Eurasian Journal of Business and Management, 8(1), 2020, 1-10
DOI: 10.15604/ejbm.2020.08.01.001

EURASIAN JOURNAL OF BUSINESS AND MANAGEMENT

www.eurasianpublications.com

CALCULATION OF SPECIFIC COMPANY RISK PREMIUM FOR AGRICULTURAL BUSINESS VALUATION

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Received: January 30, 2020 Accepted: March 19, 2020

Abstract

The purpose of the article is to determine which method of company specific risk premium calculation for agricultural companies gives the most correct result in the process of a business valuation. We conduct a study on agricultural holdings valuation methodology and this article builds on our prior study to improve the methodology and justify the appropriate method of Company Specific Risk Premium calculation for agricultural business valuation because properly performed business valuation procedure increases the company's value, its investment attractiveness. For our study, we select large agricultural holdings, leading daily stock trading, from top agricultural producing countries in different parts of the world: Brazil, USA, Ukraine and Australia. Costa Group Holding (CGC) is selected for this article as a company meeting all of the above-mentioned requirements. Compared with the recent researches, the main contributions of the paper are summarized as follows: justified and proved by calculations the correct methodology for calculating of Company Specific Risk Premium in agricultural business valuation for investment purposes.

Keywords: Company Specific Risk Premium, Business Valuation, Investment, Risk Factors, Specific Risks

1. Introduction

The problem of defining a company specific risk premium remains relevant for a long time. Scientists have proposed several ways to calculate it, but since each of the previously proposed methods carries a large percentage of subjectivity, this question remains unresolved. Company specific risk premium is a component that has a significant impact on the result of business valuation for investment purposes. By investing in the company, the investor must be confident that the return on these investments is higher than other risk-free investment alternatives. This is especially important when we talk about the agricultural sector, which differs from other areas by an increased degree of risk. Accordingly, identifying the correct methodology for calculating

the premium for a specific risk of an agricultural company is an important task in determining the value of a business for investment purposes. A specific risk is a unique risk to a given company, as well as one that cannot be determined by an analyst or appraiser because of its uniqueness. A company's specific risk premium is a coefficient or percentage expressing a specific risk.

The rest of the paper is organized as follows: Section 2 gives literature review whereas Section 3 discusses data and methodology of this study. Section 4 presents main findings and Section 5 gives the results. Finally, Section 5 concludes the paper.

2. Literature review

The issue of the company specific risk definition was studied earlier in the scientific literature. Reinganum (1981) claims in his study that small firms have a higher rate of return than large firms with the same beta risk. For evaluating company specific risk premium, Mercer (1989) proposes to use factors such as key figures and company management, size of the company, financial structure, product / geographical diversification, customer diversification, earnings: margins and historical predictability, other specific factors. Black and Green (1994) identify the following factors as the main factors making up a company specific risk premium: competition, financial strength, management ability and depth, profitability and stability of earnings, national economic effects, and local economic effects.

Evans (1999) supplements and expands Mercer's (1989) approach with a large number of influential factors, determines not only discounts, but also premiums to each factor that affects the value of company specific risk premium. The research reveals that company specific risk is included in the total risk and is a risk that has a great influence on the variability of the company's share price (Goyal and Santa-Clara, 2001). Trugman (2002) also proposes a factor analysis to determine a company's specific risk premium, highlighting eight key factors: economic conditions, business location, depth of management, barriers to entry, industry conditions, competition, quality of management, and bottom line.

To evaluate company specific risk premium, professional appraisers from Highlang Global LLC (2004) suggest selecting those factors that have the greatest impact on the level of company specific risk among all and including only these factors in the calculation of company specific risk premium. Moreover, all factors in their opinion should weigh the same, since there is no methodology that determines exactly the degree of influence of each factor.

Butler and Pinkerton (2006) propose a method of company specific risk premium for public companies that differs from other methods based on factor analysis. The main idea is as follows: total market beta includes the specific risk premium and can be calculated from it. Erasmus *et al.* (2012) point out that when valuing private companies, an appraiser takes into account the specific risk of the company by adjusting the cost of capital and future cash flows. Shepeleva (2015) offers a new methodology for calculating a company specific risk premium on emerging markets. Okulov (2017) develops a new method for valuing company specific risk based on the theory of decision-making under uncertainty.

In spite of plenty of literature, there is an obvious fact that the issue of company specific risk premium calculation for agricultural companies is not highlighted enough. Company specific risk is an essential component of a discount rate calculation in agricultural business valuation for investment purposes, which affects the result of business valuation highly.

There are generally accepted methodologies for calculation of expected investment return, adjusting the expected investment return, measuring all of the components of investment risk. In fact, company specific risk is the one input for discount rate calculation that has no certain, accepted by all the professional appraisers, methodology. Its calculation depends on an opinion of a professional valuation analyst only.

Specific risks exist regardless of the level of the investment diversification. The reasons are capital market imperfection and information risk due to incomplete access to information. Thus, there is an obvious need to search for a methodology, which has a maximum possible share of objectivity. The objective of the article is to determine which method of company specific risk premium calculation for agricultural companies gives the most correct result in the process of a business valuation.

3. Data and methodology

The study is conducted based on data from Costa Group Holdings Limited (CGC), which is Australia's largest horticultural company, officially listed on the Australian Securities Exchange. All the conclusions, concerning the determination of SCRP factors, their ranges are made on the basis of the financial statements (2014-2019) from the company's official website (Costa Group Holdings Limited, 2019). Risk free rate of return (for Australia) is obtained from Trading Economics (2019). For Industry beta (Farming/Agriculture) we use data from Aswath Damodaran (2019). The cash flow forecast is based on the simple average value of the operating cash flow over the past 5 years (2014-2018) with a 5% annual growth rate.

In this article, we use the following methodology to achieve our purpose:

- Factor analysis, which, helps to identify what components this risk is and what it represents. Most business valuation professionals use factor analysis to determine SCRP. Thus, the selection of factors that have a significant impact on the value of the Specific Company Risk Premium is also a difficult task;
- Based on the analysis of the five main methods for calculating SCRP (Highlang Global LLC, Mercer's approach, Trugman's factors, Black and Green method, Deloitte & Touche LLP's methodology) we select five significant factors, presented in all of these methods, that have the greatest impact on the SCRP: competition; company management; dependence on key employers; financial stability of business; location of business;
- We use five most common approaches of company specific risk calculation to determine the correct approach for agricultural business valuation: Mercer's approach (Mercer, 1989), Trugman's factors (Trugman, 2002), The Black/Green Factors (Meinhart, 2008), Highland Global LLC's approach, Deloitte & Touche LLP's methodology (Shepeleva and Nikitushkina, 2016). These approaches are applied to Costa Group Holdings Limited (CGC);
- Next, we calculate the discount rate for the company Costa group holdings limited. The calculation is performed using the Build-up method modified;
- Further, we calculate the value of one share of the company Costa Group Holdings Limited, listed on Australian Securities Exchange, using income approach, discounted cash flow method;
- We compare company values and values of one share, obtained using different company specific risk premiums.

4. Main findings

Company specific risk is a part of total risk, which is specific for a given security and a component that makes it unique. Company specific risk premium is a quantitative expression of this specific risk, added to discount rate in calculating the cost of equity. Company specific risk premium calculation is a difficult task, as there is no single methodology recognized by the valuation professionals and set out in the legislation or valuation standards. At the same time, the scientific literature describes several methods of its calculation, the result of which, of course, contains a lot of subjectivity, since most methods are based on the opinion of an expert or analyst of the company.

"The reason for using multiple models is simple – there is no single universally accepted methodology for estimating the equity risk premium, and relying on any single model can be problematic" (Duff and Phelps, 2013, p. 103). "Use of fundamental accounting measures of risk allows for direct assessment of the riskiness of the subject company. For example, if the appropriate risk premium for the subject company when measuring risk by one or more fundamental risk measures is different than the risk premium based on size measures, this difference may be an indication of the "company-specific" differences of the subject company's fundamental risk and the average fundamental risk of companies that make up the portfolios from which the risk premia are derived" (Duff and Phelps, 2013, p. 79).

We completely agree with Highlang Global LLC valuation specialists that a factor analysis would seem the likely choice in supporting the appraiser's selection of a specific company risk premium.

"Firstly, there is no database from which to draw statistics regarding the specific company risk premium used in various valuations. Secondly, attempting to create a model would require a great deal of historic data for each company in order to perform a regression analysis. Since there is not enough historic data for a privately held company to perform a regression, creating a model may not be possible or appropriate. Therefore, factor analysis would be the logical choice in assisting the appraiser in developing an appropriate specific company risk premium" (Highlang Global LLC, 2004, pp. 4-5).

4.1. Selection of factors for the analysis

Most business valuation professionals use factor analysis to determine SCRP. Thus, the selection of factors that have a significant impact on the value of the Specific Company Risk Premium is also a difficult task.

"The first step in developing factor analysis is to determine appropriate factors that impact the specific company risk premium. For simplicity, we believe that only the most influential factors that may be quantified should be included in factor analysis" (Highlang Global LLC, 2004, p. 5).

Highlang Global LLC (2004) valuation specialists emphasize on factors that affect company performance most: business risk, operational risk, market risk, economic risk, industry risk, revenue growth, competition, diversification, employee relation. Other authors consider different factors for SCRP calculation. Mercer's (1989) approach suggests the following factors: key figures and company management, size of company, financial structure, product/geographical diversification, customer diversification, earnings: margins and historical predictability, other specific factors.

Trugman's (2002) factors are economic conditions, location of business, depth of management, barriers to entry into market, industry conditions, competition, quality of management, the bottom line. Black and Green (1994) propose such factors as competition, financial strength, management ability and depth, profitability and stability of earnings, national economic effects, and local economic effects. Shepeleva and Nikitushkina's (2016) factors are price level; dependence on key employees; corporate governance; dependence on key consumers; dependence on key suppliers; availability of business development prospects; state of fixed assets; financial condition of the business and the possibility of raising funds to finance capital investments.

Based on the analysis of five main methods for calculating SCRP (Highlang Global LLC, Mercer's approach, Trugman's factors, Black and Green method, Deloitte & Touche LLP's methodology), we select five main factors present in all of these methods that have the greatest impact on the SCRP: competition, company management, dependence on key employers, financial stability of business, and location of business.

4.2. Assessment of the selected factors

We agree with the opinion of the practicing appraisers from Highland Global LLC (2004) that the overall range of a company-specific risk premium is in the range of 0 to 10%. But how to evaluate each factor properly and account it for the total amount of CSRP? Do all the factors have to weigh the same, since it is extremely difficult to determine the impact of each factor accurately and it will still have a probabilistic nature? Should they weigh differently and at the discretion of an appraiser, who examines the company documents in detail, its financial status, historical data, plans and projects for the future?

Highland Global LLC's appraisers affirm that "the factors should be equally weighed as there is no method to quantify which factors would have a greater impact or to justify any other weighing scheme" (Highlang Global LLC, 2004, p. 5). Mercer's (1989) approach estimates each

factor from 0 to 5 %. There are other methodologies of factor analysis, for instance: Meinhart (2008) describes all the procedures for SCRP determination in details.

"These three CSRP measurement procedures are often called: the plus/minus procedure, the number procedure, and the listing procedure. All three of these procedures start with listing the relevant CSRP factors selected by the valuation analyst" (Meinhart, 2008, p. 23). These procedures are applied to Trugman's and the Black/Green's methodologies in our research.

4.3. Applying the selected methodology

We use five most common approaches of company specific risk calculation to determine the correct approach for agricultural business valuation (Mercer's approach, Trugman's factors, the Black/Green Factors, Highland Global LLC's approach, Deloitte & Touche LLP's methodology). These approaches are applied to Costa Group Holdings Limited (CGC), which is Australia's largest horticultural company, officially listed on the Australian Securities Exchange.

We analyze the data and apply Mercer's approach for company specific risk premium calculation of Costa Group Holdings Limited (see Table 1).

Table 1. Company specific risk premium calculation for Costa Group Holdings Limited (Mercer's approach)

Factor	Range	Evaluation
Key figures and company management	0%-5%	1 %
Size of company	0%-5%	0 %
Financial structure	0%-5%	1 %
Product/geographical diversification	0%-5%	2 %
Customer diversification	0%-5%	1 %
Earnings: margins and historical predictability	0%-5%	1 %
Other specific factors	0%-5%	0 %
Total		6 %

Source: Compiled by authors, based on Mercer (1989)

We analyze the data and apply Trugman's factors for company specific risk premium calculation of Costa Group Holdings Limited (see Table 2).

Table 2. Company specific risk premium calculation for Costa Group Holdings Limited (Trugman's factors)

Factors	Plus/Minus Procedure	Numeric Procedure	Listing Procedure
Economic conditions	+	1 %	x
Location of business	+	1 %	x
Depth of management	+	1 %	x
Barriers to entry into market	+	1 %	x
Industry conditions			
Competition	+	1 %	x
Quality of management	+	1 %	x
The bottom line			
Total selected CSRP percent		6 %	

Source: Compiled by authors, based on Meinhart (2008)

"A company-specific assessment of all of these factors is relevant to the CSRP selection process. Further, as with all of the lists of CSRP factors, the ad valorem tax valuation analyst has to ultimately rely on informed judgment and professional experience to select a specific CSRP measurement" (Meinhart, 2008, p. 23).

We analyze the data and apply Deloitte & Touche LLP's methodology for company specific risk premium calculation of Costa Group Holdings Limited (see Table 3).

Table 3. Company specific risk premium calculation for Costa Group Holdings Limited (Deloitte & Touche LLP's methodology)

Risk factor	Risk degree range			Result
	Low	Medium	High	
Competition	1	2	3	2
Company management	1	2	3	1
Dependence on key employers	1	2	3	1
Financial stability of business	1	2	3	1
Location of business	1	2	3	1
A. Total amount:				6
B. Calculated risk (B=A/5):				1.2

Source: Compiled by authors, based on Shepeleva and Nikitushkina (2016)

After calculating the CSRP coefficient, we determine the magnitude of CSRP, according to the Table 4.

Table 4. Premium ranges for company specific risk premium (Deloitte & Touche LLP's methodology)

Risk degree	Calculated value	Company specific risk premium size
Low	> = 1 but < 1.5	0 - 2%
Below average	> = 1.5 but < 2.0	3 - 4%
Average	> = 2 but < 2.5	5 - 6%
Above average	> = 2.5 but < 3.0	7 - 8%
High	> = 3.0	9 - 10%

Source: Compiled by authors, based on Shepeleva and Nikitushkina (2016)

We analyze the data and applyHighland Global LLC's methodology for company specific risk premium calculation of Costa Group Holdings Limited (see Table 5).

Table 5. Company specific risk premium calculation for Costa Group Holdings Limited (Highland Global LLC's methodology)

Factors	Range	Evaluation
Business Risk	0%-10%	0 %
Operational Risk	0%-10%	0 %
Financial Risk	0%-10%	0 %
Market Risk	0%-10%	0 %
Economic Risk	0%-10%	2 %
Industry Risk	0%-10%	0 %
Profitability	0%-10%	2 %
Revenue	0%-10%	0 %
Growth	0%-10%	0 %
Management/Corporate Governance	0%-10%	2 %
Competition	0%-10%	2 %
Customer Concentration	0%-10%	2 %
Diversification	0%-10%	0 %
Employee Relations	0%-10%	0 %
Total		10%

Source: Compiled by authors, based on Highlang Global LLC (2004)

Each factor (in Highlang Global LLC's methodology) "was rated from zero to ten with zero having no impact on the risk premium and ten having the highest impact upon the risk premium. With this approach, though it is unlikely, a firm could theoretically have no specific company risk premium based on the factor analysis indicating a highly stable, low risk profile firm. On the other hand, a firm could have a specific company risk premium of ten, which added to the risk-free rate, the equity risk premium, and the small company size premium may result in a cost of equity or discount rate in excess of 35%" (Highlang Global LLC, 2004, p. 5).

We analyze the data and apply The Black/Green Factors for company specific risk premium calculation of Costa Group Holdings Limited (see Table 6).

Table 6. Company specific risk premium calculation for Costa Group Holdings Limited (The Black/Green Factors)

Factors	Plus/Minus Procedure	Numeric Procedure	Listing Procedure
competition	+	1 %	x
financial strength	+	1 %	x
management ability and depth	+	1 %	x
profitability and stability of earnings	+	1 %	x
national economic effects	+	1 %	x
local economic effects	+	1 %	x
Total		6 %	

Source: Compiled by authors, based on Meinhart (2008)

Further, we calculate the value of one share of the company Costa Group Holdings Limited, listed on Australian Securities Exchange.This calculation verifies the correctness of the selected company specific risk premium methodology for agricultural business valuation. We calculate the discount rate for the company Costa group holdings limited (see Table 7). The calculation is performed using the Build-up method modified.Business valuation of CostaGroup Holdings Limitedis carried out based on the financial statements for the previous years 2014-2018, presented on the official website of the company (Costa Group Holdings Limited, 2019).Thus, Tables 7, 8 and 9 represent the initial data for calculating the value of the company and one share of Costa Group Holdings Limited, listed on Australian Securities Exchange.

Table 7. Costa group holdings limited discount rate calculation (Build-up method modified)

Formula	**Rf+EPR*β+CSP+SCRP**		
	Meaning	Number	Source
Rf	Risk free rate of return (Australia, 2019)	1.06	Trading Economics (2019)
ERP	Equity risk premium (Australia, 2019)	5.0	Fenebris (2019)
β	Industry beta (Farming/Agriculture)	0.72	Aswath Damodaran (2019)
CSP	Company size premium	0	Used in the valuation of small companies
SCRP	Specific company risk premium	1.2	Calculated using Deloitte & Touche LLP company specific risk assessment methodology (Shepeleva and Nikitushkina, 2016)
1.06+5.00*0.72+0+1.2=5.86			

Source: Compiled by authors

Table 8. Costa group holdings limited cash flows, fact 2014-2018 years

Year	2014	2015	2016	2017	2018
Cash flows from operating activity, th. AUD*	39,341.00	27,976.00	62,777.00	89,076.00	104,202.00

Note: *th. AUD- thousand, Australian dollars

Source: Compiled by authors

Table 9. Costa group holdings limited cash flows, prognosis 2014-2018 years*

Year	2019	2020	2021	2022	2023
Prognosis of cash flows from operating activity, th. AUD	53,900.00	56,595.00	59,425.00	62,396.00	65,516.00

Note: *The cash flow forecast is based on the simple average value of the operating cash flow over the past 5 years (2014-2018) with a 5% annual growth rate.

Source: Compiled by authors, based on Costa Group Holdings Limited (2019)

Further, we calculate the company value of Costa Group Holdings Limited using an income approach, discounted cash flow method (see Table 10) at a discount rate - 6.00%.

Table 10. Calculation of a share value for Costa group holdings limited*

Operating cash flows, prognosis, (th.,AUD)	53,900.00	56,595.00	59,425.00	62,396.00	65,516.00	Post-forecast period
	0.50	1.50	2.50	3.50	4.50	
Years	1.00	2.00	3.00	4.00	5.00	
Cash flows, (th.,AUD)	56,351.34	59,169.14	62,127.39	65,233.92	65,516.00	
Discount rate	6%	6%	6%	6%	6%	6%
Present value	0.9712	0.9163	0.8644	0.8155	0.7693	0.7472
Net present value, (th.,AUD)	54,733.26	54,217.12	53,705.46	53,198.93	50,404.69	266,259.47
Reversion value, (th.,AUD)						1,091,933.33
Company value, (th., AUD)						**1,082,215.58**
Shares outstanding						**400,791,811**
Share value, (th., AUD)						**2.70**

Note:* valuation date- December, 4, 2019

Source: Compiled by authors, based on Costa Group Holdings Limited (2019)

Costa Group Holdings Limited value calculations using income approach, discounted cash flow method at discount rates: 11.00% and 15.00 %, obtained with the use of other CSRP (see Tables1-6) are carried out similarly to Table 10.

In Table 11, we can compare company values and values of one share, obtained using different company specific risk premiums.

The data obtained as a result of calculations indicate that the correct methodology of company specific risk premium calculation for agricultural business valuation is Deloitte & Touche LLP's company specific risk assessment methodology. We come to this conclusion since the value of one share of Costa group holdings limited, obtained as a result of our calculations (2.70 AUD) is close to its current quotation on Australian Securities Exchange (2.48 AUD). Compared with the recent researches, the main contributions of the paper are summarized as follows: the correct methodology for calculation of Company Specific Risk Premium in agricultural business valuation for investment purposes is justified and proved by calculations.

Table 11. Costa group holdings limited CSRP, calculated by different methods and their impact on the value of one share*

	CSRP (Mercer's approach)	CSRP (Trugman's factors)	CSRP (Black/Green Factors)	CSRP (Highland Global LLC's approach)	CSRP (Deloitte & Touche LLP's methodology)
	6 %	6%	6%	10%	1.2%
Discount rate, calculated with this SCRP	11 %	11 %	11 %	15 %	6%
Company value, calculated with this SCRP, thousand AUD	591,638	591,638	591,638	436,416	1,082,216
Share value, calculated with this SCRP, AUD	1.48	1.48	1.48	1.09	**2.70**
Last quotations on valuation date* (Australian Securities Exchange) , AUD					**2.48**

Note: *valuation date- December, 4, 2019

Source: Compiled by authors

5. Conclusion

Company specific risk is an essential component of a discount rate calculation in agricultural business valuation for investment purposes, which affects the result of business valuation highly. There are generally accepted methodologies for calculation of expected investment return, adjusting the expected investment return, measuring all of the components of investment risk. In fact, company specific risk is the only input for discount rate calculation that has no certain, accepted by all the professional appraisers, methodology. Its calculation depends on the opinion of a professional valuation analyst only.

Specific risks exist regardless of the level of investment diversification. The reasons are capital market imperfection and information risk due to incomplete access to information. Thus, there is an obvious need to search for a methodology that has a maximum possible share of objectivity. Given research reveals that the main factors that have the greatest impact on the SCRP are competition, company management, dependence on key employers, financial stability of business, location of business. We consider the influence of other factors insignificant and difficult to determine.

Our calculations confirm that the correct methodology of company specific risk premium calculation for agricultural business valuation is Deloitte & Touche LLP's company specific risk assessment methodology. It is because the value of one share of Costa group holdings limited, obtained as a result of our calculations is close to its current quotation on Australian Securities Exchange. Further research in this field should be targeted at the development and approbation of alternative methodologies for specific company risk premium calculation.

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