formerly known as International Financial Reporting Interpretations Committee (IFRIC) (IASB, 2017b). The IFRS Foundation has a three-tier governance structure which is centred on a Board of experts (IASB) who are governed by Trustees who are in turn governed by a monitoring group of public institutions and authorities. The IFRS Advisory Council provides guidance and advice to the Trustees and to the Board while the Board also consults with other consultative groups and bodies (IASB, 2017c).

The standard setting process involves writing up discussion papers, holding extensive meetings, publishing exposure drafts, receiving comment letters on those exposure drafts, issuing of the standard and then a post implementation review which takes place a few years after the standard has been mandatorily adopted. Most projects by the IASB begin with research where various issues are discussed and explored. Possible solutions are identified and often the Board will publish its thoughts in a discussion paper where the public can comment. If it is found that a financial reporting issue exists and a solution cannot be found, the standard setting process begins. Proposals for a new standard are published in an exposure draft which the public are free to comment on. The Board reads the comment letters received and holds discussions and meetings with various stakeholders around the world as well as IFRS Foundation technical staff.

The Board analyses and discusses the feedback received and then amends the draft standard. Once the draft standard has been amended, then the final standard can be issued with a mandatory adoption date (IASB, 2017a).

DEVELOPMENT OF IFRS 16 FROM IAS 17

Under IAS 17, lessees classified leases as either financing or operating and would account for these leases differently. Lessees were not required to recognise an asset and liability arising from operating leases however they were required to do so for finance leases. The Financial Accounting Standards Board (FASB) and the IASB initiated a joint project to improve lease accounting so that it addresses the needs of users of financial statements. The FASB is the national standard setter of the United States of America (IASB, 2016e).

Criticism of IAS 17

Lessee accounting under IAS 17 was criticised as the financial reporting of operating leases was not transparent and did not report the economic substance of the transaction. Users would adjust financial statements of companies by increasing the assets and liabilities of companies using estimated discount rates. The existence of two different accounting models for leases was also criticised where assets and liabilities were only recognised for finance leases. This reduced comparability for users of financial statements and allowed companies to structure lease arrangements to achieve a particular accounting outcome. Previous lessor accounting did not address the credit risk associated with leases, particularly those classified as operating leases. The IASB and FASB agreed to address the above criticisms by requiring lessees to recognise assets and liabilities for all leases that are greater than 12 months and for which the underlying asset is not of low value. The IASB and FASB ('the Boards') also agreed to require lessors to provide additional risk disclosure (IASB, 2016e).

Discussion Paper and 2010 Exposure Draft

The Boards published a joint Discussion Paper in March 2009 titled "*Leases: Preliminary Views*". The Discussion Paper proposed a new lessee accounting model where lessees

would recognise a right-of-use asset and lease liability at commencement date of the lease. The Discussion Paper did not address the detail of lessor accounting. In August 2010, the Boards published a joint Exposure Draft: “Leases”. The ED was developed after considering comments and opinions from the Lease Accounting Working Group as well as those interested in the accounting for leases. The 2010 ED further expanded on the new lessee accounting model of recognising a right-of-use asset. The ED also proposed changes to lessor accounting which was not included in the Discussion Paper. Respondents to the Discussion Papers recommended that the Boards develop accounting models for lessees and lessors in order to be consistent. The Boards saw value in developing lessor accounting as this coincided with the time that the new revenue standard, IFRS 15, was being developed. The ED proposed a dual accounting model for lessors whereby a lessor would either recognise a receivable and liability at commencement date⁷ or would derecognise the asset and recognise a receivable and a residual asset. The first model was called the ‘performance obligation’ approach and the second model was called the ‘derecognition’ approach. The ED also included detailed proposals on the measurement of the lessee’s liability and the lessor’s lease receivable (IASB, 2016e).

The Boards received 786 comment letters in response to the 2010 ED. The Boards also engaged in discussions with various stakeholders and interested parties. Members of the Boards participated in meetings, conferences, discussion forums and one-to-one discussions around the world including Hong Kong, the United Kingdom and the United States. Responses to the 2010 ED indicated the following: there was general support for the new lessee accounting model of recognising a right-of-use asset and lease liability, however, there were differing opinions on the effects in the statement of comprehensive income of recognising right-of-use assets. The effects are that the lessee would recognise two separate expenses namely depreciation expense and interest expense. Regarding lessor accounting, many respondents disagreed with the proposals as they were concerned that the dual approach for lessors was not consistent with the single approach for lessees. The single approach required lessees to recognise

⁷ Commencement date is the date on which a lessor makes an underlying asset available for use by a lessee. (IAS 17 Appendix A Defined terms)

a right-of-use asset and lease liability for all leases. The dual approach allowed lessors the option to choose between the 'performance obligation' approach and the 'derecognition' approach. Many respondents disagreed with the 'performance obligation' approach as they stated that that would inflate a lessor's assets and liabilities. Some respondents thought that the requirements in IAS 17 for lessors worked well in practice and should continue to be used in the new Leases standards. A large majority of respondents were concerned around the cost and complexity of implementing the new proposals. The Boards considered the feedback received on the 2010 ED and decided to develop a revised model that identified two classes of leases with specific reporting requirements for each. The classification would depend on the extent to which the lessee would consume the economic benefits of the underlying asset. The Boards then published a second ED in 2013 (IASB, 2016e).

2013 Exposure Draft

The second ED proposed the following: for leases where the lessee was expected to consume more than an insignificant amount of the economic benefits, the lessee would apply a similar approach to that mentioned in the 2010 ED where depreciation on the right-of-use asset, and interest on the lease liability would be recognised separately in the statement of comprehensive income. The lessor would recognise its residual interest in the underlying asset separately from its receivable from the lease. For leases where the lessee was expected to consume an insignificant amount of the economic benefits, the lessee would recognise a single lease expense in the statement of comprehensive income and the lessor would recognise the underlying asset. The Boards received 641 comment letters in response to the 2013 ED and subsequently held discussions, round table meetings and conferences with various stakeholders around the world. The Boards again met with the IASB's advisory bodies including the IFRS Advisory Council and the Accounting Standards Advisory Forum (IASB, 2016e). Feedback on the 2013 ED indicated the following: many stakeholders were in support of the recognition of a right-of-use asset and lease liability for the lessee, however there were still several stakeholders who had concerns about the proposed new model for lessees. Some were of the view that the previous model in IAS 17 did not need to be changed or that the

deficiencies could be rectified through improved disclosure rather than changing the recognition and measurement requirements. Some respondents disagreed with the proposed dual approach for lessees. Many stakeholders thought that the measurement proposal in the 2013 ED represented a significant improvement over the proposals in the 2010 ED specifically relating to the simplification of variable lease payments and payments under renewal and purchase options. Concerns raised by stakeholders included the cost and complexity of the dual models for both lessees and lessors, the disclosure proposals and the proposed scope of the transactions that may be affected by the issuance of a new leases standard. Most stakeholders disagreed with the dual approach model for lessors and believed the previous single model in IAS 17 for lessors should remain.

The Boards considered the feedback from the various stakeholders and confirmed their previous decision that a lessee should recognise a right-of-use asset and corresponding lease liability for all leases with some exceptions. After consultation with respondents to the Discussion Paper and the 2010 and 2013 EDs, the IASB concluded that there would be significant benefits from requiring a lessee to recognise right-of-use assets and lease liabilities for all leases. The benefits from this financial reporting were deemed to outweigh the costs (IASB, 2016e). The Board therefore decided to adopt the single lessee accounting model for all leases. In contrast, the FASB decided to adopt a dual model for lessees where leases are classified as either operating leases or capital leases. There are a number of other differences between IFRS 16 and the decisions made by the FASB relating to the lessee accounting model which are outside the scope of this dissertation. Due to the feedback received, the IASB decided to carry forward the lessor accounting principles from IAS 17 (IASB, 2016e).

Finalisation of IFRS 16

IFRS 16 addresses many of the concerns raised by various stakeholders relating to the cost and complexity of implementing a new leases accounting standard. In addition to the single lessee accounting model and the decision to carry forward the previous lessor accounting model in IAS 17, the IASB decided on the following: to allow lessees to not recognise a right-of-use asset and lease liability if the lease was short-term or related to

a low value asset, to allow entities to apply the new standard at a portfolio level for leases with similar characteristics, the simplification of the requirements dealing with variable lease payments and payments during optional periods, the simplification of the requirements for separating lease and non-lease components of a contract, an adjustment to the disclosure requirements for lessees and the simplification of the lessee transition requirements (IASB, 2016e).

REVIEW OF PRIOR RESEARCH INTO CONSTRUCTIVE CAPITALISATION

Development of original model

The development of the original model for constructive capitalisation was published in Imhoff Jr., Lipe, & Wright, (1991). The paper developed a model for constructive lease capitalisation based on certain uniform assumptions. The method allows financial statement ratios to be calculated as if operating leases had been capitalised since the commencement dates of the leases. The method developed allows users to determine the effect of constructive capitalisation on total assets, liabilities and net profit. To estimate the effect on total liabilities, the note disclosure relating to companies' operating leases is utilised. The notes disaggregate the future lease payments for operating leases into payments due within each of the next five years and a single figure for payments due after five years. This is required disclosure as per SFAS 13.⁸ IAS 17 requires a disaggregation of future operating lease payments into payments due within one year, payments due later than one year but no later than five years and payments due later than five years.⁹ The future minimum operating lease payments are then discounted using the entity's incremental secured borrowing rate and an estimate of the remaining life of the asset. Once the debt has been estimated, an estimate of the lease asset is made by examining the relationship between the lease liability and leased asset over the lease term.

Imhoff Jr., Lipe, & Wright, (1991) used the McDonalds Corporation's annual report in 1988 to provide an illustration of the model. The assumption was made that all cash

⁸ A statement of financial accounting standards issued by the FASB which outlines accounting standards and policies to be applied by companies applying US GAAP

⁹ International Accounting Standard (IAS) 17: 56

flows occur at year-end rather than throughout the year, the discount rate used was 10% p.a. and the average remaining lease term was 15 years. McDonalds' unrecorded debt relating to operating leases was about \$1.17 billion which represented more than one third of the company's total debt. The paper went further to conduct sensitivity analysis by adjusting the discount rate by 2% in both directions as well as adjusting the estimated remaining lease term by an increase of five and ten years respectively. The change in these estimates produced results that showed that the unrecorded debt varied from \$1.01 billion to \$1.31 billion. The authors tested the accuracy of their model by computing the unrecorded operating lease debt of Pillsbury.¹⁰ Using the model, they calculated a figure of \$440 million which was within 4% of the figure of \$423 million that Pillsbury voluntarily disclosed in its operating lease note disclosure for 1988 (Imhoff Jr. et al., 1991).

In determining the value of the unrecorded lease asset, the following assumptions were made:

1. Straight line depreciation is used for all assets.
2. The unrecorded lease asset and lease liability equal 100% of the present value of the future minimum lease payments at inception of the lease.
3. The unrecorded lease asset and lease liability both equal zero at the end of the lease term.

The ratio of the asset to liability balance can be calculated using the following formula:

$$\frac{R_L}{T_L} \times \frac{PV_{TL,i\%}}{PV_{RL,i\%}}$$

R_L = remaining life of the leased asset

T_L = total life of the leased asset

$i\%$ = marginal borrowing rate (discount rate)

$PV_{TL,i}$ = present value annuity for TL at $i\%$

$PV_{RL,i}$ = present value annuity for RL at $i\%$

¹⁰ Pillsbury was the parent company of Burger King from 1967 until 1997. In 1997, a new parent company, Diageo, was formed.

The ratio calculated will always be below 100% as the leased asset balance diminishes more quickly than the liability balance as a result of the initial lease payments comprising mainly interest and the later payments comprising more principal.

Using the model, the unrecorded lease assets relating to the McDonalds Corporation was \$785.8 million, which was about one tenth of total assets and was more than ten times larger than the finance leases capitalised in terms of SFAS 13. The effect on current year net income was not examined in detail in this paper. Imhoff Jr., Lipe, & David, (1997) dealt with this impact which will be discussed in the following paragraph. The results from this paper showed that if McDonalds had capitalised their operating leases, their return on assets ratio for 1988 would have been 9% less and their debt to equity ratio would have been about 30% greater (Imhoff Jr. et al., 1991). The model was used to expand the analysis to seven pairs of companies in different industries where the following six uniform assumptions were used to perform the analysis. This was done so that differences between the companies could be attributed to differences in the value of operating leases rather than differences in assumptions made.

1. A 10% p.a. interest rate used for each company to discount future cash flows.
2. An average remaining lease life of 15 years.
3. All cash flows occur at year end.
4. The unrecorded lease asset equals 70% of the unrecorded liability.
5. A tax rate of 40%.
6. No effect on the current period's net profit.

Imhoff Jr. et al., (1991) did not illustrate the impact of constructive capitalisation on the statement of comprehensive income. The income and expense effects were discussed in Imhoff Jr. et al., (1997). Imhoff Jr. et al., (1997) used SouthWest Airlines as a practical example to illustrate the impact on net income and operating income. The statement of comprehensive income effects were not as significant as the statement of financial position effects, however they had an impact on the performance of an entity and the ratios that are based on the entity's performance. Ratios such as return on assets and return on equity are often linked to executive and director compensation making the

effect on them important. Operating income¹¹ is higher when leases are capitalised as the annual lease expense is replaced with depreciation expense and interest expense. The interest expense reduces net income but is not considered when calculating operating income. This results in a more favourable picture of the entity's performance. The adjustments to net income can be calculated by subtracting the change in equity from one year to the next that arises as a result of constructive capitalisation. Operating income can be calculated from the adjusted net income figure which assumes constructive capitalisation. The after-tax interest expense on the capitalised leases would need to be added back to obtain the operating income figure.

The Imhoff Jr. et al., (1991) study was replicated by Kilpatrick & Wilburn, (2006) to assess whether the use of operating leases as a source of financing had increased over a certain time period. The study attempted to replicate the Imhoff Jr. et al., (1991) study with the same companies and same assumptions. A total of 14 companies were analysed in the Imhoff Jr. et al., (1991) study. Five out of those 14 companies had either closed or were acquired by another company when this study was performed in 2006. The mean lease liability increased from \$722.6m in the Imhoff Jr. et al., (1991) study to \$1 927m, an increase of 267%. This is a large increase and the increase in total liabilities represented 72% in the Imhoff Jr. et al., (1991) study and 87% in this study. The mean lease asset as a percentage of total assets increased from 32% to 36%. The average debt to assets ratio increased from 73% in 1987 to 81% in 2004. Return on assets decreased from 5% in 1987 to 2% in 2004. Kilpatrick & Wilburn (2006) found the impact of constructive capitalisation to be even more significant in their study than in the original Imhoff Jr. et al., (1991) study.

Company Specific Discount Rates

Imhoff Jr. et al., (1991) used a uniform interest rate of 10% p.a. to discount future operating lease payments while Imhoff Jr., Lipe, & Wright, (1993) used firm specific interest rates. Imhoff Jr. et al., (1997) proposed two methods for determining the appropriate interest rate. The most appropriate rate to use would be each firm's weighted average marginal interest rates at inception of the leases. The first method

¹¹ Income after depreciation before interest expense

relied on using the implicit interest rate in the company's finance leases which is sometimes disclosed in the notes. If the rate is not provided in the notes, then it is possible to calculate it by calculating the following year's interest expense and dividing it by the outstanding finance lease liability at the current year end. The following year's interest expense relating to finance leases can be calculated by subtracting the current portion of the finance lease liability from the following year's total finance lease payment. The current portion of the finance lease liability is the principal portion of the following year's total finance lease payment which companies disclose as the current portion of their finance lease liability. The calculated rate may then be adjusted upwards slightly due to more ownership risk remaining with the lessor under operating leases. The other method for calculating the interest rate is calculated by dividing total interest expense by total interest-bearing debt. The interest expense must not be net of interest income otherwise a reliable estimate is not obtained.

Geometric Digression Model

Fulbier et al., (2006) continued to develop the original model by modifying the method used to calculate the annual lease payment for year's two to five. The study used a geometric digression model to calculate the future lease payments for year's two to five. The lease payments were assumed to decline at a constant rate. The lease payment for any of the years two to five was calculated based on the previous year's lease payment. The lease payment due within one year was used to calculate the lease payment for year two and the lease payment for year two was used to calculate the lease payment for year three and so on. The sum of the calculated lease payments for years two to five had to equal the total lease payments disclosed in the notes for that period.

Fulbier et al., (2006) used a modified constructive capitalisation model to determine the effects on listed German companies' financial statements and financial ratios. The sample comprised German companies listed on the three main German indices namely DAX, MDAX and SDAX. The final sample of companies was 90 as 32 companies had to be excluded from the original sample due to a lack of operating lease information disclosed. While 65% of the companies in the sample made use of IFRS for preparation of their financial statements, the remaining 35% used US GAAP and German

Commercial Code (HGB). The authors argued that the different frameworks would not impact greatly on their study as the frameworks were largely the same and they were testing the changes in the financial ratios of the various companies rather than the ratios in isolation. The model made use of company specific assumptions with regards to discount rates, tax rates and remaining lease terms.

Due to the unavailability of discount rates for specific leases, the discount rates were estimated using the interest rates used to discount provisions or pension obligations which were found in the notes. For companies that did not disclose this information, the average of the discount rates disclosed by the other companies was used.

The study looked at financial ratios that dealt with the structural changes¹² in the statement of financial position, ratios that measured profitability¹³ and ratios showing the impact on capital markets.¹⁴ Intensity of investment and debt to equity showed an average increase of 3.9% and 8% respectively while equity to assets showed a decrease of 4.9%. The largest changes in the profitability ratios were return on capital employed which decreased by 2% and profit margin which increased by 2.9%. The capital market ratios were only slightly affected with earnings per share increasing by an average of 0.2% and the price earnings ratio decreasing by an average of 0.2%. The study grouped the companies in the sample into seven industry groups (chemical, drugs and healthcare, construction and assembly, fashion, natural resources and energy, retail, services and other) and found that the retail and fashion industries were affected the most by constructive capitalisation of operating leases.

Constructive Capitalisation: Global

PWC, (2016) released a study in February 2016 analysing the effects of IFRS 16 on 3 199 companies from countries around the world excluding the United States. The study assessed the impact of IFRS 16 on key financial ratios and performance measures such as EBITDA. The study showed that the median increase in debt levels

¹² Turnover capital employed (Revenue/Average capital employed), intensity of investment (Non-current assets/total assets), equity to assets, debt to equity

¹³ Profit margin (EBIT/Revenue), return on assets (EBIT/Average total assets), return on capital employed (EBIT/Average capital employed), times interest earned (EBIT/interest expense), return on equity

¹⁴ Earnings per share, price earnings ratio, book to market ratio (Equity/Market capitalisation)

would be 22% and the median increase in EBITDA would be 13%. The study concluded that 53% of entities would see an increase in their debt levels of more than 25%. The most impacted industry was retail with a 98% median increase in debt. Companies in the airline industry would experience an increase of 47% in their debt levels while the utilities sector's debt levels would only increase by 2% (the least affected industry in the sample). The study used the constructive capitalisation approach to perform the analysis. Companies with no leases, a negative EBITDA or entities with no debt were excluded from the sample.

United Kingdom and Europe

Beattie, Edwards, & Goodacre, (1998) studied the effect of a change in the accounting requirements of not having to capitalise operating leases. The capitalised method used in this study was similar to the one suggested by Imhoff Jr. et al., (1991) which had been adapted for the accounting and tax environment of the United Kingdom (UK). The results showed that from a random sample of 300 listed UK companies, the unrecorded lease liability represented 39% of reported debt while the unrecorded asset represented 6% of total assets. Capitalisation of operating leases had a significant impact on six of the nine ratios selected in the study namely profit margin, return on assets, asset turnover and three measures of gearing. There were significant differences in the results between the different sectors however the services sector was the most affected.

The results showed that the mean total liability in respect of operating leases was £51m of which £8m would be classified as short term and £43m as long term. The long term or non-current portion represented, on average, 39% of long term debt before capitalisation. The results varied across the sectors as the mean liability for the mineral extraction sector was £6m (3% of long term debt) and for the services sector it was £88m (69% of long term debt). Capitalised operating lease asset values ranged from a mean of £5m for mineral extraction to £80m for the services sector with the total mean being £40m, representing 0.8%, 13% and 6% of pre-capitalisation total assets respectively. The debt to equity ratio increased from 0.2 to 0.7 post capitalisation while profit margin increased from 8.7% to 9.8%. Return on equity increased from 7.9% to

8.3%. Interest cover declined from 15.9 to 11.7 while return on assets also declined from 4.4 to 3.9.

Branswijck, Longueville, & Everaert (2011) studied the impact of the change in lease accounting for listed companies in Belgium and the Netherlands in 2008. Their results showed that the debt to equity ratio, return on assets and the current ratios were significantly affected by capitalising operating lease payments. Their results also showed that the impact on ratios differed amongst the various industries. The study used information published in corporate annual reports and used the method proposed by Imhoff Jr. et al., (1991).

This study examined 128 companies listed on Euronext Brussels and 116 companies listed on Euronext Amsterdam at April 2010. Entities withdrawn from the sample included those that did not make use of operating leases, companies from the banking sector as well as companies that did not present enough information on their operating leases. This resulted in a final sample of 31 Dutch companies and 35 Belgian companies. The information on future operating lease rentals contained in the financial statements of these various companies was used to perform the analysis. This study noted that there were two methods that exist for lease capitalisation. The one method was the heuristic method while the other was the constructive capitalisation method proposed by Imhoff Jr. et al., (1991). The heuristic method which has been developed and used by analysts overstates the potential lease assets and liabilities according to Imhoff Jr., Lipe, & Wright, (1993). The heuristic method involved identifying a company's current year operating lease expense and then multiplying it by a factor, usually a factor of eight (Imhoff Jr. et al., 1993). The heuristic method was favoured by analysts due to its simple nature and less costly implementation as there was no need to look at a company's operating lease disclosure (Branswijck et al., 2011).

The results of the study showed that the average increase in the lease asset from pre-capitalisation to post capitalisation was 3% whereas the average increase in total liabilities was 5.8%. The total estimated unrecorded debt was €123m. The average marginal interest rate was 6% p.a., the average estimated total lease life was 8.4 years and the average asset to liability ratio was 89.6%. The average debt to equity ratio

increased from 2 to 2.2. The current ratio dropped from 1.44 to 1.39 and the return on assets ratio remained the same at 0.09. The study found that the manufacturing industry would be more affected by the changes in lease accounting compared to the telecommunications industry.

Morales-Díaz & Zamora-Ramirez, (2018) published a study in 2018 analysing the impact of IFRS 16 on 646 listed European companies' key financial ratios. The study enhanced the current research on the impact of IFRS 16 as it made adjustments to the determination of the lease term and how the discount rate was determined. The adjustments were made due to clearer guidance on lease terms and discount rates in IFRS 16 compared to the exposure draft. IFRS 16 makes it clear that lease terms should include renewal options if the entity is reasonably certain to exercise the renewal option. This study used information available in the annual financial statements as well as information obtained directly from the companies to more accurately assess the lease term. The results showed that the mean increase in total assets was 10% and the mean increase in total liabilities was 21%. The retail, hotel and transportation industries were the most affected.

United States of America

Kostolansky & Stanko, (2011) studied the impact of the new leasing standard on the financial statements and ratios of firms in the Standard & Poor's 100 (S&P 100) using a variety of discount rates. The discount rates used were 3%, 6% and 9%. The data for this study was obtained from the Form 10-K reports, specifically the financial statements and leasing footnotes. The Form 10-K reports are annual reports submitted to the United States Securities and Exchange Commission (SEC) in terms of the Securities Exchange Act that contain, inter alia, financial statements and information relating to a company's financial performance, organisational structure and vision (United States Securities and Exchange Commission, 2019). The study assessed the impact on total assets and total liabilities as well as the effect on the total debt to total assets ratio and the return on assets ratio.

The results showed that the average increase in total liabilities using a 6% discount rate was 10% with a maximum increase of 231% for one company. The average increase in total assets was 5% using a 6% discount rate. Under a 9% discount rate, total liabilities and total assets increased by 9% and 4% respectively. The average total debt to total assets ratio increased from 64% to 66.5%, 66.2% and 66.1% using a discount rate of 3%, 6% and 9% respectively. Average return on assets decreased by 4% using a 6% discount rate and decreased by 3% using a 9% discount rate. The study found that the most affected industry was Retail Trade as total liabilities increased by an average of 43% using a 6% discount rate. The Service Industries sector and Transportation, Communication and Utilities sector were also affected considerably with an average increase in total liabilities of 13.6% and 13.9% respectively using a 6% discount rate. The Finance, Insurance and Real Estate sector was the least affected with an average increase in total liabilities of 1.1%.

The study found that of the 100 firms analysed, over half do not make use of finance or capital leases. The average amount of the capital (finance) lease liability for all companies was \$123m whereas the average amount of uncapitalised operating leases was \$2 821m using a 6% discount rate. Some industries are more greatly affected by the new lease accounting presumably because they are more capital intensive and make more use of operating leases as a source of finance. The manufacturing industry in this study however, only experienced an average increase of 2.7% in total assets which seems to contradict this notion.

Australia

Wong & Joshi, (2015) performed an analysis of the impact of the 2013 ED on lease accounting on leasing companies in Australia. The study was performed on large companies listed on the Australian Stock Exchange (ASX). The paper aimed to illustrate the impact on financial statements and financial ratios of leading Australian companies in 2010. The study used the method of constructive capitalisation developed by Imhoff Jr., Lipe, & Wright, (1991) to illustrate the impact of the change in lease accounting. The study found that lease capitalisation would have a material impact on the figures presented in the statement of financial position and statement of comprehensive income

and would result in significant changes to return and leverage ratios. The top 170 companies listed on the ASX were chosen because they represented different sectors and had a market capitalisation in excess of \$1 000m. Companies from the clean technology industry were removed from the sample as well as 62 companies that lacked operating lease information. The final sample of companies was 107 with the largest industry sectors being the industrial and material sector (23), metal and mining sector (20), and the energy and utilities sector (17). The financial data was collected from the annual reports of the sample companies.

The study found that the amount of unrecorded lease liabilities for the sample of 107 companies was \$679.7m. This equated to 3% of the total assets and 4% of the total liabilities. They further found that lease capitalisation would increase mean total assets by \$648.7m and mean total liabilities by \$658.3m. They found that there was a significant increase in leverage ratios particularly the debt to equity ratio. The mean debt to equity ratio increased by 31% and the mean debt to assets ratio increased by 10% after capitalisation of the operating leases. Return on assets was found to have decreased by 15% while return on equity decreased by 1%.

Turkey

Altintas & Sari, (2016) attempted to establish the impact of IFRS 16 on financial statements and financial ratios in Turkish retailing companies whose shares were publicly traded on the Istanbul Stock Exchange. The study used the constructive capitalisation method for these companies. The results indicated that the new standard would have a statistically significant effect on some of the financial ratios such as the debt to equity, debt to asset, return on assets and return on equity ratios. The retail sector comprised 13 companies as of December 31, 2014. Six out of the 13 companies were excluded due to a lack of operating lease information. The study adopted the constructive lease capitalisation method developed by Imhoff Jr. et al., (1991). The authors extracted actual operating lease expenses from the selected companies' financial statements for the period 2010-2014 and future operating lease payments for the following 10 years. These lease payments were then discounted to 1 January 2010. The study found that the present value of the retailing sector companies' total

unrecorded lease assets and lease liabilities was 2.7 trillion Turkish Lira. In the 2010 financial year, total liabilities were found to have increased by 45%, total assets by 30% and total equity decreased by 5%. The debt to assets ratio decreased by 38%, the debt equity ratio increased by 213%, the return on equity decreased by 249% and the return on assets decreased by 105%. The sample for this study was small and specific to the retail industry and should be taken into consideration when interpreting the results.

South Africa

Villiers & Middelberg, (2013) studied the impact of the proposed accounting changes to leasing on the financial ratios of the top 40 JSE listed companies. The initial sample size included 42 companies which were ranked based on market capitalisation for 2010. The number of companies exceeded 40 as some of the companies had the same market capitalisation. The sample was reduced to 29 as some companies did not provide operating lease disclosure and the model was not able to be applied to certain companies. This paper followed a six-step process in determining the effect of capitalisation on the financial ratios:

1. Calculation of financial ratios before adjustments to the financial statements
2. Estimation of the lease term and annual lease payment
3. Estimation of the discount rate or capitalisation rate
4. Adjustments to the financial statements
5. Recalculation of the financial ratios
6. Comparison of adjusted financial ratios to pre-adjusted financial ratios

In estimating the annual lease payment for years two to five, the method suggested by Fulbier, Silva, & Pferdehirt, (2006) was followed where the lease payments were assumed to decline at a constant rate because as time passes, lease contracts come to an end. This assumes that no new lease contracts are being signed. Each lease payment from years two to five was multiplied by a constant digression factor. The digression factor was calculated on Microsoft Excel (2013 version) using the data-solver function. Villiers & Middelberg, (2013) used the South African prime interest rate of 9%

p.a. to discount the future operating lease payments for all companies to ensure consistency. The repo rate was not used as only six of the companies in the sample would pay interest at the repo rate as there were only six financial institutions in the sample. The study based its findings on the impact on the companies' financial ratios which it split up into financial ratios that indicate structural change within a company,¹⁵ financial ratios measuring the profitability of a company¹⁶ and financial ratios affecting the valuation of companies from a market perspective.¹⁷

The average debt to equity ratio increased by 9% from 2.63 to 2.87 while the average debt ratio increased by 8% from 48% to 52%. The average interest cover decreased from 15.42 times to 14.24 times after capitalisation. The average net profit percentage decreased by 32% from 19% to 13%. The net profit percentage is a measure of an entity's overall performance and is calculated by dividing net profit by revenue. Return on equity decreased by 21% from 19% to 15%. Return on assets decreased by 20% from 10% to 8%. Earnings per share was found to have declined due to the negative effects of the amortisation of the right-of-use asset and interest expense on net profit.

Dillon, (2014) studied the effect of constructive capitalisation of operating leases on South African companies considering the proposed lease accounting rules. The study analysed the impact of key financial ratios of listed South African companies operating within five sectors namely General Industrials, Industrial Transportation, Food and Drug Retailers, General Retailers and Travel and Leisure. The study was performed based on the 2013 ED which had a dual model for lessees and classified leases according to either a Type-A lease or a Type-B lease. The constructive lease capitalisation method was based on the method developed by Imhoff Jr. et al., (1991). The method used in this study was refined so that it reflected current lease accounting rules as per the 2013 ED.

The results indicated that constructive lease capitalisation had a significant impact on key financial statement ratios most notably leverage and other debt related ratios. Out of

¹⁵ Debt to equity ratio, debt ratio and interest cover

¹⁶ Net profit percentage, return on equity and return on total assets

¹⁷ Earnings per share and price-earnings ratio

the five sectors analysed, retailers were the most affected. The study also assessed the impact of lease capitalisation on disclosed loan covenants. The results showed that none of the loan covenants disclosed were breached when capitalising operating leases however they were all negatively impacted. The mean unrecognised lease liability represented 33% of total debt while the mean unrecognised leased asset represented 11.3% of total recognised assets under conventional operating lease capitalisation. Under the proposed lessee accounting treatment in the 2013 ED relating to Type-A and Type-B leases, the mean unrecognised lease liability represented 33% of total debt while the mean unrecognised leased asset represented 14% of total recognised assets. The mean unrecognised leased asset is greater using the accounting treatment of Type-A and Type-B leases in the 2013 ED as the right-of-use assets for Type-B (property) leases were not amortised resulting in a higher leased asset balance at any given time. The mean debt ratio pre-capitalisation increased from 51% to 57% using conventional operating lease capitalisation. The debt to equity ratio increased from a mean of 79% to 92%. The times interest earned dropped significantly from a mean of 111.2 to a mean of 8. EBITDA and earnings before interest and tax (EBIT) margins increased from 15% and 11% to 18% and 12% respectively.

METHODOLOGY

This chapter sets out how the sample for the study was chosen as well as how the model was developed with a detailed explanation of each important input into the model.

SAMPLE

This study aimed to capitalise operating leases of South African listed companies using information disclosed by the companies in their 2016 annual financial statements for financial years ending no later than 31 December 2016. The capitalisation was based on the model developed in the Imhoff Jr., Lipe, & Wright, (1991) as well as further refinements developed in the Dillon, (2014); Fulbier, Silva, & Pferdehirt, (2006) & Imhoff Jr., Lipe, & David, (1997) studies. Further information regarding the reasons for the selection of the chosen model can be found in the development of model section of this chapter.

All companies in the following sectors listed on the JSE (excluding companies listed on the AltX exchange) were chosen as part of this study:

1. Industrial Transportation
2. Food & Drug Retailers
3. General Retailers
4. Travel & Leisure

The companies in each sector above were obtained from the Business Report in the Cape Times newspaper when the research for this paper was performed (Business Report, 2017). The companies in each of the sectors above change over time due to new listings, delistings and unbundling transactions. The sectors above were chosen based on the sectors studied in Dillon, (2014); IASB, (2016); Imhoff Jr. et al., (1991) & Sharpe & Nguyen, (1995). Dillon, (2014) studied the four sectors mentioned above as well as the General Industrials sector on the JSE. This sector was excluded as it was the sector least impacted by capitalising operating leases as mentioned in the Dillon, (2014) study. The results of the study showed that the unrecognised lease liability for the General Industrials sector only represented 6% of the total reported liabilities. The

IASB effects analysis studied the impact of IFRS 16 on a variety of industries from retailers to healthcare. The airline, retail, travel & leisure and transport industries were the most affected (IASB, 2016c). The large impact was attributable to leases of supermarket stores, aircraft, hotels and heavy vehicles. Imhoff Jr. et al., (1991) studied the impacts of constructive capitalisation on 14 companies in seven different industries. Those seven industries were Fast Food, Semi-Fast Food, Clothing, Drug Stores, Home Furnishings, Food Stores and Airlines. Sharpe & Nguyen, (1995) found that companies in the Manufacturing, Transportation, Communications, Wholesale, Retail and the Services sectors made use of operating leases as a source of financing for their assets. Branswijck, Longueville, & Everaert, (2011) looked at the impact on the Food and beverages, Services, Retail and Transport, Chemicals and Pharmaceuticals, Manufacturing and Telecommunications industries. The studies mentioned above formed the basis for deciding which industries on the JSE to analyse.

The number of companies in each of the chosen sectors on the JSE is shown in table 1 below.

Table 1: The number of companies in each of the relevant JSE sectors	
Sector	Companies
Industrial Transportation	8
Food & Drug Retailers	8
General Retailers	18
Travel & Leisure	11
TOTAL	45

DATA SELECTION

The information required to perform the analysis was obtained from the annual reports or annual financial statements of the various companies which were downloaded from the internet. The 2016 annual financial statements for financial years ending no later than 31 December 2016 were downloaded. The annual or integrated reports were looked at first to extract the necessary data however, if the data could not be found then

the annual financial statements were used. The information that was needed was obtained from the financial statements as well as the note disclosure. Information relating to current year profit, current year operating lease expense, future operating lease payments, interest rates as well as loan covenants were obtained if presented or disclosed.

Once the relevant information was obtained from the financial statements, it was captured onto a data sheet. An example of the data capture sheet that was used can be found in Appendix 1. The information from the data capture sheet was then transferred to Microsoft Excel (2013 version). The effects of capitalisation on certain ratios were calculated. The ratios that were calculated were intended to cover the debt and asset structure of each company as well as the effects on profitability. Prior research in Altintas & Sari, (2016); Beattie, Edwards, & Goodacre, (1998); Dillon, (2014); Fulbier et al., (2006); Villiers & Middelberg, (2013) & Wong & Joshi, (2015) has focused on the following ratios and performance measures:

- i. Debt-to-equity
- ii. Debt-to-assets
- iii. Return on equity
- iv. Return on assets
- v. Interest cover
- vi. Profit margin
- vii. Earnings per share (EPS)
- viii. EBITDA margin

Fulbier et al., (2006) & Villiers & Middelberg, (2013) calculated the effects on earnings per share as a measure of performance. The IASB focused their research on the effects on asset turnover, interest cover, EBITDA and return on equity (IASB, 2016c).

In addition to calculating the effects on total reported assets, total reported liabilities and total equity, this study analysed the impact on all the ratios and measures of performance mentioned above except for EPS. It was deemed that there was no need to

use EPS as the other ratios included in the analysis provided meaningful results and the calculation of EPS presented the following challenges:

1. In a group structure, it needs to be determined if the parent or one of the subsidiaries is the lessee. If the parent is the lessee, then the full interest and depreciation expense is included in the numerator of the EPS calculation. However, if a subsidiary is the lessee then only the parent's portion of the interest and depreciation expense is included. This was not possible due to the limited information supplied in the annual financial statements.
2. A calculation of the portion of the interest expense and depreciation expense attributable to the parent entity is required. This became challenging in complex group structures or if there was not enough information to calculate the parent's effective shareholding in the subsidiary.
3. If a company had cumulative preference shares in issue, then a portion of the interest expense and depreciation expense would need to be allocated to the preference shareholders. This was difficult as there was limited information available with regards to the terms of the preference shares.

The definitions of all the ratios used in this study can be found in Appendix 4.

DEVELOPMENT OF MODEL

Extraction of Data

The model used in this study was adapted from the model developed in the Imhoff Jr. et al., (1991) paper. Imhoff Jr. et al., (1991) developed a model to assess the effects of constructive capitalisation on the statement of financial position while Imhoff Jr. et al., (1997) expanded on this model to assess the impacts on the statement of comprehensive income. Once developed, the model was applied to all the companies in the sample. The accuracy of the model was tested on the 2016 annual financial statements of Tesco plc ('Tesco'). Tesco was chosen as it voluntarily disclosed £7 814m as the total indebtedness of its operating lease obligations at 27 February 2016. The same method as described in this chapter was applied to the Tesco financial statements

and an unreported lease liability of £8 148m was calculated. This equates to a difference of £334m and an error margin of 4%.

The model applied in this study was consistent with the “modified retrospective” approach in Appendix C of IFRS 16 which allows preparers of financial statements to calculate the outstanding lease liability at adoption date as the remaining lease payments discounted at the incremental borrowing rate. The right-of-use asset is then calculated as if IFRS 16 had always applied or it is equal to the calculated lease liability. This study used the former option and attempted to calculate the right-of-use asset retrospectively. The difference between the asset and liability is recognised as a cumulative adjustment to equity on adoption date (IASB, 2016d). The following is an example illustrating the “modified retrospective” approach.

Example 2: Illustration of “modified retrospective” transition approach

Assume Company X entered into a five-year lease on 1 January 2017 with annual lease payments of R200 made in arrears on 31 December. The incremental borrowing rate at adoption date (1 January 2019) is 10%.

The outstanding lease liability at 1 January 2019 will be the remaining three lease payments of R200 discounted at 10% p.a. (i.e. R497).

The right-of-use asset can either equal the lease liability of R497 on adoption date or it can be calculated retrospectively. If applied retrospectively, the lease liability would have been R758 on 1 January 2017 (commencement date of lease). The right-of-use asset on 1 January 2019 would therefore be R454 ($758 \times 3/5$). The difference between the liability of R497 and the asset of R454 is shown as an adjustment to equity of R43 ($R497 - R454$).

Information first needed to be extracted from the annual financial statements of the various companies in the sample. The complete data capture sheet can be found in Appendix 1, which shows all the information that was obtained from the companies' annual financial statements. Companies in the original sample that did not provide

enough information relating to their operating leases were excluded from this study. The following information was extracted from the financial statements:

- i. Future minimum operating lease payments for the following year, years two to five and more than five years. This was obtained from the operating lease note disclosure.
- ii. Incremental borrowing rate for finance leases (if applicable). This was obtained from the finance lease note disclosure.
- iii. Total reported assets and liabilities (obtained from the statement of financial position).
- iv. Loan covenants.
- v. All other relevant line items to calculate the effect on the ratios and measures of performance.

Interest Rate

The interest rate used to discount the operating lease payments was determined as one of the following (in order of preference):

1. The incremental borrowing rate for the entity's finance leases. This rate was either provided in the notes or could be calculated as discussed in Imhoff Jr. et al., (1997).
2. The average borrowing rate for all interest-bearing debt. This is calculated by dividing total interest expense by total interest-bearing debt.
3. South African prime lending rate of 10.25% p.a. ('per annum') as of 21 July 2017 (Reserve Bank of South Africa, 2017).

Tesco discounted its operating lease obligations in its 2016 annual financial statements by 7% p.a. This rate was confirmed using the method described in option one above. The rate was recalculated as 7% p.a. using Tesco's disclosed information for its finance leases.

Options one and two in the list above were methods developed in Imhoff Jr. et al., (1997). The marginal interest rate at inception of the lease was calculated with regards

to an entity's finance lease obligations. The interest rate was calculated by dividing the following year's interest expense on the finance lease obligation by the outstanding finance lease obligation at year-end as disclosed in the statement of financial position. An entity does not directly disclose the following year's interest expense for finance leases, therefore it was derived by subtracting the current portion of the finance lease liability from the total finance lease payment due in the following year. The recalculated interest rate was then adjusted upwards due to the greater ownership risk remaining with the lessor. An example is illustrated below:

Example 3: Determination of interest rate from finance leases disclosure

Assuming Company X disclosed its finance obligations as follows:

Finance lease commitments	'R
<i>Within one year</i>	25
<i>Greater than one year but less than five years</i>	64
<i>After five years</i>	148
<i>Current finance lease liability</i>	17
<i>Non-current finance lease liability</i>	123
Total finance lease liability	140

The capital portion of the following year's finance lease payment is R17, and the total payment is R25 therefore the interest portion is R8 (25 – 17). The interest portion of R8 is then divided by the total finance lease liability of R140 to obtain an interest rate of 5.7% p.a. The interest rate is then adjusted upwards by one percent to 6.7% p.a. to reflect the increased ownership risk for operating leases. The future operating lease payments are then discounted by 6.7% p.a. to calculate the unreported lease liability.

The use of leasing (finance and operating) is a source of finance therefore the average borrowing rate for interest bearing debt can be used as a proxy for the interest rate (Correia et al., 2015). The South African prime lending rate was appropriate as most South African companies borrow at a rate that is linked or similar to the prime rate (Villiers & Middelberg, 2013). The incremental borrowing rate for finance leases whether disclosed or calculated was adjusted upwards by one percent to account for the additional ownership risk that the lessor retains under operating leases. This adjustment was in line with the Dillon, (2014) & Imhoff Jr. et al., (1997) studies. A uniform interest rate of 10% p.a. as used in Imhoff Jr. et al., (1991) was not considered appropriate as each entity leases different assets and has a different risk profile. Villiers & Middelberg, (2013) also used a uniform rate of 9% p.a. which was the South African prime lending rate at the time that the study was conducted. Using an entity specific interest rate was deemed to be more accurate for the analysis of each company, each sector as well as for the whole sample. Kostolansky & Stanko, (2011) used a variety of discount rates (3% p.a., 6% p.a. and 9% p.a.) to calculate the unreported lease liability. This was a form of

sensitivity analysis and was not considered appropriate given that reasonably accurate interest rates could be calculated. In the absence of discount rates for an entity's finance leases, Fulbier et al., (2006) used the interest rates that discounted the entity's provisions or pension obligations. This was not considered appropriate for the following reasons:

1. The discount rate used for provisions was a pre-tax rate that reflects current market assessments of the time value of money and risks specific to the liability (IASB, 2016b).¹⁸ It would not be appropriate to use an interest rate that reflects the risks of a specific liability to discount lease payments. A market related rate is also not appropriate as the lease payments should be discounted using an entity specific rate.
2. The discount rate for pension obligations or defined benefit plans is determined by reference to market yields at the end of the reporting period on high quality corporate bonds (IASB, 2016b).¹⁹ This was not deemed appropriate as this rate was not entity specific but rather a market related rate.

Once the results were obtained, for the purposes of performing a sensitivity analysis, the interest rate was adjusted upwards by 2% p.a. and 4% p.a. to determine the effects of a change in the discount rate. The average interest rate for the entire sample was 8.18% p.a., hence it was deemed appropriate to increase the rate by 2% p.a. and 4% p.a. respectively as any rate above 12% p.a. would not be realistic in a South African context as the prime lending rate when this study was performed, was 10.25% p.a. (Reserve Bank of South Africa, 2017).

Annual Lease Payment

The companies included in the sample grouped their future operating lease payments for years two to five in terms of the IAS 17 disclosure requirements. These lease payments were separated using a geometric digression model developed by Fulbier et al., (2006) where each lease payment was assumed to decline at a constant rate. The

¹⁸ IAS 37:47

¹⁹ IAS 19:83

following years lease payment would equal the previous year's lease payment multiplied by a constant digression factor. Each lease payment for this period was calculated using the Data-Solver function on Microsoft Excel (2013 version). Each of the calculated lease payments for years two to five was then summed up to ensure that it equalled the total lease payments disclosed for that same time period. The constant digression model was also used in the Dillon, (2014) study for years two to five. The declining annual lease payment was based on the assumption that as lease terms come to an end, total lease payments would decline (Fulbier et al., 2006). Villiers & Middelberg, (2013) applied the constant digression factor to lease payments due after year five as well. This was in contrast to the Dillon, (2014) study that assumed the annual lease payments would remain constant after year five. In this study, the remaining lease term after year five was calculated as the total lease payments due after five years divided by the lease payment for year five. This number was then rounded up and an additional year was added. The rounding up and addition of an extra year was a more conservative approach as it was not likely that the lease payments would remain constant over the period exceeding five years. The rounding up and addition of an extra year is consistent with the Dillon, (2014) study. It was deemed to be impractical to use the constant digression model to determine the annual lease payments after year five as the annual lease payments in later years of the leases became unrealistically low. The lease payments were then present valued using the relevant discount rate to calculate the unreported lease liability. An example below illustrates how the lease payment for each year was calculated:

Example 4: Calculation of annual lease payment using digression factor	
<i>Assume Company X has the following note disclosure for its operating lease commitments:</i>	
<i>Operating lease commitments</i>	<i>'R</i>
<i>Within one year</i>	<i>12 000</i>
<i>Greater than one year but less than five years</i>	<i>31 000</i>
<i>After five years</i>	<i>22 000</i>

The future annual minimum lease payments will be:

YR1	12 000	YR6	4 400
YR2	9 991	YR7	4 400
YR3	8 318	YR8	4 400
YR4	6 925	YR9	4 400
YR5	5 766	YR10	4 400

The lease payment for year one was R12 000 as provided in the notes. The annual lease payments for years two to five was calculated using Microsoft Excel's (2013 version) data solver function. The tool ensures that the lease payment declines every year and that the sum of the lease payments equals R31 000 as provided in the notes. The remaining lease term after year five is calculated by dividing R22 000 by the lease payment in year five of R5 766. This results in 3.8 which is then rounded up and an extra year is added to obtain five. The annual lease payment during the period exceeding five years is then calculated to be R4 400 (22 000/5).

Right-of-use Asset

The right-of-use asset was calculated using the formula developed in the Imhoff Jr. et al., (1991) study. The formula was discussed in the literature review and requires an estimate of the remaining lease term as well as the total lease term. The remaining lease term was calculated as five years plus the time period it takes to reduce the total lease payments due after five years to zero. The total lease term could not be calculated as the terms for individual leases were not disclosed. Furthermore, entities enter into different types of leases with different lease terms for their various assets. Entities sometimes disclosed the range of their lease terms in their operating lease note disclosure. The assumption was made that the operating leases were 50% expired. This is consistent with the assumption used in the Dillon, (2014); Fulbier et al., (2006) & Imhoff Jr. et al., (1991) studies. The assumption was that companies' leases are constantly coming to an end, with new leases being signed therefore at any given time, the average remaining lease term would be about 50%.

Once the results were found, the estimated lease expiration was increased and decreased by 15% to assess the sensitivity of the results to a change in one of the inputs.

Current Year Profit

The calculation of the effect on current year profit from constructive capitalisation was developed by Imhoff Jr. et al., (1997). The effect on current year profit was calculated from the adjustment to equity in the current year and the prior year. The adjustment to equity was the difference between the unreported lease liability and unreported right-of-use asset after tax. The effect on equity at any point in time will be negative as the lease liability always exceeds the right-of-use asset (Dillon, 2014; Imhoff Jr. et al., 1997). This was because the lease payments at the start of the lease do not pay off much of the capital portion of the outstanding liability. The right-of-use asset was amortised equally every year over the lease term and so would have a lower balance compared to the lease liability at any point in time (Dillon, 2014; Imhoff Jr. et al., 1997). At the end of the lease, the lease liability and right-of-use asset equals zero. The change in equity from the prior year to the current year was the current year impact on net profit. To calculate the prior year impact on equity, it was necessary to use the comparative operating lease note disclosure. The unreported lease liability could then be calculated as at the end of the prior year. The unreported right-of-use asset was then calculated based on the ratio developed in the Imhoff Jr. et al., (1991) study. The example below illustrates how the current year impact on profit was calculated.

Example 5: Effect on current year profit

Assume Company X entered into a five-year lease on 1 January 2017 with annual lease payments of R200 made in arrears on 31 December. The incremental borrowing rate at adoption date (1 January 2019) is 10%.

	Opening balance (A)	Interest (B)	Payment (C)	LEASE LIABILITY	RoUA	EQUITY EFFECT
				Closing balance (A+B-C)		
YR1	758	76	200	634	607	-27
YR2	634	63	200	497	455	-42
YR3	497	50	200	347	303	-44
YR4	347	35	200	182	152	-30
YR5	182	18	200	0	0	0

The effect on profit in year three (i.e. 2019 financial year) will be a loss of R2 which is calculated as (44 - 42). The operating lease expense of R200 is removed from profit and replaced with an interest and depreciation expense of R50 and R152 in year three, resulting in a loss of R2. The interest and depreciation expense sum up to R202 (50 + 152), which is R2 greater than the operating lease expense of R200, hence the negative effect of R2 on current year profit.

Tax rate

The tax rate used in this study was 28%, the South African normal company tax rate (South African Revenue Service, 2017). This rate was in line with the Dillon, (2014) & Imhoff Jr. et al., (1991) studies where uniform tax rates of 28% and 40% were used respectively. Fulbier et al., (2006) used firm specific tax rates. These were calculated as the average effective tax rate for each company. This was not considered appropriate as South African companies are taxed at a flat rate of 28%, as mentioned in the Dillon, (2014) study. The current year net profit after the effects of capitalisation was calculated by adjusting for the current year movement in profit or loss. The current year movement in profit or loss was calculated as the difference between the adjustment to equity in the prior year and the current year.

Turnover-linked lease payments

Lease payments that are linked to turnover are not lease payments²⁰ as defined in terms of IFRS 16 and are therefore expensed and not included as part of the lease liability. The turnover linked payments were taken into account by either reducing current year profit by the portion of the current year operating lease expense that was linked to turnover, or they were excluded from the calculation of the lease liability if they related to future years.

Straight Line Operating Lease Assets or Liabilities, Onerous Contracts and Loan Covenants

When calculating the total effect of capitalisation on assets and liabilities, straight line operating lease assets and liabilities were removed when they related to leases where the entity was the lessee. The effects of straight line operating lease assets or liabilities were also removed when calculating the effects of capitalisation on the ratios and performance measures. For example, when return on equity was calculated after capitalisation, any straight-line operating lease liability was added back to equity in order to remove its effects. If they related to leases where the entity was the lessor, they were ignored as lessor accounting has remained largely the same in IFRS 16 compared to IAS 17. Leases that resulted in the recognition of an onerous contract provision were also removed. This treatment was in line with the Dillon, (2014) study.

The annual financial statements of each company were assessed to see whether they disclosed their loan covenants. If loan covenants were disclosed, they were noted. The effects of capitalisation on loan covenants were assessed by comparing the relevant ratios before and after capitalisation. The disclosure of loan covenants would provide useful information to users to assess if a company was in financial difficulty. The disclosure would allow a user to make a more informed decision as to whether the company was a worthwhile investment.

²⁰ The IFRS 16 definition of lease payments includes variable lease payments that depend on an index or a rate, not payments that are linked to turnover. (IFRS 16: Appendix A)

RESULTS AND ANALYSIS

FINAL SAMPLE

This chapter presents the results of this study in various tables which will be accompanied by discussion of those results. The final sample chosen for this study appears in table 2 below.

Table 2: The final number of companies in the sample by sector			
Sector	Number of companies listed on JSE	Number of companies excluded	Final number of companies included in the sample
Industrial Transportation	8	2	6
Food & Drug Retailers	8	3	5
General Retailers	18	3	15
Travel & Leisure	11	4	7
TOTAL	45	12	33

The specific companies excluded from each sector are included in table 3 below followed by a brief discussion of the reasons for the exclusion.

Table 3: Companies excluded from the final sample		
Sector	Company Name	
Industrial Transportation	Value Group Limited, Trenchor Limited	2
Food & Drug Retailers	Clicks Group Limited, Dis-chem Pharmacies Limited, Gold Brands Investments Limited	3
General Retailers	Curro Holdings Limited, HomeChoice Holdings Limited,	3

	Nictus Limited	
Travel & Leisure	Sun International Limited, Tsogo Sun Holdings Limited, City Lodge Hotels Limited, 1time Holdings Limited	4
TOTAL		12

The following companies were excluded from the sample because the annual lease payments for years two to five could not be calculated using the geometric digression model. The companies were: Curro Holdings Limited, HomeChoice Holdings Limited, Nictus Limited, Value Group Limited, Trencor Limited, Sun International Limited, Tsogo Sun Holdings Limited, City Lodge Hotels Limited, and Clicks Group Limited. It was not deemed appropriate to assume a constant annual lease payment as this would not be consistent with the treatment of other companies in the sample.

The following companies were excluded from the sample because they were recently listed on the JSE and therefore had no comparative annual financial statements. The effects on the statement of comprehensive income as well as the related ratios could not be calculated and therefore they were excluded. The companies were: Dis-chem Pharmacies Limited and Gold Brands Investments Limited. Sun International Limited would have been excluded even if the geometric digression model worked as its comparative reporting period ended on 30 June 2016 whereas the current reporting period ended 31 December 2016. It would not have been appropriate to include it in the sample as the statement of comprehensive income effects would have been calculated on a 6-month period rather than a 12-month period.

1time Holdings Limited was excluded from the sample as its trading was suspended from the JSE and therefore no financial statements were available to perform any analysis.

FINDINGS

Sector Analysis

Constructive lease capitalisation had an effect on all ratios and line items analysed except net profit margin. The findings for the entire sample are presented below in table

4. An analysis of the results for each sector can be found in Appendix 3. All figures appearing in the tables in this chapter are presented in rands rounded to the nearest million. Companies choose to present their financial statements in whatever presentation currency they deem appropriate and they use the most appropriate form of rounding. Most companies in the sample rounded to the nearest million however there were a few companies that rounded to the nearest thousand. The figures were adjusted to the nearest million so that a comparative analysis could take place in terms of the line items as the percentage changes were calculated based on absolute numbers. Two of the companies in the final sample namely Choppies (Food & Drug Retailers) and Wilderness (Travel & Leisure) presented their financial statements in Botswana Pula. This had no impact in terms of the key ratios however the relevant line items needed to be translated to rands in order for the figures to be comparable to the other companies who presented their financial statements in rands. All the relevant line items (net profit after tax, total debt, total assets and total equity) were translated to rands using the closing spot rate of Botswana Pula to South African rands on the last day of each respective company's 2016 financial year (I-net, 2017).

A comparison between the sectors in terms of the percentage increase or decrease of the relevant ratios and line items appears in table 4 below.

Table 4: Comparison of results among the different sectors					
Key ratios	Sector				Total – entire sample
	Industrial Transportation	Food & Drug Retailers	General Retailers	Travel & Leisure	
Debt to equity	1%	150%	106%	30%	84%
Debt ratio	4%	18%	30%	12%	15%
Return on equity	0%	24%	6%	4%	7%
Return on assets	-2%	-43%	-21%	-4%	-13%

Interest cover	-2%	-66%	-9%	-98%	-94%
Net profit margin	1%	-27%	-3%	7%	0%
EBITDA margin	55%	38%	33%	28%	37%
Line item					
Net profit after tax	-1%	-22%	-13%	0%	-16%
Total debt	11%	50%	64%	24%	37%
Total assets	6%	27%	33%	12%	20%
Total equity	-3%	-15%	-13%	-4%	-11%

Table 4 indicates that the most impacted sector was retailers specifically food and drug retailers which is consistent with the Dillon, (2014); Fulbier et al., (2006); Kostolansky & Stanko, (2011) & PWC, (2016) studies. The average debt to equity ratio for the food and drug retailers sector increased by 150% which was due to large operating leases that retailers use for their retail space. Retailers need large spaces, usually in shopping centres, to offer their products to customers. The travel and leisure sector was also impacted considerably with a 30% increase in the debt to equity ratio. The companies in this sector were more varied compared to the companies in the retail sector however the large increase is attributable to large aircraft leases, leases of office buildings and hotels as well as leases of properties that are then sub-leased out to franchisees in terms of franchising agreements. The debt to equity ratio increased marginally for the industrial transportation sector however the average increase in total debt was 11%. The increase was attributable to property leases for office buildings and vehicle storage facilities as well as leases for the charter of container ships.

Interest Rate

The average interest rate used for the entire sample was 8.18% p.a. which is below the South African prime lending rate of 10.25% p.a. when this study was performed (Reserve Bank of South Africa, 2017). The prime lending rate was used for eight out of the final sample of 33 companies as the calculated discount rate using the method set out in the methodology chapter was unrealistically low. For example, the interest rate for

Spar was calculated by dividing the total interest expense (R110.4m) by its interest-bearing borrowings (R4 996.2m). This resulted in a calculated rate of 2.2% p.a. which was unrealistically low in a South African context and was deemed inappropriate. In this instance, the South African prime lending rate was used to discount the future operating lease payments.

What is the impact of constructive lease capitalisation on JSE listed companies in certain sectors, in light of IFRS 16 Leases?

Financial Position

Total unreported debt for the final sample of 33 companies arising from uncapitalised operating leases amounted to just over R122 billion while total unreported assets amounted to over R102 billion. The total unreported debt represents 37% of the total debt reported by the companies using current IAS 17 principles while the total unreported assets represents 20% of the total assets currently reported.

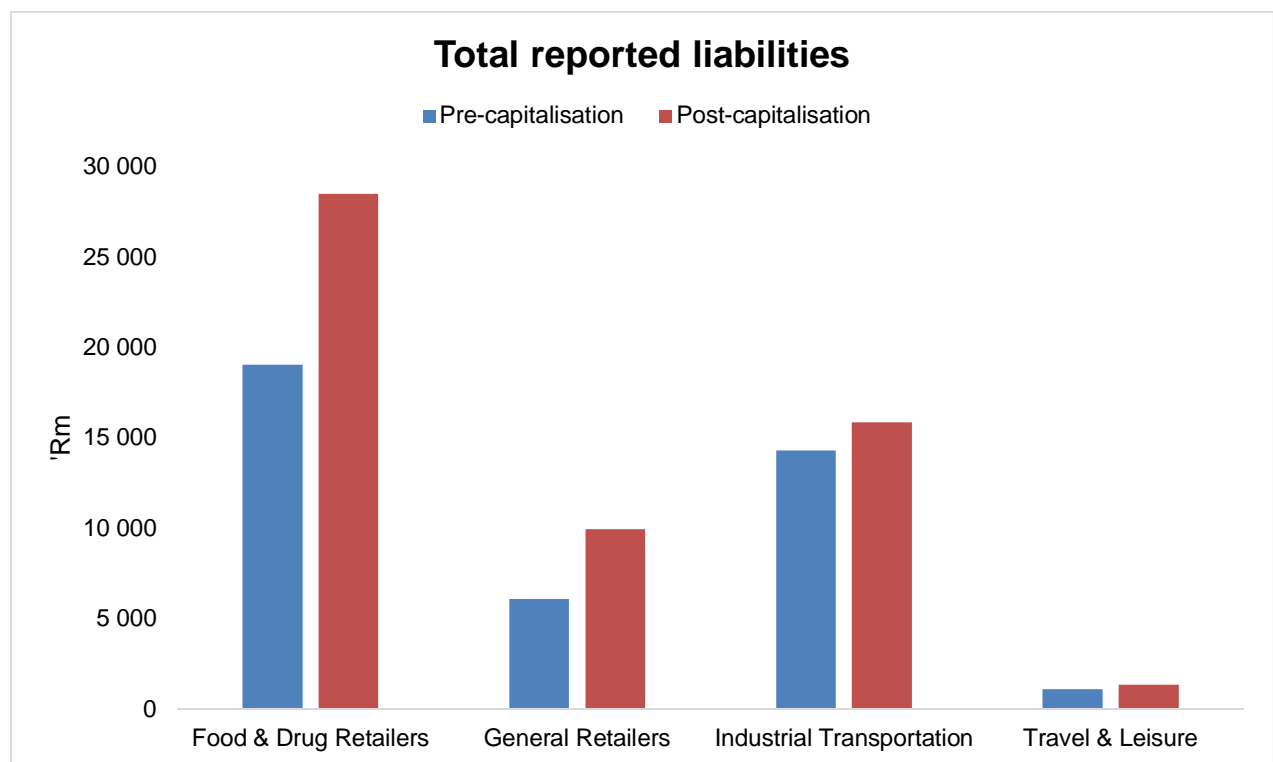


Figure 1. Graph showing the change in total reported liabilities before and after capitalisation for all four sectors analysed

The increase in the debt ratio across the sectors is not as considerable as the increase in the debt to equity ratio as constructive capitalisation results in an increase in debt and assets with a decrease in equity. As the numerator (total debt) and the denominator (total assets) in the debt ratio are both increasing, the total impact on the debt ratio is smaller. With regards to the debt to equity ratio, the numerator (total debt) is increasing and the denominator (total equity) is decreasing which results in a larger impact. The average debt to equity ratio increased by 84% for the entire sample. The increase of 150% for the food and drug retailers sector is consistent with the 213% increase in the Altintas & Sari, (2016) study which focused only on Turkish retailers. The average increase of 84% is higher than the results found in prior studies such as Branswijck et al., (2011); Dillon, (2014); Fulbier et al., (2006); Villiers & Middelberg, (2013) & Wong & Joshi, (2015). The debt to equity ratio in (Beattie et al., 1998) increased by 250% which is considerably more than the 84% increase in this study however the average debt to equity ratio pre-capitalisation was 0.2 in the Beattie et al., (1998) study. The debt to equity ratio in the Dillon, (2014) study increased by just over 16%. The large difference between this study and the (Dillon, 2014) study can be attributed to a slightly different sample as the general industrials sector was not included in this study. Also, this study had a slightly different methodology for calculating the unrecognised right-of-use asset. This study used the formula method developed by Imhoff Jr. et al., (1991) while the Dillon, (2014) study used the “contract-basket” approach developed by Fulbier et al., (2006). The average increase in the debt ratio was 15% across all sectors which is consistent with the results found in prior studies including Dillon, (2014) which found that the debt ratio increased by just under 12%.

Total debt and total assets increased considerably across the sectors. The increase in total assets of 20% was less than the increase in total debt of 37% because the right-of-use asset has a lower value than the lease liability at all times during the lease except at commencement of the lease and at the end of the lease. The increase in total debt of 37% is consistent with previous studies such as Altintas & Sari, (2016); Dillon, (2014) & PWC, (2016). Branswijck et al., (2011) found that total debt only increased by about 6% however this study was performed in 2011 and the sample was companies listed in Belgium and Netherlands. The decrease in total equity for the entire sample of 11% is

consistent with the result that the increase in total debt was greater than the increase in total assets.

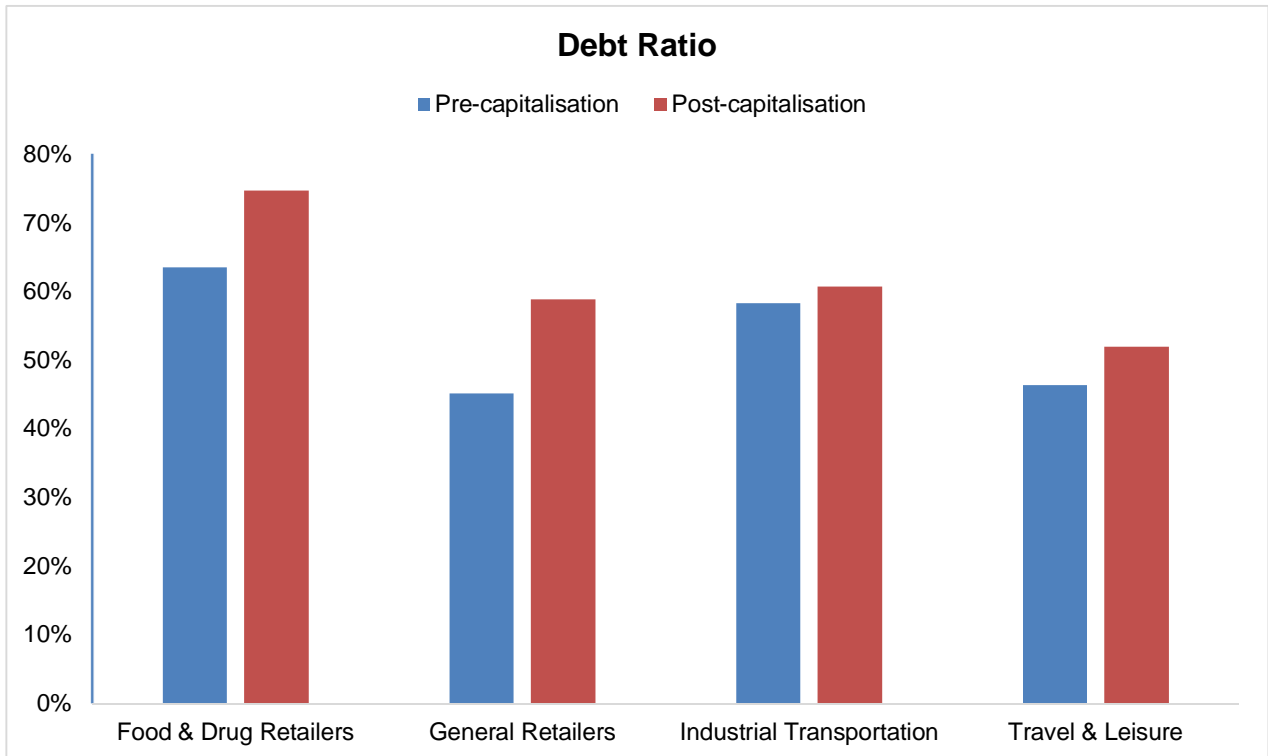


Figure 2. Graph showing debt ratio for the different sectors pre- and post-capitalisation.

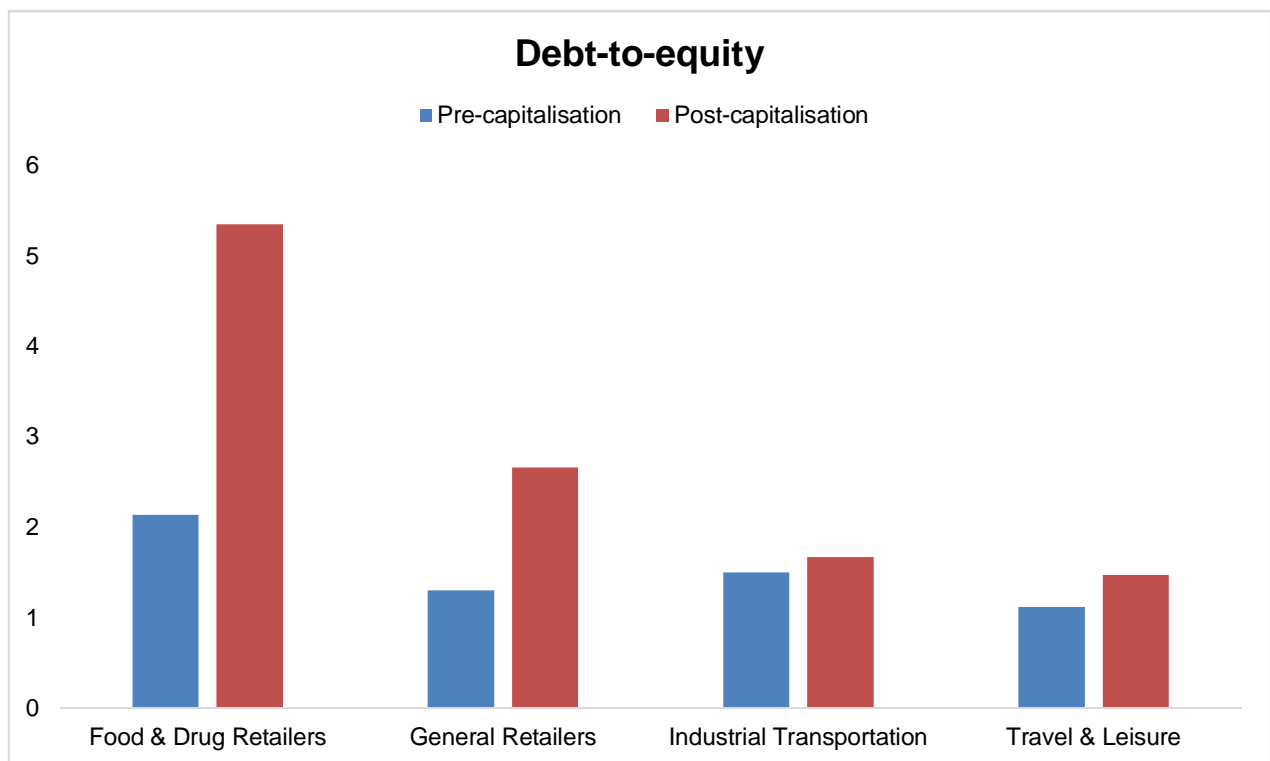


Figure 2. Graph showing debt-to-equity ratio for the different sectors pre- and post-capitalisation.

Profitability

Return on equity increased by 7% across all sectors with the food and drug retailers' return increasing by 24% which is consistent with the finding that this sector makes the most extensive use of operating leases. The return on equity increased because equity decreased as a result of constructive capitalisation and net profit changed marginally. Equity decreased because the capitalisation of the liability exceeds the capitalisation of the asset as the right-of-use asset is amortised quicker than the lease liability. The 7% increase is consistent with the 5% increase in return on equity in the Beattie et al., (1998) study however it differs to the results in the Villiers & Middelberg, (2013) & Wong & Joshi, (2015) studies. Villiers & Middelberg, (2013) found that return on equity declined by 21% and Wong & Joshi, (2015) found that return on equity declined by 1%. The difference in results is attributable to different samples as Wong & Joshi, (2015) focused on companies listed on the ASX as well as slightly different methodologies. Wong & Joshi,(2015) used uniform assumptions for its interest rate, asset to liability ratio and remaining lease term which could have impacted the results. Villiers & Middelberg, (2013) used a uniform interest rate of 9% p.a. and had a more varied sample which could have resulted in differences in results. Return on assets declined by 13% for the entire sample which is consistent with the results found in the Beattie et al., (1998); Villiers & Middelberg, (2013) & Wong & Joshi, (2015) studies. The return on assets declined because total assets (denominator) increased as a result of the capitalisation of the right-of-use asset and net profit (numerator) either increased or decreased slightly. Branswijck et al., (2011) found that return on assets remained the same before and after capitalisation and Altintas & Sari, (2016) found that return on assets decreased by 105%. The large difference can be attributable to the small sample of six Turkish retailers in the Altintas & Sari, (2016) study.

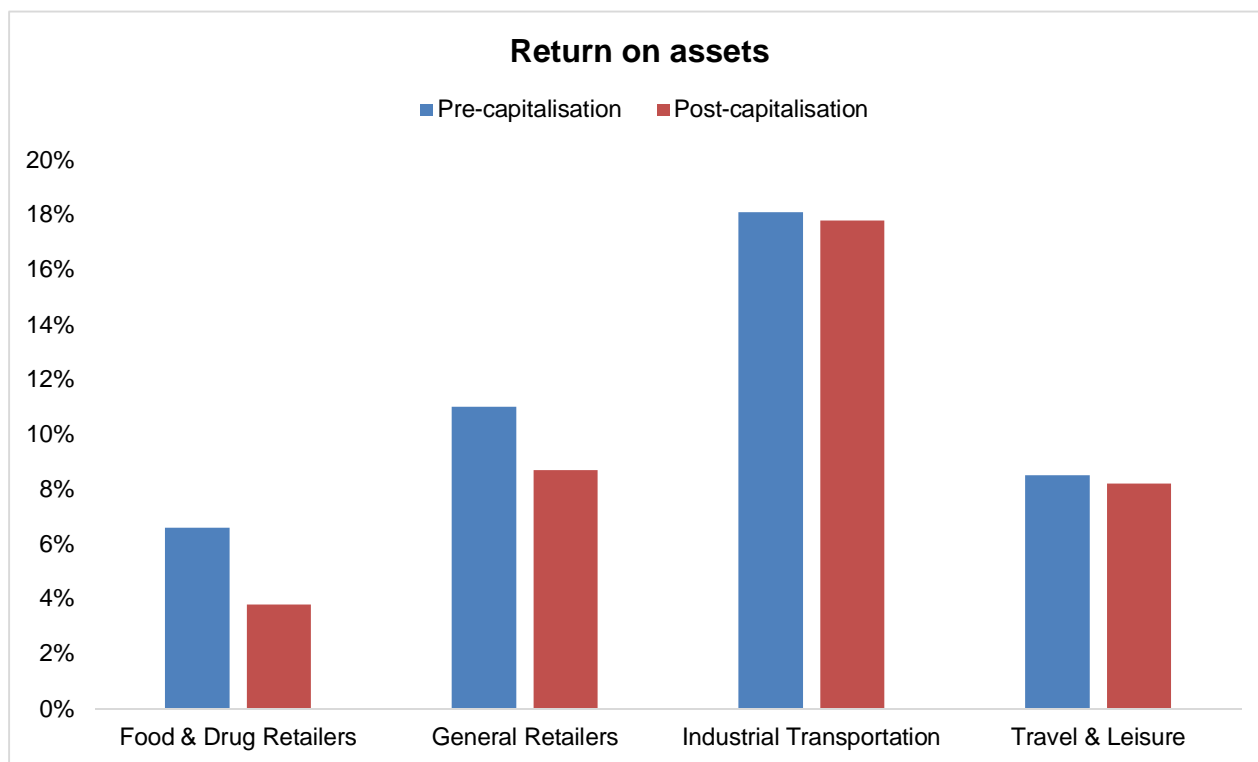


Figure 3. Graph showing return on assets for different sectors pre- and post-capitalisation.

The average interest cover ratio declined by 94% across all sectors with the most prominent decreases in the general retailers and travel and leisure sectors. The decline is attributable to the presentation of interest expense that is now reported under IFRS 16, which was not previously reported under IAS 17. The decline in the interest cover ratio is consistent with the results found in the Dillon, (2014) study that saw a 93% decrease in the interest cover ratio. The Villiers & Middelberg, (2013) study showed a decline of just over 7% in the interest cover ratio. The reason for the differences in the studies is due to the different samples. The companies in the sectors chosen as part of this study make extensive use of operating leases whereas companies in the JSE top 40 are more varied and include companies such as banks which make minimal use of operating leases. Dillon, (2014) went on to mention, that the decline in the interest cover ratio was skewed due to three outlier companies that had excessively high pre-capitalisation interest cover ratios above 288 times. When these three companies were removed, the interest cover ratio declined by 42% post capitalisation. This study performed a similar type of analysis and removed four companies from the sample (Spur, Cashbuild, Italtile and Mr Price) that had interest cover ratios in excess of 572.

Once these companies were removed, the interest cover ratio declined by 57% post capitalisation. The high interest cover ratios for the companies mentioned above are due to their minimal use of debt financing.

Net profit margin remained constant with increases for the industrial transportation and travel and leisure sectors while the general and food and drug retailers experienced a slight decrease in net profit margin. This is in contrast to results in prior studies such as Beattie et al., (1998) which had an increase in profit margin of almost 13% and Fulbier et al., (2006) which had an increase of just under 3%. The differences are attributable to the different time periods when those studies were performed as well as the different samples as the Beattie et al., (1998) & Fulbier et al., (2006) studies were based on companies in the United Kingdom and Germany respectively. Villiers & Middelberg, (2013), a South African study, found that the net profit margin decreased by 32% however the study was based on the JSE top 40 which includes companies from a variety of sectors. This is in contrast to this study which focused on four specific sectors on the JSE. EBITDA margin was affected across all sectors with an average increase of 37%. The increase is more than the 20% increase in the EBITDA margin in the Dillon, (2014) study. The difference may be reflective of the slightly different sample of companies as well as an increase in the use of operating leases over time which increases a company's operating lease expense. The increased usage of operating leases over time is supported by the Kilpatrick & Wilburn, (2006) study. Under IFRS 16, depreciation expense and interest expense will replace the operating lease expense however these two line items are not included in EBITDA resulting in a large increase in the reported figure.

There was a negative effect on net profit across all the sectors except travel and leisure which had a zero net effect. Some companies experienced an increase in net profit whilst others experienced a decrease. The increase or decrease was dependent on which stage of the lease term the companies were at. If the leases were recently signed then net profit would have decreased as the combination of the depreciation expense and interest expense would have exceeded the operating lease expense. If the leases were near the end of their term then net profit would have increased as the operating

lease expense would have been greater than the combination of the depreciation expense and interest expense. The depreciation expense remains constant throughout the lease term assuming straight line depreciation, however the interest expense decreases over the lease term as it is calculated on the outstanding lease liability which declines over the lease term as lease payments are made.

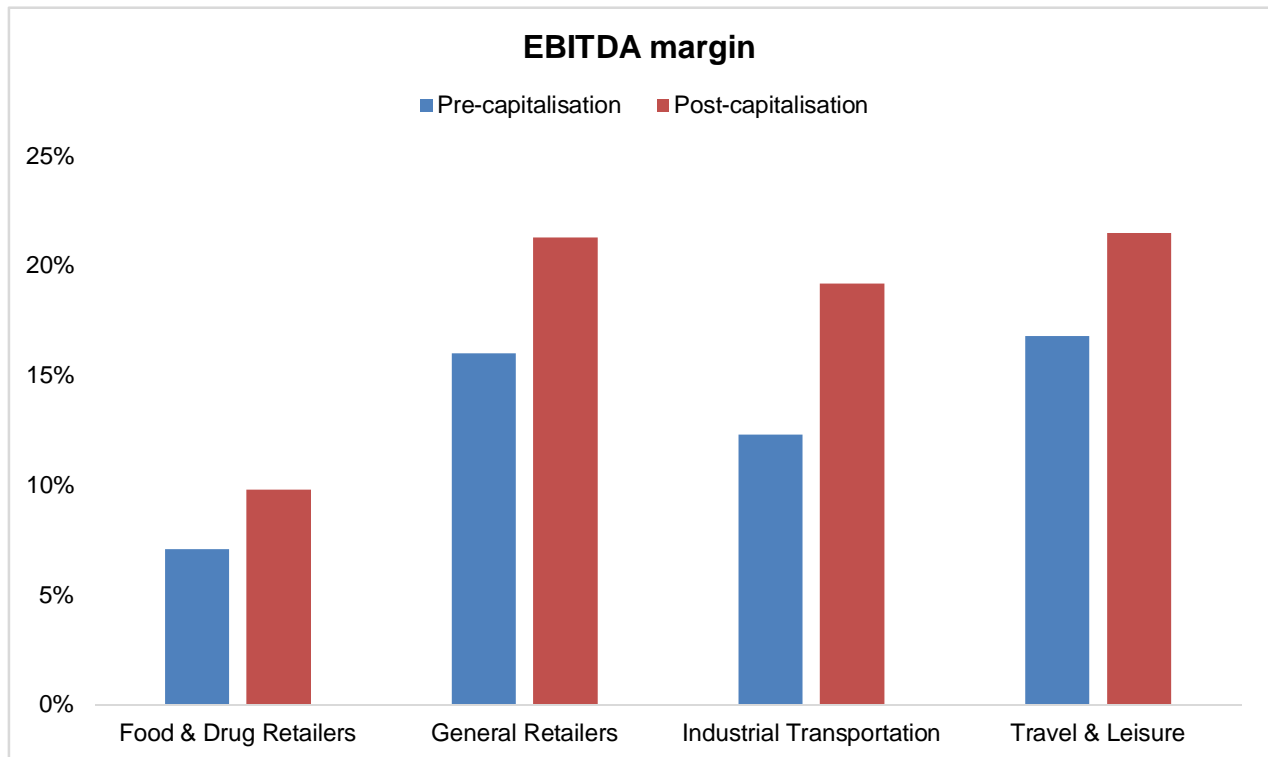


Figure 4. Graph showing the EBITDA margin for different sectors pre- and post-capitalisation.

Which specific companies are likely to be the most impacted and least impacted by constructive capitalisation, in terms of their financial statements, financial ratios and covenants?

Three of the companies analysed in the sample experienced considerable increases in their debt to equity ratios. The companies were Pick ‘n Pay (‘PnP’), Massmart and Woolworths. This section explains the reasons for the large changes to the key financial ratios from pre-capitalisation to post-capitalisation.

PnP’s debt to equity ratio increased from 3.35 to 13.07 post-capitalisation (an increase of nearly four times). The increase was attributable to PnP’s extensive use of operating leases for its stores across Africa. Through inspection of PnP’s key ratios, it was clear

that they are highly leveraged with a debt ratio of 77% before capitalisation. Their operating lease usage intensity was 14% (calculated as operating lease expense divided by total debt). This is high in comparison to companies in the other sectors as well as companies in Food and Drug Retailers sector. Lease usage intensity was a measure used in Morales-Díaz & Zamora-Ramirez, (2018) to determine a company's reliance on operating leases. PnP's straight line operating lease liability of R1.2 billion was high in comparison to other companies in the sector. This could be an indication of high escalation clauses in PnP's lease contracts.

Massmart's debt to equity ratio increased from 4.16 to 12.35 (an increase of nearly three times). The large increase can be attributed to the decrease of 48% in Massmart's equity as a result of capitalisation. This effect was magnified due to Massmart's high leverage pre-capitalisation. Massmart's debt ratio before capitalisation was 81% which was the second highest in the sample of companies analysed in the General Retailers sector.

Woolworths debt to equity ratio increased from 1.49 to 3.47 (an increase of over two times). The reason for the increase was also due to Woolworths being highly levered. This was evidenced in its debt ratio of 60% which was high in comparison to its competitors in the General Retailers sector. Woolworth's equity declined by 19% as a result of capitalisation while its total debt increased by 89%. The large increase in debt can be attributable to Woolworth's extensive use of operating leases for its stores that are committed for many years into the future. This is seen in the operating lease commitments note disclosure that shows that substantial payments are payable after more than five years.

Does changing the inputs into the model result in relevant²¹ information that would influence a financial statement user's assessment of the impact of constructive capitalisation? Furthermore, do the original inputs into the model faithfully represent²² the impact of constructive capitalisation?

The results of the sensitivity analysis can be found in Appendix 6. Two of the inputs into the model, namely the interest rate and the percentage of the lease expired were adjusted to determine the impact on the results. These inputs were chosen as they were key inputs that had an important impact on the unreported lease liability, right-of-use asset and ratios. The interest rate was a significant judgment as preparers of financial statements would need to apply their judgement in assessing their incremental borrowing rate, which will then be disclosed in the notes. Imhoff Jr. et al., (1991) performed a sensitivity analysis on the effects of a change in interest rate and a change in the lease expiration and found the effects to be immaterial. The percentage of the lease expired affects the right-of-use balance as it impacts the right-of-use asset to lease liability ratio. The adjustment to the lease expiration is therefore more related to what percentage the right-of-use asset represents as a portion of the lease liability. The interest rate was adjusted upwards by 2% p.a. and 4% p.a. and the percentage of lease expired was adjusted downwards to 35% and upwards to 65%. It was not deemed appropriate to adjust the interest downwards by 2% p.a. as the average interest used for the sample was 8.18% p.a. which was over 2% p.a. below the prime lending rate at the time this study was performed.

The four different scenarios were analysed independently of one another i.e. one input was changed while the rest remained constant. The analysis shows that the unreported lease liability ranges from 35% to 38% of the total reported debt under IAS 17 which is close to the original results of 37%. The unreported right-of-use asset ranges from 19% to 21% of the total reported assets under IAS 17 which is also close to the original results of 20%. The small margins of difference suggest that changing the inputs into the

²¹ Relevant financial information is defined in the Conceptual Framework as information that is capable of making a difference in the decisions made by users (IASB, 2016a).

²² Faithful representation is defined in the Conceptual Framework as financial information that is complete, neutral and free from error (IASB, 2016a).

model do not have a material impact on the results. The largest impacts as a result of the sensitivity analysis were as follows:

- The debt to equity ratio increased by 100% assuming a lease expiration of 65% compared to an average increase of 84% under the original results. This is due to the right-of-use asset becoming smaller in comparison to the lease liability as the lease term approaches its end. As the right-of-use asset becomes smaller, the cumulative negative effect on equity is greater, resulting in the larger increase in the debt to equity ratio. An example below illustrates this point.
- Total assets increased by 10% assuming the interest rate increased by 4% p.a. compared to an average increase of 20% under the original results. The difference arises as a result of the higher discount rate which reduces the liability which in turn reduces the unrecognised asset.
- Total equity decreased by 5% assuming the interest rate increased by 4% p.a. compared to a decrease of 11% under the original results. The smaller impact on the outstanding asset and liability results in a smaller impact on equity.

Example 6: Impact of change in lease expiration on equity

Company X entered into a six-year lease of machinery with annual lease payments of R150 due annually in arrears. Company X's incremental borrowing rate for this lease is 9%.

	Opening balance	Interest	Payment	Lease liability closing balance	RoUA closing balance
YR1	673	61	150	583	561
YR2	583	53	150	486	449
YR3	486	44	150	380	336
YR4	380	34	150	264	224
YR5	264	24	150	138	112
YR6	138	12	150	0	0
Lease expiration	50%	67%			
RoUA (A)	R336	R224			

Lease Liability (B)	R380	R380
Equity (B-A)	-R43.25	-R155.40

- *The opening balance of the lease liability of R673 has been calculated by discounting the six future lease payments of R150 by 9%.*
- *The lease expiration of 50% is calculated at the end of the third year i.e. when the lease is 50% complete. The lease expiration of 67% is calculated at the end of the fourth year. This approximates the 65% lease expiration used in performing the sensitivity analysis.*
- *The lease liability is kept constant at R380 as the percentage of lease expired is adjusted to account for the effect it has on the right-of-use asset balance as a percentage of the lease liability.*

Loan covenants

Out of the 33 companies included in the final sample, only six disclosed their loan covenants. Out of the six that disclosed their loan covenants, only four companies provided enough detail to calculate whether the loan covenant would be breached as a result of constructive capitalisation. The results appear in table 5 below and show that none of the companies breached their covenants as a result of capitalisation of the lease payments. This is consistent with the Dillon, (2014) study which found that out of the six companies that disclosed their loan covenants, none of them were breached. However, this study shows that the impact on the covenants was both positive and negative. Four out of the seven covenants improved as a result of constructive capitalisation while two of the covenants declined and one covenant remained the same. The improvement in four of the covenants is as a result of the influence of EBITDA. Constructive capitalisation increases EBITDA considerably as there is no expense figure in EBITDA as a result of the lease. EBITDA is calculated as earnings before interest and depreciation therefore the new IFRS 16 expenses (depreciation and interest) are not included in the EBITDA calculation. The improvement in the covenant ratios contrasts the Dillon, (2014) where it was found that constructive capitalisation had a negative impact on all covenants. Companies are currently not required to disclose any loan or debt covenants according to IFRS. In the past, companies would not have disclosed

loan covenants that were close to being breached, however, the disclosure requirements of IFRS 16 make it clear that companies must disclose any restrictions or covenants imposed by leases (IASB, 2016d).

Table 5: Impact on loan covenants

Company	Covenant	Formula	Before	After
Super Group Limited	minimum capital adequacy ratio of 18%	tangible net asset value/tangible asset value	29.4%	29.2%
	minimum net interest cover of 2.7 times	EBITDA/net interest paid	10	10.2
	must maintain a net debt to EBITDA of less than 2.5 times	net debt/EBITDA	1.25	1.03
Imperial Holdings Limited	maximum net debt to EBITDA of 3.5 times	net debt/EBITDA	1.78	1.77
Taste Holdings Limited	maximum net leverage ratio of 3	net debt/EBITDA	2.67	2.43
Verimark Holdings Limited	maximum interest-bearing debt: shareholders' funds of 100%	interest bearing debt/total equity	10.9%	70.4%
	trade receivables at least equal to 150% of the primary lending facility	trade receivables/bank overdraft	624.1%	624.1%
Choppies Enterprises Limited	minimum net tangible assets of USD85m	covenant removed during the year		
Massmart Holdings Limited	Not specified			

CONCLUSION

SUMMARY

Statement of Financial Position vs. Statement of Comprehensive Income

This study aimed to find the impact of capitalisation of operating lease payments on companies in four sectors listed on the JSE. The results show that constructive capitalisation has a substantial impact on the statement of financial position with a lesser impact on the statement of comprehensive income. The impact on the statement of financial position was due to the right-of-use asset and lease liability that is now reported under IFRS 16 for all leases other than short-term leases and leases of low value items. Total unreported debt across all companies in the sample amounted to R122bn, which was 37% of total reported debt. Total unreported assets amounted to R102bn, which was 20% of total reported assets. The statement of comprehensive income was impacted to the extent that depreciation and interest expense replaced the operating lease expense previously reported under IAS 17. The removal of an operating lease expense increases important performance measures such as EBITDA and EBIT. EBITDA, on average, increased by 21% across the sample, while the net profit margin declined by 16%. The model applied in this study to assess the impact of IFRS 16 was consistent with the “modified retrospective” approach outlined in Appendix C of IFRS 16.

Covenants

Out of the 33 companies included in the final sample, only four companies provided enough information in their annual financial statements to be able to calculate the impact of lease capitalisation on their covenants. It was found that capitalisation did not result in any of the four companies breaching their covenants. The effect of capitalisation on the covenants was mixed with positive and negative impacts. The results chapter provides more detail regarding the impact on loan covenants.

The results showed that companies need to closely monitor their extent of leasing as the negative impact on their key ratios and performance measures may impact their credit rating due to an increase in reported debt levels. Banks may be less willing to provide loan finance due to unfavourable ratios and greater risk of default by the

company. Investors and shareholders who are more averse to debt may change their decision with regards to which companies to invest in, as a more faithful representation of the company's debt levels will be presented.

Sectors

The capitalisation model was based on the model developed in the Imhoff Jr., Lipe, & David, (1997) & Imhoff Jr., Lipe, & Wright, (1991) studies. Further refinements were made in the Dillon, (2014) & Fulbier, Silva, & Pferdehirt, (2006) studies which this study made use of. Out of the four sectors analysed, the Food and Drug Retailers sector was found to be the most impacted in terms of the change in the debt to equity ratio, which is consistent with the results in Dillon, (2014); IASB, (2016) & Kostolansky & Stanko, (2011). Total unreported debt as a percentage of total debt amounted to 67% for the General Retailers sector, while the impact on the Food & Drug Retailers sector was 53%. The impact on the Industrial Transportation and Travel & Leisure sectors was less with total unreported debt amounting to 11% and 25% respectively.

The companies that experienced the largest increases in their debt to equity ratios were PnP (Food & Drug Retailers) and Rex Trueform (General Retailers). PnP's debt to equity ratio increased by 291%, while Rex Trueform's increase was 422%. The least impacted company in the sample, in terms of the debt to equity ratio, was Cargo Carriers in the Industrial Transportation sector. Cargo Carriers' debt to equity ratio increased by 3%. If the outliers from the General Retailers and Food & Drug Retailers' sectors are removed (i.e. PnP, Shoprite, AF&OVR, Rex Trueform and Verimark) then the impact of IFRS 16 on companies across all sectors analysed is not as substantial as might be expected. Companies that have substantial future operating lease payments, and are highly levered could experience the largest impacts.

The Dillon, (2014) study assessed the impact of constructive capitalisation based on the 2013 ED whilst this study assessed the impact of constructive capitalisation based on the published IFRS 16. IFRS 16 differs to the 2013 ED as there is more guidance with regards to the treatment of variable lease payments and extension options in leases. The amendments were used to the extent that the information was available in the financial statements of the various companies. For example, some

companies disclose the portion of their operating lease expense that is linked to turnover. Lease payments that are linked to turnover are expensed in the statement of comprehensive income and will influence the EBITDA margin and net profit margin. This study looked at four sectors on the JSE whereas the Dillon, (2014) study looked at five sectors which included the General Industrials sector. This study was a more recent assessment of the impact that IFRS 16 will have on companies' financial statements and was more aligned to what the actual impact will be when IFRS 16 is mandatorily adopted for years beginning on or after 1 January 2019.

Sensitivity Analysis

This study went further to perform a sensitivity analysis to assess the impact of changing some of the inputs into the model. The analysis showed that adjusting the discount rate and the estimated lease expiration percentage did not influence the results to an extent where they were dissimilar to the original results. The largest impact from the sensitivity analysis was a decrease in total assets from 20% to 10% when the interest rate was adjusted upwards by 4%. It can be concluded that the inputs into the model were reliable and the original results faithfully represent the possible impact of IFRS 16. Furthermore, the sensitivity analysis showed that changing the key inputs into the model was not relevant in terms of the Conceptual Framework, as it would be unlikely to influence a user's investment decisions regarding the possible impact of the new standard.

LIMITATIONS

This study made use of various assumptions and estimates so that the model could be completed. The assumptions and estimates cannot be guaranteed to be completely accurate however there was enough evidence in prior research that the model developed by Imhoff Jr. et al., (1991) provides a reliable basis to assess the impact of constructive capitalisation.

The estimated discount rate used to discount the future non-cancellable operating lease payments is an input into the model that has an important impact on the results. The discount rate was assessed for each company based on the hierarchy discussed in the Methodology chapter and it cannot be guaranteed that each discount rate used was equal to each company's incremental borrowing rate.

Several of the companies in the final sample entered into sub-leases with regards to its assets leased under operating leases. These arrangements commonly occur with retailers, who rent premises to open a store, and then sub-lease those premises to a franchisee. IFRS 16 requires the lessee to assess whether the sub-lease is a finance or operating lease (IASB, 2016d). If it is a finance lease, then the right-of-use asset is derecognised from the lessee's statement of financial position (IASB, 2016d). If this is the case, then there would be an impact on total assets as they would decline. It was not possible to assess this impact as the companies did not provide enough disclosure to determine whether the sub-lease was a finance lease or an operating lease.

IFRS 16 makes it clear that if a lease term is reasonably expected to be extended then those lease payments to be made during the extended period are included in the lease liability at commencement of the lease. There was not enough information disclosed in the financial statements to assess whether it was reasonably likely that the extension option would be exercised and what the lease payments would be during that extension option.

The constant digression model developed in the Fulbier et al., (2006) paper was not able to be used on nine of the companies in the original sample therefore they were excluded. More information is provided on this in the Results and Analysis chapter. The results from the assessment of whether loan covenants were breached or not are limited due to the small sample size as only four companies disclosed sufficient information to be able to calculate their loan covenants.

FURTHER RESEARCH

There is scope to perform constructive capitalisation on the JSE top 100 or all companies listed on the JSE however analysis becomes difficult when dealing with companies that make minimal use of operating leases as there is less disclosure with regards to operating leases. Companies in sectors such financial services present their financial statements in a different manner to retailers which could make analysis more challenging and less comparable. There is scope to assess whether banks take operating leases into account when deciding on whether to grant loan finance to a company. A detailed comparison between the various studies from around the world on constructive capitalisation could be performed to determine if there is any

relationship between the effects of capitalisation and the jurisdiction that the companies operate in. Research into the actual practical implications and cost of implementing IFRS 16 could be conducted through interviews with the appropriate individuals at various companies. There is also scope to assess the impact of different methodologies of constructive capitalisation. For example, the results of the factor or heuristic method used by the Fitch and Moody's credit rating agencies could be contrasted to the method used in this study (Financial Watch, Berman, & LaSalle, 2007; Moody's Investors Service, 2015). The effect that IFRS 16 has on lease usage by companies would be an interesting research topic once the standard has been adopted. Companies may decrease their use of leases and opt to purchase assets instead as they will no longer be able to benefit from "off-balance sheet" financing.

REFERENCES

- Altintas, T., & Sari, E. S. (2016). The effect of the IFRS 16: constructive capitalization of operating leases in the Turkish retailing sector. *Journal of Bussines, Economics & Finance*, 5(1), 138.
- Beattie, V., Edwards, K., & Goodacre, A. (1998). The impact of constructive operating lease capitalisation on key accounting ratios. *Accounting and Business Research*, 28(4), 233–254.
- Branswijck, D., Longueville, S., & Everaert, P. (2011). The Financial Impact Of The Proposed Amendments To Ias 17 : Evidence From Belgium And The Netherlands. *Accounting and Management Information Systems*, 10(2), 275–294.
- Business Report (2017, July 27). BR Stocks. *Cape Times* newspaper.
- Correia, C., Flynn, D., Uliana, E., & Wormald, M. (2015). *Financial Management* (8th Edition). Cape Town: Juta.
- Dillon, J. (2014). *Impact of constructive capitalisation of operating lease on South African companies considering new proposed lease accounting rules*. University of Cape Town.
- Financial Watch, Berman, M., & LaSalle, J. L. (2007). Capitalization of Operating Leases by Credit Rating Agencies. *ELT*, 19(2), 12–18.
- Fulbier, R. U., Silva, J. L., & Pferdehirt, M. H. (2006). *Impact of lease capitalization on financial ratios of listed German companies* (Vol. 49).
- Gleeson, B., & White Clarke Group. (2017). *2017 Global Leasing Report. Global Leasing Report*.
- I-net. (2017). INET BFA Expert - Iress. Retrieved July 22, 2017, from <https://expert.inetbfa.com/>
- IASB. (2016a). *A Guide Through IFRS Standards Part A1*.
- IASB. (2016b). *A Guide Through IFRS Standards Part A2*.

- IASB. (2016c). *Effects Analysis, IFRS 16 Leases*. Retrieved from www.ifrs.org
- IASB. (2016d). *IFRS 16 Leases*.
- IASB. (2016e). *IFRS 16 Leases Basis for Conclusions. IFRS Green Book 2016 Part A*.
- IASB. (2017a). IFRS - How we set IFRS Standards. Retrieved July 3, 2017, from <http://www.ifrs.org/about-us/how-we-set-standards/#research>
- IASB. (2017b). IFRS - IASB. Retrieved July 3, 2017, from <http://www.ifrs.org/groups/international-accounting-standards-board/#about>
- IASB. (2017c). IFRS - Our structure. Retrieved July 3, 2017, from <http://www.ifrs.org/about-us/our-structure/>
- Imhoff Jr., E. A., Lipe, R. C., & David, W. W. (1997). Operating Leases: Impact of Constructive Capitalization. *Accounting Horizons*, 11(2), 12–32.
- Imhoff Jr., E. A., Lipe, R. C., & Wright, D. W. (1991). Operating Leases: Impact of Constructive Capitalization. *Accounting Horizons*, 5(1), 51–63.
- Imhoff Jr., E. A., Lipe, R., & Wright, D. W. (1993). The Effects of Recognition Versus Disclosure on Shareholder Risk and Executive Compensation. *Journal of Accounting, Auditing & Finance*, 8, 335–368.
- Kilpatrick, B. G., & Wilburn, N. L. (2006). *Off-Balance Sheet Arrangements : Revisiting Constructive Capitalization* (Vol. 5066).
- Kostolansky, J., & Stanko, B. (2011). The joint FASB / IASB lease project : Discussion and industry implications. *Journal of Business & Economics Research*, 9(9), 29–35.
- Moody's Investors Service. (2015). Moody's updates its global methodology for financial statement adjustments. Retrieved November 15, 2017, from https://www.moody's.com/research/Moodys-updates-its-global-methodology-for-financial-statement-adjustments--PR_327853
- Morales-Díaz, J., & Zamora-Ramirez, C. (2018). Effects of IFRS 16 on Key Financial

Ratios : a New Methodological Approach Impact of IFRS 16 on Key Financial Ratios :
Accounting in Europe, 15(1), 1–33.

PWC. (2016). *A study on the impact of lease capitalisation IFRS 16 : The new leases standard*.

Reserve Bank of South Africa. (2017). Current market rates - South African Reserve Bank. Retrieved July 21, 2017, from <http://www.resbank.co.za/Research/Rates/Pages/CurrentMarketRates.aspx>

Sharpe, S. A., & Nguyen, H. H. (1995). Capital market imperfections and the incentive to lease. *Journal of Financial Economics*, 39(2–3), 271–294.

South African Revenue Service. (2017). Corporate Income Tax. Retrieved July 21, 2017, from <http://www.sars.gov.za/TaxTypes/CIT/Pages/default.aspx>

United States Securities and Exchange Commission. (2019). Form 10-K Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934. Retrieved July 29, 2019, from <https://www.sec.gov/files/form10-k.pdf>

Villiers, R. R. D. V., & Middelberg, S. L. (2013). Determining The Impact Of Capitalising Long-Term Operating Leases On The Financial Ratios Of The Top 40 JSE-Listed Companies. *International Business & Economics Research Journal*, 12(6), 655–670.

Wong, K., & Joshi, M. (2015). The Impact of Lease Capitalisation on Financial Statements and Key Ratios: Evidence from Australia. *Australasian Accounting, Business and Finance Journal*, 9(3), 27–44.

APPENDICES

Appendix 1: Data Capture Sheet

Company Name: _____

Interest rate (disclosed)			
Interest rate (calculated)	Option 1	Option 2	
	Finance lease payment following year		Total interest expense
	Total finance lease liability		Total interest-bearing debt
	Current portion of finance lease liability		
Total interest expense			
Operating lease expense			
Straight line operating lease asset or liability for lessee			
		2016	2015
Minimum operating lease payments	Within 1 year		
	2-5 years		
	5+ years		
Revenue			
Net profit after tax			
Total debt			
Total assets			
Total equity			
EBITDA			
EBIT			
Loan covenants (if disclosed)			

Appendix 2: Results for entire sample

Table 6: Impact on key ratios and line items for the entire sample

Key Ratio	Average – pre capitalisation	Average – post capitalisation	% change		
Debt to equity	1.52	2.79	84%		
Debt ratio	53.4%	61.5%	15%		
Return on equity	23.3%	25.0%	7%		
Return on assets	11.1%	9.6%	-13%		
Interest cover	155.80	8.92	-94%		
Net profit margin	10.5%	10.5%	0%		
EBITDA margin	15.1%	20.7%	37%		
Line item	Rm	Rm	Min		Max
Net profit after tax	1 015.9	858.4	-16%		-69%
Total debt	10 123.8	13 911.8	37%		337%
Total assets	16 261.1	19 577.0	20%		70%
Total equity	6 136.6	5 478.1	-11%		-55%

Appendix 3: Results for each sector

Table 7: Impact on key ratios and line items for Industrial Transportation

Key ratios	Average – pre capitalisation	Average – post capitalisation	% change		
Debt to equity	1.50	1.67	11%		
Debt ratio	58.3%	60.7%	4%		
Return on equity	35.1%	35.0%	0%		
Return on assets	18.1%	17.8%	-2%		
Interest cover	5	4	-2%		
Net profit margin	23.5%	23.6%	1%		
EBITDA margin	12.3%	19.2%	55%		
Line item	Rm	Rm	Min		Max
Net profit after tax	588.4	579.8	-1%		-9%
Total debt	14 312.3	15 866.4	11%		19%
Total assets	22 063.7	23 374.3	6%		9%
Total equity	7 751.3	7 488.7	-3%		-4%

Table 8: Impact on key ratios and line items for Food & Drug Retailers

Key ratios	Average – pre capitalisation	Average – post capitalisation	% change		
Debt to equity	2.14	5.35	150%		
Debt ratio	63.5%	74.7%	18%		
Return on equity	20.8%	25.8%	24%		
Return on assets	6.6%	3.8%	-43%		
Interest cover	12.28	4.20	-66%		
Net profit margin	2.2%	1.6%	-27%		
EBITDA margin	7.1%	9.8%	38%		
Line item	Rm	Rm	Min		Max
Net profit after tax	2 238.0	1 754.0	-22%		-69%
Total debt	19 036.0	28 489.7	50%		77%
Total assets	30 447.5	38 692.2	27%		54%
Total equity	11 411.5	9 677.7	-15%		-55%

Table 9: Impact on key ratios and line items for General Retailers

Key ratios	Average – pre capitalisation	Average – post capitalisation	% change		
Debt to equity	1.30	2.66	106%		
Debt ratio	45.2%	58.9%	30%		
Return on equity	21.6%	22.8%	6%		
Return on assets	11.0%	8.7%	-21%		
Interest cover	206.41	18.05	-91%		
Net profit margin	8.6%	8.4%	-3%		
EBITDA margin	16.0%	21.3%	33%		
Line item	Rm	Rm	Min		Max
Net profit after tax	1 079.2	940.9	-13%		-58%
Total debt	6 068.2	9 950.2	64%		337%
Total assets	10 587.3	14 060.0	33%		70%
Total equity	4 516.4	3 911.5	-13%		-48%

Table 10: Impact on key ratios and line items for Travel & Leisure

Key ratios	Average – pre capitalisation	Average – post capitalisation	% change		
Debt to equity	1.12	1.47	30%		
Debt ratio	46.4%	52.0%	12%		
Return on equity	15.5%	16.2%	4%		
Return on assets	8.5%	8.2%	-4%		
Interest cover	400	9	-98%		
Net profit margin	7.7%	8.3%	7%		
EBITDA margin	16.8%	21.5%	28%		
Line item	Rm	Rm	Min		Max
Net profit after tax	158.1	158.8	0%		23%
Total debt	1 078.7	1 340.8	24%		38%
Total assets	1 945.9	2 181.6	12%		16%
Total equity	867.4	834.4	-4%		-7%

Appendix 4: Key ratios defined^{23,24}

Key ratio	Formula	Explanation (if applicable)
Debt to equity	$\frac{\text{Total debt}}{\text{Total equity}}$	Total debt included any deferred tax liability that arose from the recognition of the right-of-use asset. Total equity included equity attributable to the parent entity as well as to the non-controlling interest (NCI).
Debt ratio	$\frac{\text{Total debt}}{\text{Total assets}}$	Total assets included any deferred tax asset that arose from the recognition of the lease liability. Total debt was calculated as above.
Return on equity	$\frac{\text{Net profit after tax}}{\text{Total equity}}$	Total equity was calculated as above.
Return on assets	$\frac{\text{Net profit after tax}}{\text{Total assets}}$	Total assets were calculated as above.
Interest cover	$\frac{\text{EBIT}}{\text{Interest expense}}$	The EBIT was calculated from the financial statements and excluded total tax expense and interest income and interest expense.
Net profit margin	$\frac{\text{Net profit after tax}}{\text{Revenue}}$	Revenue was calculated as the total revenue line item which included income other than just sales.
EBITDA margin	$\frac{\text{EBITDA}}{\text{Revenue}}$	EBITDA was used only if the company disclosed it. There was no attempt to calculate an EBITDA figure for each company due to limited disclosure.

²³ The formulas for the ratios were obtained from Correia, Flynn, Uliana, & Wormald, (2015).

²⁴ The figures have been taken directly from the AFS of the companies in the sample i.e. they have not been recalculated.

Appendix 5: Impact on ratios for each company

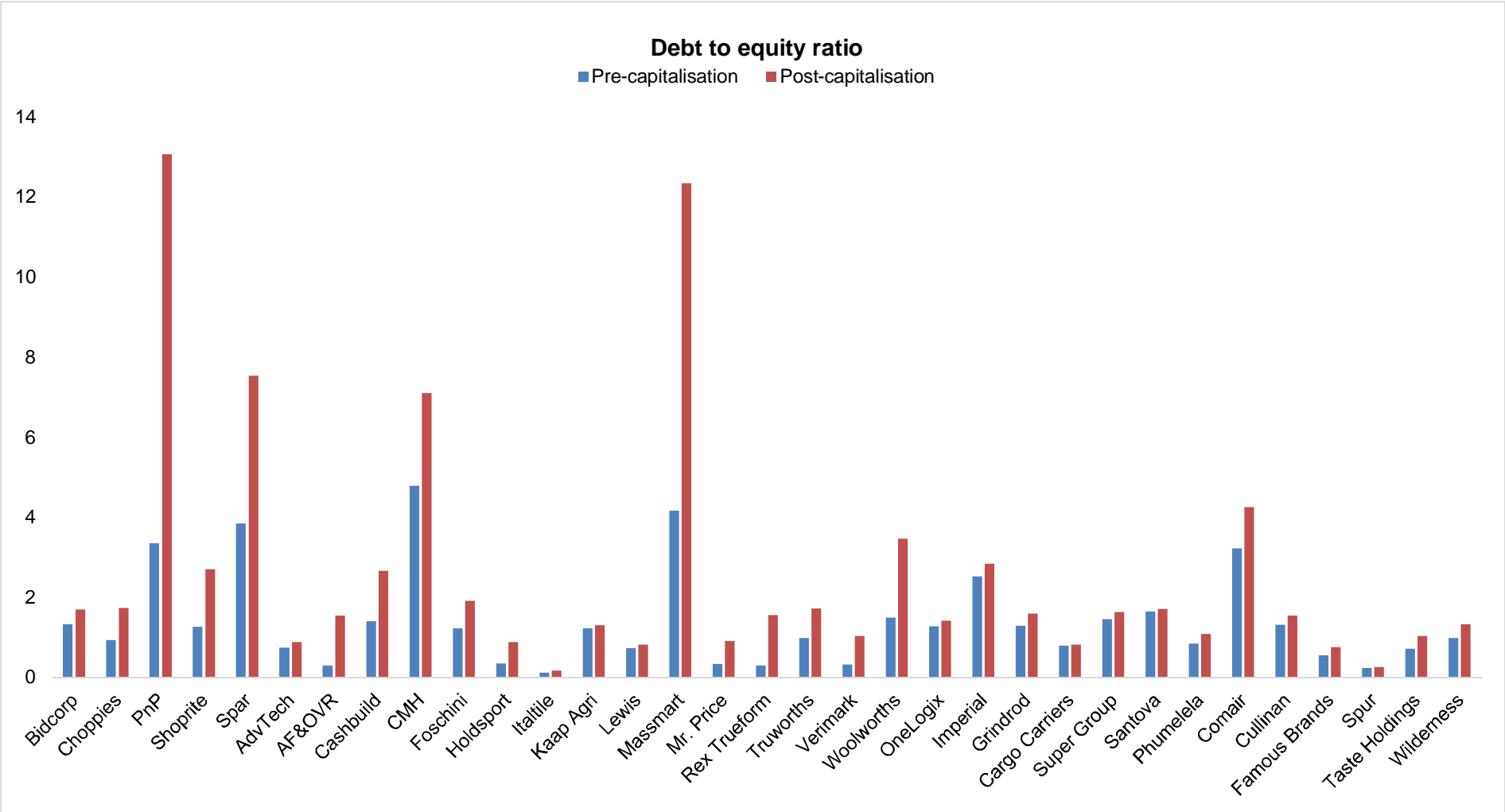


Figure 5. Graph showing debt to equity ratio of all companies in the sample pre- and post-capitalisation.

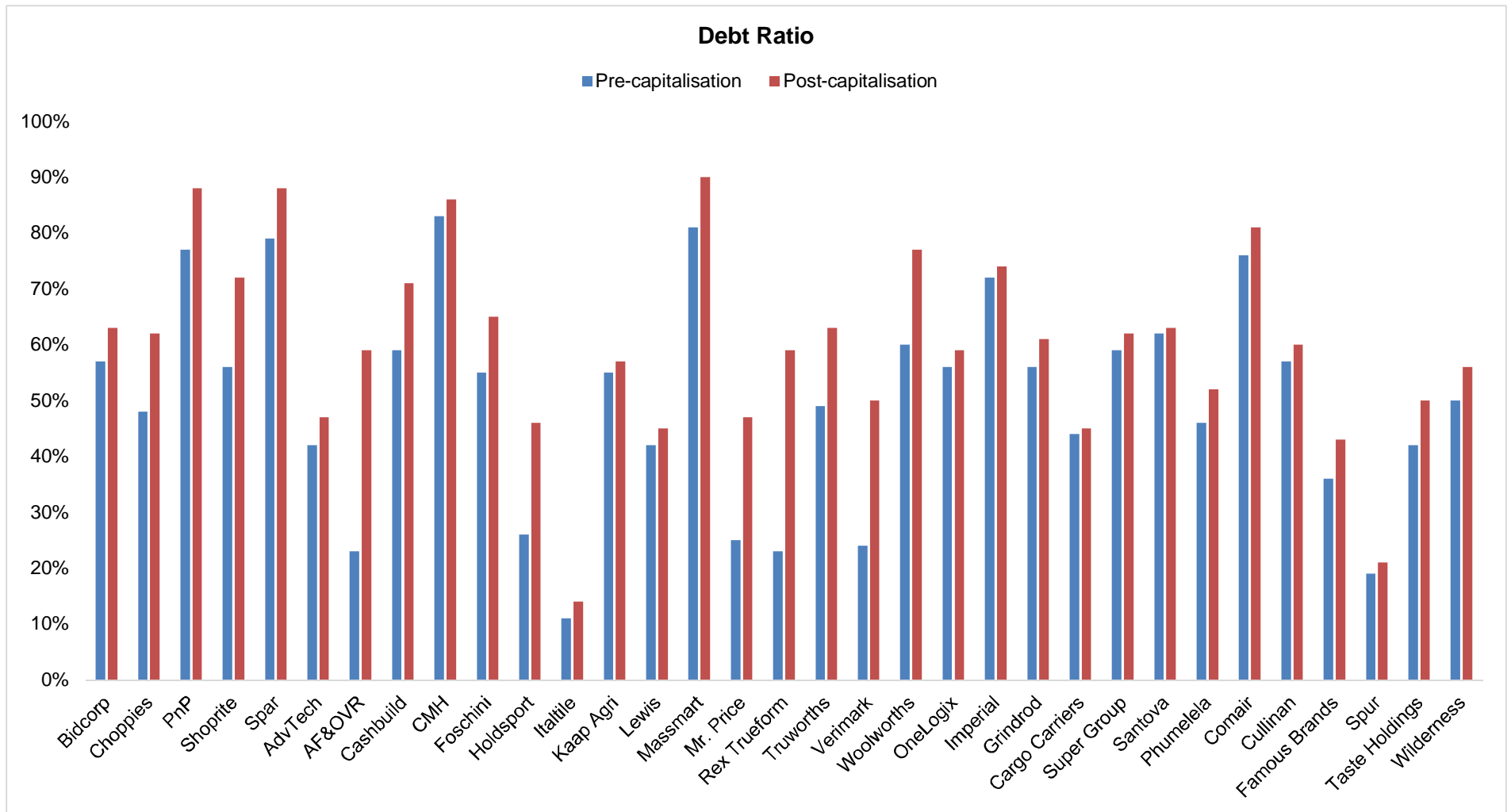


Figure 6. Graph showing debt ratio of all companies in the sample pre- and post-capitalisation.

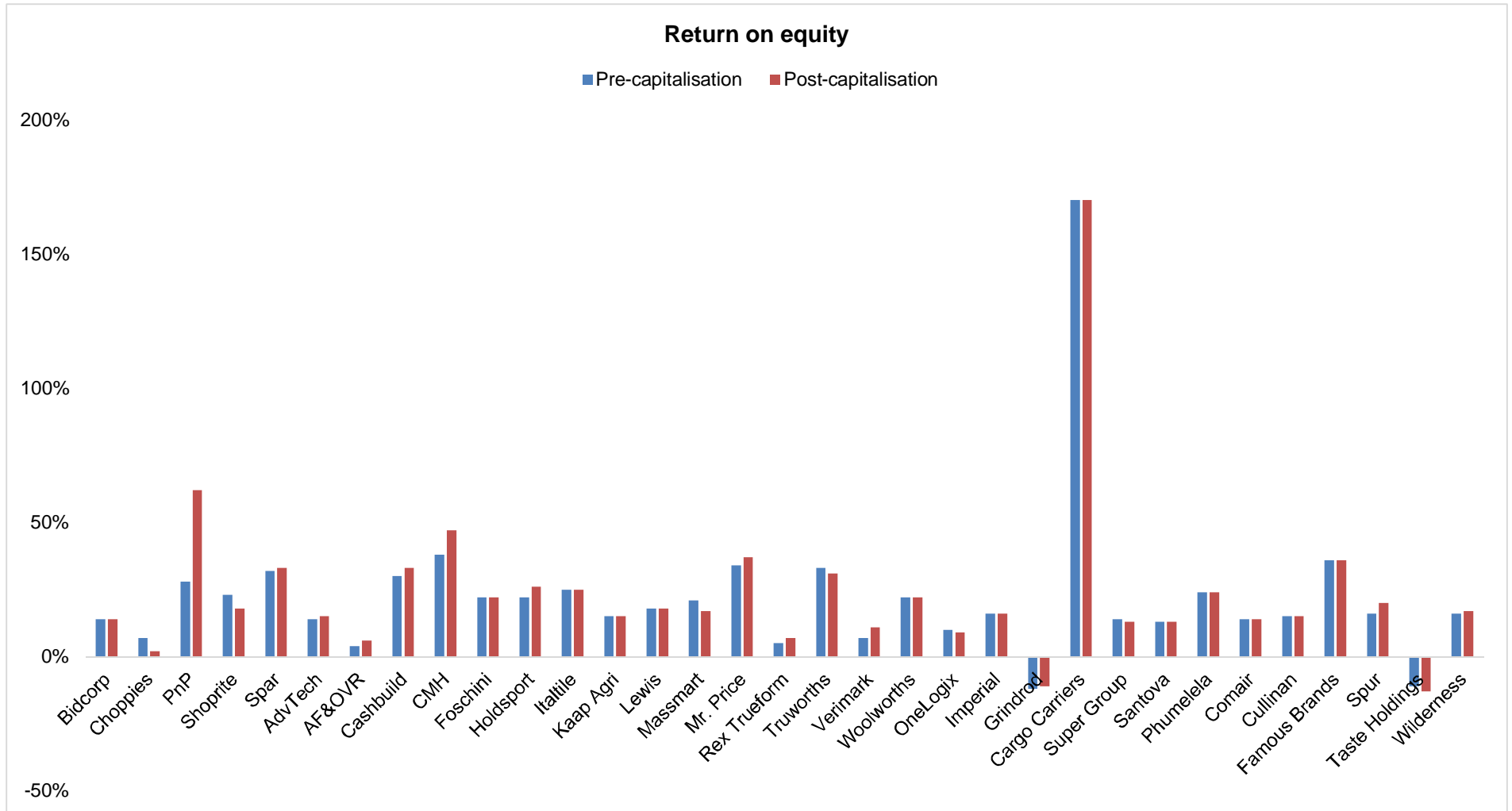


Figure 7. Graph showing return on equity of all companies in the sample pre- and post-capitalisation.

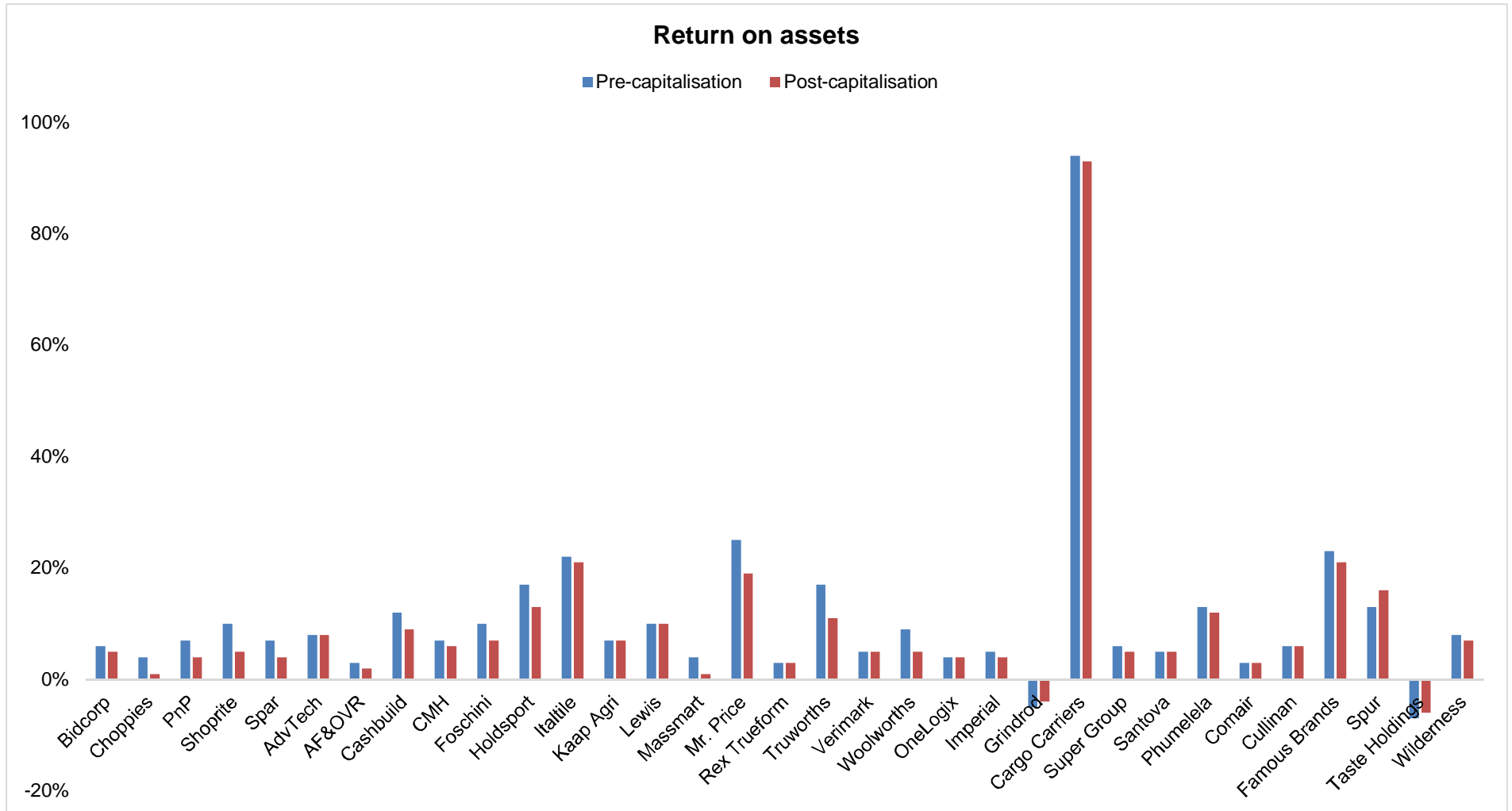


Figure 8. Graph showing return on assets of all companies in the sample pre- and post-capitalisation.

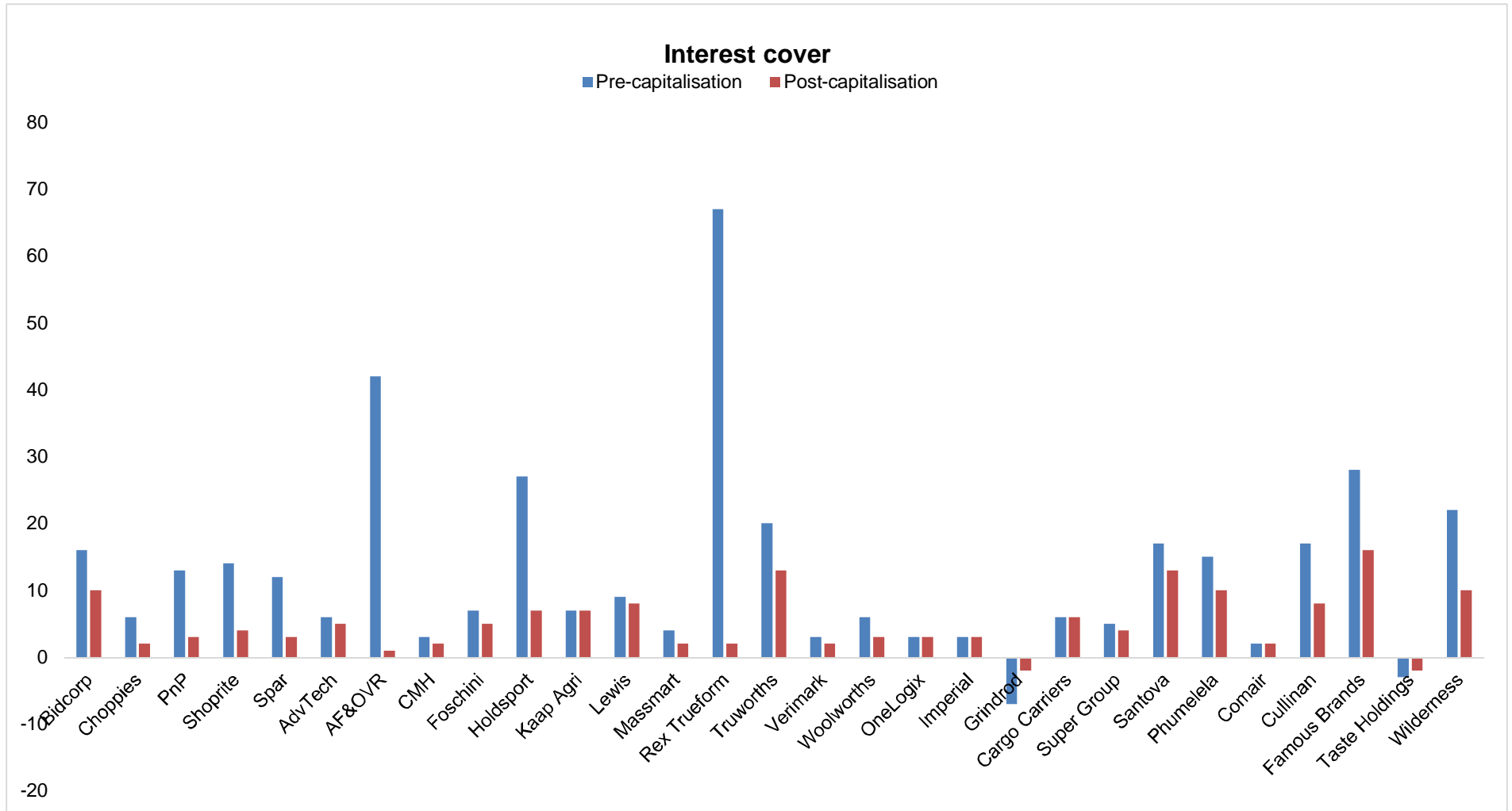


Figure 9. Graph showing interest cover of all companies in the sample (excluding Spur, Cashbuild, Italtile, Mr. Price) pre- and post-capitalisation.

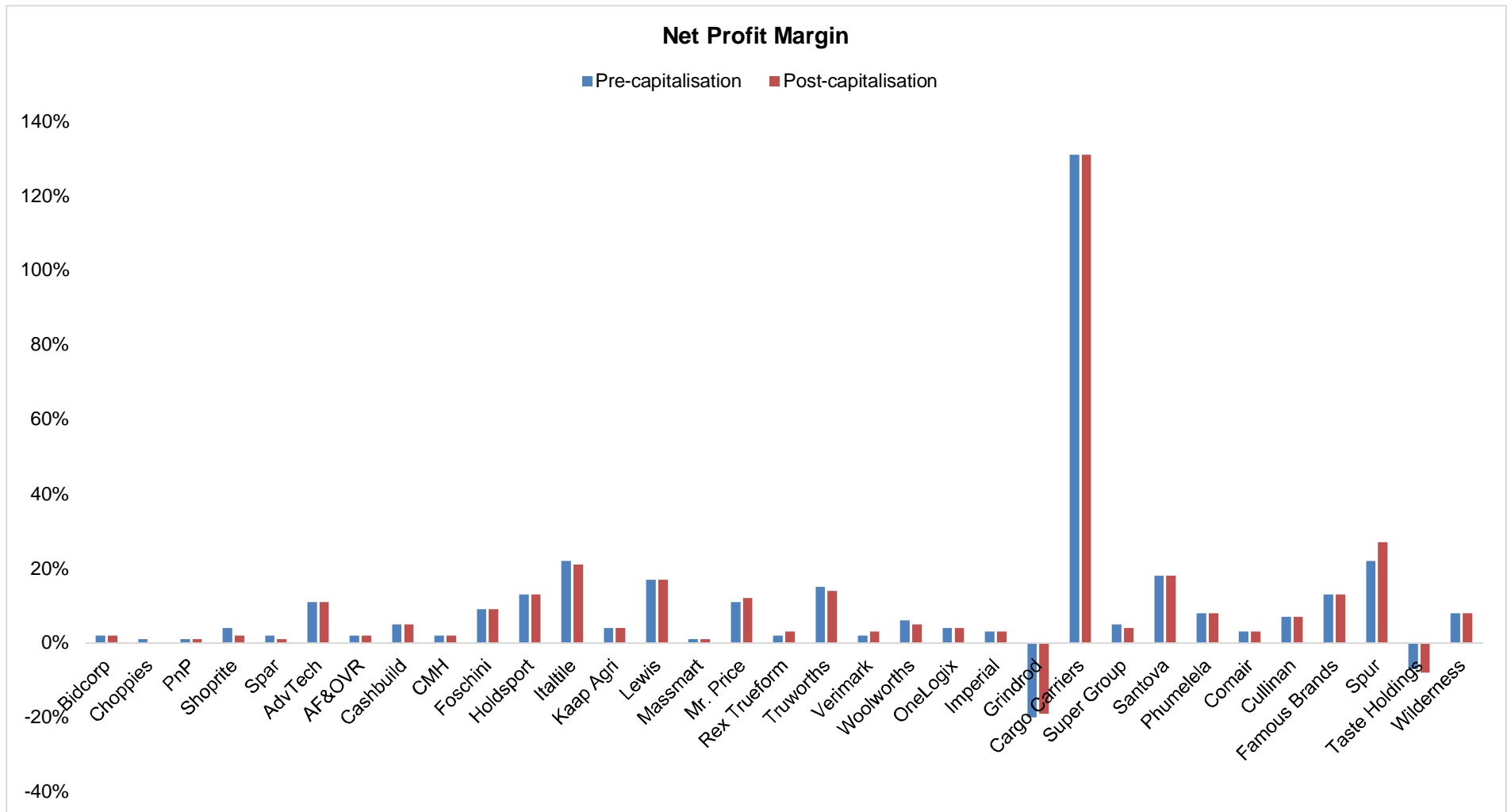


Figure 10. Graph showing net profit margin of all companies in the sample pre- and post-capitalisation.

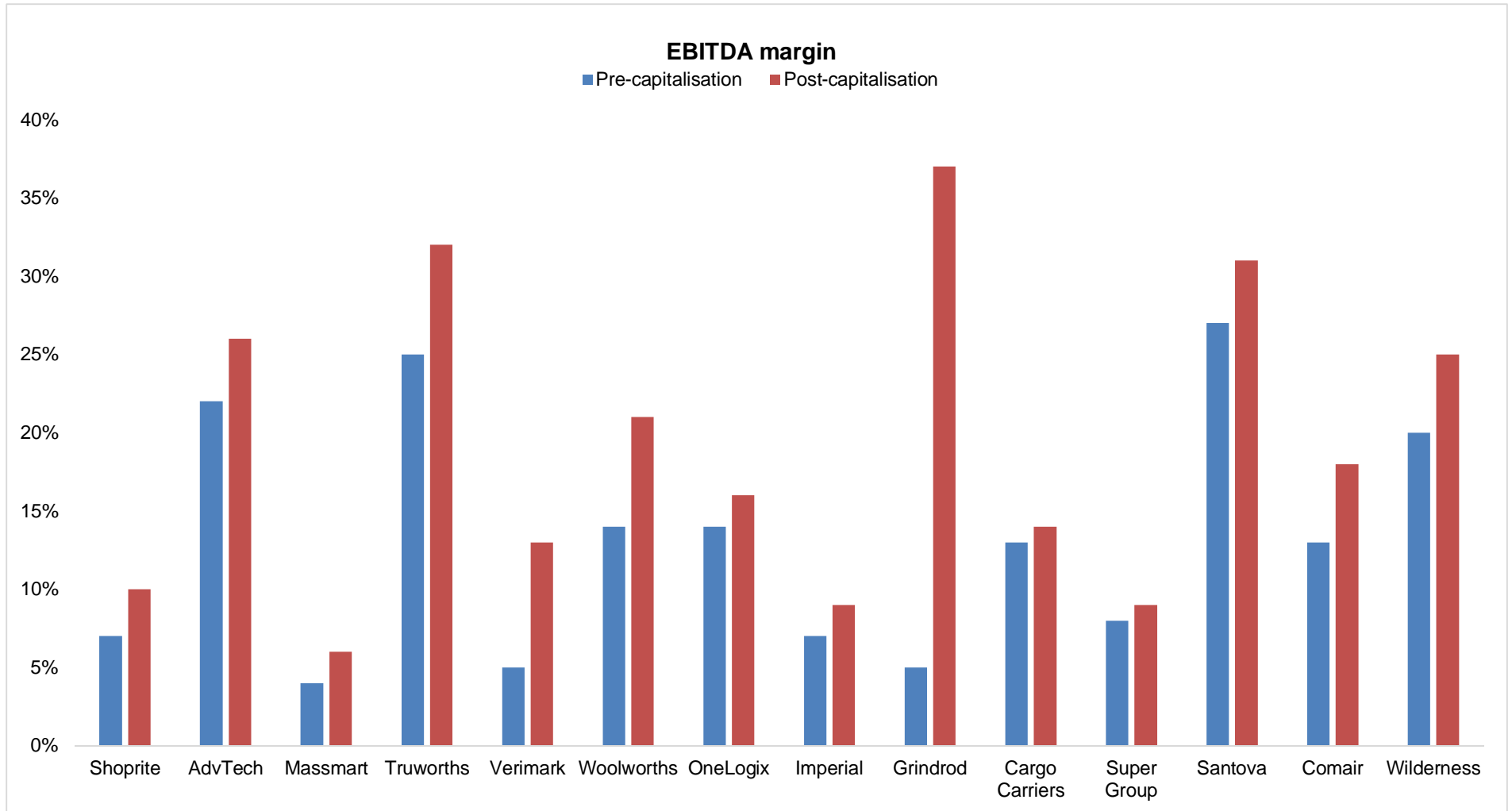


Figure 11. Graph showing EBITDA margin of certain companies in the sample pre- and post-capitalisation. Only companies that disclosed EBITDA in their AFS were selected.

Appendix 6: Sensitivity analysis

Table 11: Increase of 2% p.a. in the interest rate

Key ratios	Sector				Total – entire sample
	Industrial Transportation	Food & Drug Retailers	General Retailers	Travel & Leisure	
Debt to equity	11%	146%	103%	30%	83%
Debt ratio	4%	17%	29%	11%	15%
Return on equity	0%	24%	6%	4%	7%
Return on assets	-2%	-43%	-20%	-4%	-13%
Interest cover	-4%	-70%	-92%	-98%	-95%
Net profit margin	1%	-29%	-3%	7%	0%
EBITDA margin	55%	38%	33%	28%	37%
Line item					
Net profit after tax	-22%	-14%	-1%	0%	-16%
Total debt	45%	59%	10%	23%	36%
Total assets	24%	29%	5%	11%	20%
Total equity	-16%	-15%	-4%	-4%	-11%

Table 12: Increase of 4% p.a. in the interest rate

Key ratios	Sector				Total – entire sample
	Industrial Transportation	Food & Drug Retailers	General Retailers	Travel & Leisure	
Debt to equity	11%	138%	99%	29%	82%
Debt ratio	4%	16%	29%	11%	15%
Return on equity	0%	22%	6%	4%	7%
Return on assets	-2%	-42%	-20%	-4%	-13%
Interest cover	-5%	-72%	-93%	-98%	-95%
Net profit margin	1%	-30%	-4%	6%	-1%
EBITDA margin	55%	38%	33%	28%	37%
Line item					
Net profit after tax	-1%	-22%	-15%	0%	-16%
Total debt	10%	41%	54%	22%	35%
Total assets	5%	21%	26%	10%	19%
Total equity	-4%	-16%	-15%	-5%	-11%

Table 13: Lease expiration of 35%

Key ratios	Sector				Total – entire sample
	Industrial Transportation	Food & Drug Retailers	General Retailers	Travel & Leisure	
Debt to equity	10%	100%	81%	28%	78%
Debt ratio	4%	16%	29%	11%	15%
Return on equity	0%	9%	3%	4%	7%
Return on assets	-2%	-37%	-21%	-5%	-13%
Interest cover	-1%	-62%	-91%	-98%	-94%
Net profit margin	0%	-16%	-2%	6%	0%
EBITDA margin	55%	38%	33%	28%	37%
Line item					
Net profit after tax	-1%	-13%	-8%	1%	-14%
Total debt	11%	51%	66%	25%	38%
Total assets	7%	30%	36%	13%	21%
Total equity	-2%	-9%	-8%	-2%	-9%

Table 14: Lease expiration of 65%

Key ratios	Sector				Total – entire sample
	Industrial Transportation	Food & Drug Retailers	General Retailers	Travel & Leisure	
Debt to equity	13%	369%	175%	34%	100%
Debt ratio	4%	21%	33%	13%	16%
Return on equity	0%	113%	9%	8%	9%
Return on assets	-2%	-51%	-21%	-1%	-12%
Interest cover	-3%	-71%	-91%	-98%	-94%
Net profit margin	1%	-41%	-4%	12%	0%
EBITDA margin	55%	38%	33%	28%	37%
Line item					
Net profit after tax	-1%	-32%	-19%	1%	-17%
Total debt	10%	48%	62%	24%	37%
Total assets	5%	23%	28%	11%	19%
Total equity	-5%	-23%	-21%	-6%	-13%