



palgrave▶pivot

# Rational Investing with Ratios

## Implementing Ratios with Enterprise Value and Behavioral Finance

Yannick Coulon

palgrave  
macmillan

## Rational Investing with Ratios

Yannick Coulon

# Rational Investing with Ratios

Implementing Ratios with Enterprise Value  
and Behavioral Finance

palgrave  
macmillan

Yannick Coulon  
Brest Business School  
Brittany, France

ISBN 978-3-030-34264-7      ISBN 978-3-030-34265-4 (eBook)  
<https://doi.org/10.1007/978-3-030-34265-4>

© The Editor(s) (if applicable) and The Author(s), under exclusive licence to Springer Nature Switzerland AG 2020, corrected publication 2020

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use. The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Palgrave Pivot imprint is published by the registered company Springer Nature Switzerland AG.

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# PREFACE

## WHY DO YOU NEED THIS BOOK?

This book adds value to any discussion on the importance and implementation of ratios.

A financial ratio establishes a proportional relationship between accounting and market data. If a ratio is isolated and applied incorrectly, it is seen as a number without great significance. However, when well integrated into a global company vision, ratios become powerful indicators that can outline relevant information and identify warning signs. Ratios help us better understand business ventures, especially their strengths and weaknesses.

The purpose of this book goes beyond merely listing possible ratios; it aims to explain the concept and logic behind each key ratio. Didactics is key to this project, and each ratio family is illustrated with numerous graphs and practical cases. This information is therefore particularly useful for bankers, entrepreneurs, investors, managers, and obviously, students.

Ratios are applicable worldwide, and the book is not US or Europe centric; readers can come from international contexts and backgrounds.

## RATIO QUALITY AND LIMITATIONS

Ratios help establish the financial diagnosis of a company, but they are limited by the quality and availability of key information. In other words, ratios will not turn lead into gold! As a result, the book puts emphasis on ratios incorporating market data, whenever they are available and reliable.

## ACCURACY OR TREND

The absolute level and precision of a ratio is interesting. However, the trend observed is the most reliable and fundamental piece of information, as it demonstrates whether a situation is deteriorating, stabilizing or improving.

## COMPARISONS HAVE LIMITATIONS

A comparison is not always appropriate but in the practice of finance, it is a fundamental step if well applied. It helps users to detect deviations from the past or deviations from competing companies within the same sector.

## RATIOS ARE A BEGINNING, NOT AN END UNTO THEMSELVES

A financial diagnosis is only one aspect of a global company analysis. Its strategic positioning, competitive advantages, corporate sustainability and human capital add value to the financial vision.

## RATIOS ARE NUMEROUS

The list of ratios mentioned in the book is not exhaustive or academic. The inclusion of countless ratios does not allow for a concise and coherent financial analysis, and therefore the book retains the ones that are considered relevant, essential and complementary.

## RATIOS FOR FAMILY BUSINESSES AND CORPORATIONS

Many simple and more challenging educational cases are used for illustrating each ratio family. The ratios will differ depending on the given context, such as a family business or a listed company. These complementary visions are outlined.

## ENTERPRISE VALUE (EV)

Much attention is given to the concept of enterprise value, and the reader will find a detailed description of enterprise value in the first section. Numerous ratios illustrate the importance of this reference value for debt,

economic performance and valuation. The concepts of capital employed, non-core assets or surplus cash are also addressed, given that they play a key role in EV calculation. Very few current textbooks treat these metrics in such great detail.

## A TOUCH OF BEHAVIORAL FINANCE

Ratios become useless if the financial decision is emotional or irrational, and thus this book addresses a few aspects of behavioral finance. The principles of an investment thesis are outlined.

## THE NARRATIVE THREAD

The book starts with a short review of financial statements and cash flows (see Sects. 1.1 and 1.2). However, the goal is not to lecture on accounting principles, as there are already numerous books of high-quality that cover this topic on the market.

The emphasis is then placed on operating assets, capital employed and enterprise value (see Sect. 1.3). These are essential metrics that will be extensively used in Chaps. 5 and 6.

The core of this book is found in Chaps. 2, 3, 4, and 5, which deal with ratios in the following order:

- Efficiency, liquidity and solvency ratios are outlined first since poor cash management will be rapidly fatal for a company (see Chaps. 2 and 3).
- Debt and profitability ratios follow suit in Chaps. 4 and 5 with a clear divide between non-listed (i.e., accounting ratios) and listed companies (i.e., market-related ratios).
- Chapter 6 brings the full set of ratios into perspective with two case studies: One case deals with a small private company, and the other deals with three giant retail companies, namely Alibaba, Amazon and Walmart.

Chapter 7 starts with a discussion on the benefits of using an investment thesis. This disciplined and rational approach can be an efficient tool to combat behavioral biases. Possible investment theses for Alibaba, Amazon and Walmart are presented thereafter. The key behavioral biases are then introduced and conclude the chapter.

Some of the contents are straightforward, while some are more complex and concise. In any case, the book aims to be informative, practical and clear, rather than to pursue an academic dimension. The book concentrates on the essential, and it strives to make complex equations understandable.

*Please enjoy the book, and do not hesitate to send feedback.*

Brest, Brittany, France

Yannick Coulon



## ACKNOWLEDGMENTS

A special thank you goes to Tula Weis, Senior Editor and Lucy Kidwell, Assistant Editor at Palgrave Macmillan and G. Nirmal Kumar from SPI Global for their active support.

Thank you to Sarah W. PhD from Cambridge Proofreading LLC and Elaine L. from Scribbr for improving my English writing style.

I salute my former colleagues at Iomega Corp, Srinu Nageshwar, Joël Broc and my former colleagues at UBS Global Asset Management, Martin Thommen, Olivier Groeflin, Steffen Glos for the great years we have had together and from whom I had learned so much. Un grand merci à Monsieur Stéphane Derville de Maxima mais aussi à Messieurs Dai Shen, Luc Pontet, Gurvan Branellec et Jean Moussavou de BBS. Je salue aussi mes deux enfants, Samantha et Fabian.

# CONTENTS

<b>1</b>	<b>Presentation of Key Financial Metrics and Enterprise Value</b>	<b>1</b>
1.1	<i>The Balance Sheet, Income and Cash Flow Statements</i>	1
1.1.1	<i>The Balance Sheet</i>	2
1.1.2	<i>The Income Statement</i>	4
1.1.3	<i>The Cash Flow Statement</i>	5
1.2	<i>The Cash Flows</i>	5
1.2.1	<i>FCFF and FCFE</i>	5
1.2.2	<i>EBITDA</i>	7
1.2.3	<i>Recurring Cash Flows</i>	8
1.3	<i>Enterprise Value (EV)</i>	9
1.3.1	<i>Capital Employed and Operating Assets</i>	9
1.3.2	<i>Examples of Capital Employed Calculations</i>	10
1.3.3	<i>Non-Core Assets</i>	14
1.3.4	<i>Definition of Enterprise Value</i>	15
1.3.5	<i>The EV Concept Applied to Comparable Companies</i>	17
1.3.6	<i>The EV Concept Applied to Real Estate Investments</i>	19
1.3.7	<i>EV Equations</i>	22
1.3.8	<i>EV Calculation (MTM Accounting)</i>	24
1.3.9	<i>EV Calculation (Using DCF Method)</i>	25
1.4	<i>Key Takeaways on Key Financial Metrics and Enterprise Value</i>	28
	<i>References and Further Reading</i>	29

<b>2</b>	<b>Efficiency Ratios</b>	<b>31</b>
2.1	<i>Efficiency Ratios</i>	31
2.2	<i>Inventory Days</i>	33
2.3	<i>Accounts Receivable Days</i>	34
2.4	<i>Accounts Payable Days</i>	35
2.5	<i>Working Capital Definitions</i>	36
2.6	<i>Non-Cash Working Capital Financing</i>	40
2.7	<i>Working Capital Management</i>	42
2.8	<i>Key Takeaways on Efficiency Ratios and Their Limitations</i>	44
	<i>References and Further Reading</i>	45
<b>3</b>	<b>Key Liquidity and Solvency Ratios</b>	<b>47</b>
3.1	<i>Liquidity Versus Solvency</i>	47
3.2	<i>Key Liquidity Ratios</i>	48
3.2.1	<i>The Three Main Liquidity Ratios</i>	48
3.2.2	<i>Liquidity Ratios of an Illiquid Company</i>	49
3.2.3	<i>Liquidity Ratios of a Financially Sound Company</i>	50
3.3	<i>Key Solvency Metrics</i>	51
3.3.1	<i>Net Worth and Solvency Ratios</i>	52
3.4	<i>Case Studies of Three Companies Showing Contrasting Financial Situations</i>	53
3.4.1	<i>The Best-Case Scenario</i>	53
3.4.2	<i>The Grey Scenario</i>	55
3.4.3	<i>The Worst-Case Scenario</i>	58
3.5	<i>Key Takeaways on Liquidity Plus Solvency Ratios and Their Limitations</i>	61
	<i>References and Further Reading</i>	62
<b>4</b>	<b>Debt Ratios</b>	<b>63</b>
4.1	<i>Introduction on Indebtedness</i>	64
4.2	<i>Financial Leverage</i>	64
4.3	<i>Debt to Equity Ratios</i>	65
4.4	<i>Debt Coverage Ratios</i>	67
4.5	<i>Debt Ratios Using Enterprise Value</i>	70
4.6	<i>Limitations of Debt to Equity Ratio</i>	71
4.6.1	<i>Companies with Negative Equity</i>	71
4.6.2	<i>Companies with Large Real Estate Holdings</i>	74
4.7	<i>Debt and Industries</i>	79

4.8	<i>Financial Instability</i>	80
4.9	<i>Key Takeaways on Debt Ratios and Their Limitations</i>	83
	<i>References and Further Reading</i>	84
<b>5</b>	<b>Profitability and Performance Ratios</b>	<b>85</b>
5.1	<i>Book-Value Based Versus Market-Value Based Profitability Ratios</i>	86
5.2	<i>Book-Value Based Profitability Ratios</i>	86
5.3	<i>Market-Value Based Profitability Ratios</i>	89
5.4	<i>Case Study (Operating, Financial Performance and Leverage)</i>	94
5.5	<i>Case Study (Forward P/E and EV Multiples)</i>	97
5.5.1	<i>The Forward P/E Approach</i>	98
5.5.2	<i>The Forward EV Multiple Approach</i>	99
5.5.3	<i>Target Market Capitalizations Using the Forward Sector EV Multiple</i>	100
5.5.4	<i>Conclusion Incorporating the Debt Situation</i>	102
5.6	<i>Value and Growth Investing</i>	103
5.7	<i>Key Takeaways on Profitability Ratios and Their Limitations</i>	103
	<i>References and Further Reading</i>	104
<b>6</b>	<b>Case Studies</b>	<b>105</b>
6.1	<i>Brief Introduction to the Case Studies</i>	105
6.2	<i>A Private Company in Trouble: PAB Limited</i>	106
6.2.1	<i>PAB's Efficiency Ratios</i>	107
6.2.2	<i>PAB's Liquidity Ratios</i>	110
6.2.3	<i>PAB's Debt and Solvency Ratios</i>	112
6.2.4	<i>PAB's Profitability Ratios</i>	114
6.2.5	<i>Summary and Final Thoughts on Company PAB</i>	117
6.3	<i>Comparison Between Alibaba, Amazon and Walmart</i>	117
6.3.1	<i>Alibaba Group</i>	118
6.3.2	<i>Amazon</i>	121
6.3.3	<i>Walmart</i>	122
6.3.4	<i>Liquidity and Efficiency</i>	124
6.3.5	<i>The Debt and Solvency Situation</i>	127
6.3.6	<i>The Compared Profitability</i>	128
6.3.7	<i>Summary and Final Thoughts</i>	132
	<i>References and Further Reading</i>	133

<b>7 Investment Thesis</b>	<b>135</b>
7.1 <i>Definition of an Investment Thesis</i>	135
7.2 <i>Benefits of an Investment Thesis</i>	137
7.3 <i>Possible Investment Theses for Alibaba, Amazon and Walmart</i>	140
7.4 <i>Market Hedging</i>	142
7.5 <i>Selection of Damaging Behavioral Biases</i>	143
7.6 <i>Key Takeaways on Investment Thesis</i>	151
<i>References and Further Reading</i>	151
<b>Correction to: Rational Investing with Ratios</b>	<b>C1</b>
<b>Appendix: List of Key Ratios</b>	<b>153</b>
<b>General Bibliography, Webography and Further Reading</b>	<b>157</b>
<b>Index</b>	<b>159</b>

# LIST OF FIGURES

Fig. 1.1	Two conceptual presentations of a balance sheet	2
Fig. 1.2	Main building blocks of a balance sheet	3
Fig. 1.3	Main balance sheet line items	3
Fig. 1.4	Main current assets and liabilities	4
Fig. 1.5	Simplified income statement and main line items	5
Fig. 1.6	Statement of cash flows	6
Fig. 1.7	Main beneficiaries of the free cash flows	6
Fig. 1.8	FCFE and FCFF starting from EBITDA	7
Fig. 1.9	Company Bogey versus company Eagle	9
Fig. 1.10	Capital employed and net operating assets	10
Fig. 1.11	Two versions of capital employed	10
Fig. 1.12	Operating assets and long-term financing	16
Fig. 1.13	Comparable companies with the same operating assets	18
Fig. 1.14	Successive villa Alpha's purchases in 2018, 2019 and 2020	20
Fig. 1.15	Impact of lot Beta in 2020	21
Fig. 1.16	EV for a listed and consolidated company	22
Fig. 1.17	Simplified EV for a non-listed company	23
Fig. 1.18	EV direct calculation with discounted FCFF and terminal value	27
Fig. 2.1	Efficiency in operating liquidity	32
Fig. 2.2	Funds needed to finance operations	37
Fig. 2.3	Two ways to look at working capital	37
Fig. 2.4	Working capital and non-cash working capital	38
Fig. 2.5	SEGI's non-cash working capital financing	41
Fig. 2.6	Working capital days (from operations)	43
Fig. 3.1	Liquidity ratios	48
Fig. 3.2	Valuation methods used in solvency analysis	51

Fig. 3.3	Key solvency metrics	53
Fig. 3.4	Company Alpha outlined	55
Fig. 3.5	Company Beta outlined	58
Fig. 3.6	Company Epsilon outlined	61
Fig. 4.1	Financial leverage with positive effects	65
Fig. 4.2	Financial leverage with negative effects	66
Fig. 4.3	Debt to equity ratios	66
Fig. 4.4	Debt coverage ratios	68
Fig. 4.5	Many open questions on balance sheet valuations	72
Fig. 4.6	From stability to instability	81
Fig. 4.7	Balance sheet instability	82
Fig. 5.1	Book-value and market-value based ratios	86
Fig. 5.2	Trailing versus forward P/E	91
Fig. 6.1	Company PAB's current assets	111
Fig. 7.1	Investment thesis methodology	136
Fig. 7.2	Example of an investment thesis for Alibaba	140
Fig. 7.3	Example of an investment thesis for Amazon	141
Fig. 7.4	Example of an investment thesis for Walmart	141
Fig. 7.5	Index put option	143
Fig. 7.6	Different phases of a bubble	144
Fig. 7.7	Disposition effect: bad cards (past winners) replacing jokers and aces (future winners)	146
Fig. 7.8	Disposition effect in action	147
Fig. 7.9	"Neutralized" disposition effect	147
Fig. 7.10	Fear of regret in favor of inaction	148
Fig. 7.11	Fear of regret in favor of "selling"	148
Fig. 7.12	Patient and impatient investor	150

# LIST OF TABLES

Table 1.1	Company SGVSL's balance sheet	11
Table 1.2	Company SGVSL Excess's balance sheet	13
Table 1.3	Company SEGA's balance sheet, MTM	24
Table 1.4	Company SEGA's balance sheet showing EV	25
Table 1.5	Company SEGA's FCFE	25
Table 1.6	Essential metrics	28
Table 2.1	Company SEGI's simplified balance sheet	40
Table 2.2	Company SEGI's working capital metrics	41
Table 2.3	Efficiency metrics	44
Table 3.1	Company Omega's balance sheet	49
Table 3.2	Company Sigma's balance sheet	50
Table 3.3	Company Alpha's balance sheet	54
Table 3.4	Company Alpha's liquidity ratios	54
Table 3.5	Company Alpha's solvency metrics	55
Table 3.6	Company Beta's balance sheet	56
Table 3.7	Company Beta's liquidity ratios	56
Table 3.8	Company Beta's solvency metrics	57
Table 3.9	Adjustments to company Beta's liquidity ratios	57
Table 3.10	Company Epsilon's balance sheet	59
Table 3.11	Company Epsilon's liquidity ratios	59
Table 3.12	Company Epsilon's operating liquidity ratios	59
Table 3.13	Company Epsilon's solvency metrics	60
Table 3.14	Liquidity ratios	61
Table 3.15	Solvency metrics	61
Table 4.1	Company Libree's balance sheet	72
Table 4.2	Company Libree's balance sheet showing net operating assets	73



Table 4.3	Company Libertee's balance sheet at fair market value	73
Table 4.4	Mixed Company's balance sheet	75
Table 4.5	Mixed Company's income statement	75
Table 4.6	Mixed Company's debt ratios	76
Table 4.7	Operating Company's balance sheet	77
Table 4.8	Operating Company's income statement	77
Table 4.9	Operating Company's debt ratios	77
Table 4.10	Mixed Company's balance sheet showing net operating and non-core assets	78
Table 4.11	Original Mixed Company at market value	79
Table 4.12	Original Mixed Company with adjusted debt ratios	79
Table 4.13	Debt ratios of key companies in three sectors	80
Table 4.14	Debt ratios	83
Table 5.1	Trailing versus forward P/E comparison	91
Table 5.2	P/E and PEG ratios (SG, sector and HG)	92
Table 5.3	P/E and EV to EBITDA multiples	94
Table 5.4	Company Green's balance sheet	95
Table 5.5	Company Purple's balance sheet	95
Table 5.6	Income statements (Green and Purple)	95
Table 5.7	Profitability ratios (Green and Purple)	96
Table 5.8	Debt ratios (Green and Purple)	96
Table 5.9	Profitability ratios (Green and Purple)	97
Table 5.10	Market valuations (Serenity and Bold)	98
Table 5.11	Expected earnings and dividends (Serenity and Bold)	98
Table 5.12	Forward earnings multiples (Serenity and Bold)	98
Table 5.13	Target share prices (Serenity and Bold)	99
Table 5.14	EV calculations (Serenity and Bold)	99
Table 5.15	Forward EV multiples (Serenity and Bold)	100
Table 5.16	Target share prices (Serenity and Bold)	102
Table 5.17	Financial leverage and debt ratios (Serenity and Bold)	102
Table 5.18	Value versus growth comparison	103
Table 5.19	Profitability ratios	104
Table 6.1	Company PAB's balance sheet	106
Table 6.2	Company PAB's income statement	106
Table 6.3	EBITDA with COGS	107
Table 6.4	Company PAB's working capital analysis	107
Table 6.5	Company PAB's inventory data	109
Table 6.6	Company PAB's inventory days	109
Table 6.7	Company PAB's accounts receivable days	110
Table 6.8	Company PAB's accounts payable days	110
Table 6.9	Company PAB's liquidity ratios	111
Table 6.10	Company PAB's debt ratios	112

Table 6.11	Company PAB's debt coverage ratios	112
Table 6.12	Company PAB's key ratios	117
Table 6.13	Alibaba Group's balance sheet, RMB (Yuan), in millions, year ended March 31, 2019	119
Table 6.14	Alibaba Group's adjusted balance sheet, \$, in millions, year ended March 31, 2019	119
Table 6.15	Alibaba Group's original income statement, RMB, \$ US, in millions, year ended March 31, 2019	120
Table 6.16	Alibaba's adjusted income statement, \$, in millions, year ended March 31, 2019	120
Table 6.17	Amazon's balance sheet, \$, in millions, year ended December 31, 2018	122
Table 6.18	Amazon's income statement, \$, in millions, year ended December 31, 2018	122
Table 6.19	Walmart's balance sheet, \$, in millions, year ended January 31, 2019	123
Table 6.20	Walmart's income statement, \$, in millions, year ended January 31, 2019	123
Table 6.21	Liquidity and non-cash working capital metrics, Dec. 2018 to Mar. 2019	124
Table 6.22	Walmart against Carrefour' liquidity ratios, Dec. 2018 to Mar. 2019	126
Table 6.23	Workforce performance, \$, Dec. 2018 to Mar. 2019	127
Table 6.24	Debt and coverage ratios, \$, in millions, Dec. 2018 to Mar. 2019	127
Table 6.25	Solvency metrics, \$, in millions, Dec. 2018 to Mar. 2019	128
Table 6.26	EV calculations, \$, in millions, August 16, 2019	129
Table 6.27	EV multiples and operating margins	129
Table 6.28	Projected EBITDA, \$, in millions	130
Table 6.29	Projected earnings, \$, in millions	130
Table 6.30	Main profitability ratios	131
Table 6.31	Selected ratios underlining key differences	132
Table A.1	Key financial metrics	153
Table A.2	Key efficiency ratios	154
Table A.3	Key liquidity and solvency metrics	154
Table A.4	Key debt ratios	155
Table A.5	Key profitability ratios	155