The capital asset pricing model and beta finance essay

Finance

The purpose of this study is to analyse the use of enterprise discounted cash flow to value Henkel AG. Henkel is a successful company as observed from its A- in 2009 rating by standard and poor. The ability to use enterprise discounted cash flow to value a company depends on certain calculation. The sections of this study will take a closer look on the various tools, theories and key principles. The section, company assessment will briefly highlight cost of equity, risk free rate, beta, and CAPM, as decision to the process. The study will also look at the Henkel financial issue as in coast of debt, bond rating, maturity, and WACC. Theories are used to support decisions and the annual report is used to get valuable information about Henkel's financial statement. The calculations employed and the determined variables will enable the way forward in using the enterprise discounted cash flow to value a company. It should be noted that the rating of Henkel by standard and poor has increased from A- to A in 2013. Table of Contents

Introduction

Henkel A. G. is a successful company with a leading brands and technology in three business areas; Laundry and Home care, Beauty care and adhesive technologies. The company wants to leverage the full potential in their product categories in order to gain shares and thus to outperform their competitors and expand in emerging market. The following sections of the study, the company assessment will be discussed with emphasis on cost of equity, cost of capital, risk free rate, market rate, beta, capital asset pricing model (CAPM) and the treasury rate at which maturity is most appropriate to use in valuing the company. The company corporate beta (unlevered and lever) will be determined. The study will examine the company financial

issues i. e. capital structure, marginal tax, cost of debt that Henkel is using to assess its businesses

2. 0 Company assessment

2. 1 The cost of equity

This is the rate of return required by a shareholder and is calculated in two different ways either by dividend valuation model or by capital asset pricing model. In order to calculate the cost of equity, the components risk free rate, market rate and beta must be determined.

Risk free rate.

The risk free rate is defined as the return on a portfolio or security that has no covariance with the market (represented by CAPM beta of 0). Is a highly used method for estimating the cost of equity capital. To estimate the risk free rate it's important to consider government default-risk free bonds since government bonds come in many maturities. The risk free rate reflects three components; the rental rate, inflation, and maturity risk or investment rate risk which are all economic factors that are found in the yield to maturity for any given maturity length.

Market rate of return.

This is the minimum return required by investors at every level of investment risk. Instead of using the return from the market most economists prefer to use the equity risk premium which is the difference between the return from the market return and the risk free rate of return.

Beta

Peter M., Robert P. & David K. (2011) define beta as a measure of systematic risk that is directly related to the risk of the market. Gordon N. A. & Anthony Q. P. (2011), also claim that the parameter beta is used in finance in the form of the market model to estimate systematic risk. Beta is defined as the covariance of the returns of the market and has been used by many practitioners for estimating the cost of capital and determining risk and valuation models, among other things, as argued by Gordon N. A. & Anthony Q. P. (2011). Eugene F. (1994) argued that a stock's beta is a measure of the stock's market risk and also measures the extent to which the stock's returns move relative to the market. Pettengill et al. (1995) summarised a conditional relationship between beta and realised returns by separating periods of positive and negative market excess return and found a significant positive relationship between beta and realized returns when market access return are positive and a significant negative relationship between beta and realized returns when market access returns are negative. To calculate cost of capital that most companies use in investment appraisal, the WACC is used but however WACC is only applicable when companies undertaking project that are similar to their activities. When a company decides to diversify i. e. operate in a business which is different from its current operation, the CAPM must be used before calculating WACC. This is in order to remove the financial risk of a company whose beta will be considered. In considering Henkel A. G. on which maturity and treasury rate is appropriate to value it company. Looking at yield to maturity for US and German treasury rate, the rate 3. 38 and maturity 10years is appropriate. The reason being

that when valuing European companies is important to consider 10years German bond since German bond have higher liquidity and lower credit risk than bond of other European countries. Furthermore the bond yield is in same currency as Henkel's cash flow. Is worth to note that as of 2009 10years US treasury bonds were trading at 3. 9 per cent and the German zero coupon bond were trading at 3. 38 per cent.

Capital Asset Pricing Model (CAPM) and Beta

Capital asset pricing model is an instrument used in measuring relative risk. The approach to CAPM is the adoption of portfolio theory by investors. The idea behind portfolio theory is that an investor may reduce risk with no impact on return as a result of holding a mix of investment. This theory introduces two types of risk associated with a company, systematic and unsystematic risk.

Company proxy betas

In order to find a project specific discount rate using CAPM, It is important first to obtain the information on the companies with business operations similar to those of the propose investment project. These companies are referred to as proxy companies. Since their equity betas will represent the business risk of the proxy company's business operations, they are referred to as proxy equity betas which represent the business risk of the proposed investment project.

Business risk and Financial risk.

The systematic risk represented by equity beta has both business and financial risk. Josee' St-Pierre and Moujib Bahri, (2006) argued that, the

business risk factor is linked to the level of the fixed exploitation costs while the financial risk factor is linked to the coverage of the interests, the capacity for indebtedness, and the composition of the debt. Josee' St-Pierre and Moujib Bahri (2006) extended their argument that, financial risk is related mainly to the capital structure, to the identity and origin of the financial partners, to the financing contracts and to the capacity of reinvestment by the current debt. In order to start calculating the project specific discount rate, it is important to remove the effect of the financial risk (gearing) from each of the proxy equity betas so as to get the asset betas which will reflect the business risk alone. The debt beta is considered zero due to the assumption that the debt beta is usually very small when compared with equity beta and the tax efficiency of debt that further reduces the weighting of the debt beta leaving asset beta. Since this procedure removes the effect of the financial risk or gearing of the proxy company from the proxy beta it is always referred to as ungearing the equity beta.

Averaging asset betas

Ungearing equity beta of proxy companies it is observed that the resulting asset beta value will be slightly different values. This is because two proxy companies cannot have the same business risk. In order to remove the effect of the slight differences in business operations and business risk that are reflected in the asset betas, we average the betas.

Bloomberg adjusted beta

The Bloomberg adjusted beta according to Domantas Skardziukas (2011), involves multiplying beta by one third and adding two third so that the beta that is obtained is forward looking. Stock betas can be presented as either an adjusted beta or as a raw beta. Adjusted beta initially derived from historical data but modified by assumption that a security's true beta will move toward the market average of 1 over time. Adjusted beta has higher correlation than calculated beta and lower correlation than beta equals 1. For an investor to invest in stocks it is important to understand how risky the stock is in the market. Beta determines how risky the stock is in the market and gives the market risk of other stocks such that it's easy to compare. The standard value 1 of beta acts as a reference point for the investors to decide whether to invest in a portfolio or not. The beta value that is more than 1 means the stock price is moving in the same direction as the market. Beta relates to the market in various ways, a negative beta (gold and gold stock) this can be explained that the stock does better only when the stock market moves down. Furthermore when beta is zero and there is no inflation, the money value is the same (unchanged). Beta between 0 and 1 indicates that the risk is below the market (Most utility companies fall within this range). When beta is more than 1, the risk is greater than the whole market. Being aware of the various risk associated with stock market, investors can choose on what stock to invest in. Some investors prefer stock with less risk while others prefer those with higher risk. However investors now understand and are able to make decision on which investment will match the risk they are comfortable with. Investors should note that beta values for stock volatility in

2009 should not be used to predict or forecast the beta for 2010 because of its instability. Another point of concern is that beta only measures systematic risk, i. e. the risk the whole market is facing but not the risk the company is facing. To determine Henkel corporate beta using the Excel as shown in the table at last page, it show that the corporate beta for Henkel is 0. 64 this value is less than 1 indicating that the risk is less than the market. If we consider the unlevered beta across the companies doing the same business with Henkel and compare, it is observed that Henkel is doing better than other company like Oriflame with a beta of 1. 24 indicating that its risk is greater than the market as a whole since it show highest sensitivity to market movement. If we also compare companies that are using the same currency as Henkel, we still can conclude that Henkel is performing well because its sensitivity to market movement is closer to 1. When looking at the individual companies, Svenska Cellulosa AB (62. 7%) and Beiersdorf (- 15. 1%) are the highest and the least debt to equity ratio that is adjusted for risk. In the subsectors beta values (i. e. Laundry & Home care, Cosmetics & Toiletries and Adhesive) it can be noted that Clorox company (beta= 0. 34) and Estee Lauder (0. 86) show the least and the most market movement. Taking a critical look at the beta values, the beta value of Henkel is the same as the average beta this indicate how better Henkel is performing or relates with the market. In conclusion is worth noting that the company performance is influence by the currency and the market situation at that time. However if all these companies are subjected to just one currency in the same market situation the result will differ.

Henkel Financial issues

4. 1 Cost of debt

The cost of debt according to the financial times definition is actual rate companies pays on currents loans, bonds and other form of debt. Almost all firms use debt to finance their business operations despite the cost charged for each type of debt. Most firms will want to borrow low since there is no risk to debt as bondholders have enough asset cover. Terek S. Z. (2010) argued that a company without debt mean that company is able to grow and add more business that will generate surplus cash. When borrowing rises, the risk increases proportionately on bondholders in paying debt interest and the asset cover. Terek S. Z. (2010) further claim that high debt level may restrict firm's ability to payment of dividend since more cash shall be required to pay debt.

Traditional view (trade off theory)

Robert S. & Steve J. (2011) argued that the trade-off theory provides an explanation of the benefit of cautious use of debt and the dangers of excessive use of debt. This theory makes use of both the substitution and financial risk effects to give an explanation of how debt and cost of equity relates. Robert S. & Steve J.(2011) summarises this view in two ways, first they claim that interest expense is tax deductible therefore as firm uses more debt the more they create wealth through lower tax payment (tax shield). But as firm add more and more debt, the tax payment become large adding value to the firm to the point where it begin to be financially distress by trying to meet interest payment obligations. Secondly, they went further by saying that as firm begins to add debt to its capital structure, WACC falls

because the firm is using cheaper form of financing however the WACC will start to rise as creditors and shareholders begin requiring ever-increasing return as risk goes up Robert S. & Steve J. (2011). Hence the traditional trade off theory results in a level of borrowing that is aimed at minimising WACC and Maximising the company value. Sisira R. N. C. (2007) argued that, the static trade-off theory of capital structure emphasises the balance between the tax shield benefits resulting from interest payment and the bankruptcy cost of debt. This trade-off theory was developed by Modigliani and miller to illustrate that debt is use full because interest is tax deductible and that debt brings with it cost associated with actual bankruptcy, argued by Eugene F. Brigham (1994).

Modigliani And Miller Theory (M&M)

The M&M proposition 1 suggest that the value of the firm will be the same irrespective of its capital structure because changes in capital structure will not change the total value of the claims that debt holders and shareholders have on cash flow. M&M went forward to suggest another model, M&M proposition 11 where they introduced tax to find the impact. They suggested that, the use of debt in a firm involves both benefit and cost. At very low level of debt the benefit is more than the cost and when there is an increased use of debt the WACC of the firm reduces. Sisira R. N. C. (2007) argued that tax issues and interest rates are theoretically important not only in determining the amount of the debt, but also in terms of broader financing decision. At some point, as the amount of debt in a firm increases the cost outweigh the benefit. But when the cost equals benefit the WACC is minimised. In summary the most important benefit of including debt in a firm

is that firm can deduct interest payment for tax. Hence firm value can increased by leverage since interest payments are tax deductible.

4. 2 Bond Rate

The credit rating agencies like the standard and poor (S&P), Moody's, and the Fitch assign rating to bonds. This rating reflects their chances of being default. Martin O'Donovan (2004) argued that, the ratings of company may affect the capital requirements of the bank's lending to that company and in extreme cases a downgrade can be the final trigger that puts a borrower into default. The highest grade bond Aaa or (AAA) are those with least default risk. The risk premium on bonds will increase if the rating becomes lower. Bonds rated from A grade to triple B grade (A to BBB) are strong enough and are called investment grade while those rates below BBB are non-investment grade and they have the highest risk of default. Down-grading a firm bond affect its ability to borrow long-term capital. Martin O'Donovan (2004) claim that credit rating agencies play an important role in the efficient operation of global capital markets since investors and lenders rely on the credit rating agencies to provide an opinion of the creditworthiness of debt issuers and borrowers. Yongtae K. (2003) also argued that bond downgrades are associated with significant declines in the stock prices of the affected firms.

Maturity Date

The date at which the bond expires or matures is known as the maturity date. It is noted that bonds have different maturity period which might be classed as short term or long term maturity period. The duration of the bond is determine by its date of maturity either is less than 5 years for short term

bonds or above for long term bonds. But as year pass by, the maturity declines. Some bonds have provision which allows the issuer to pay them off prior to maturity date. Leonard Tchuindjo (2008), claim that as a result of a decline in credit quality of an issuer or an expectation of a major change in business condition (such as an interest rate change by central bank), the yield to maturity of a bond can increase consistently from one day to another. For Henkel, the maturity period that is most appropriate to valuing the company is 10 years and the bond rate is 4. 63 The explanation is that Henkel is rated A- by the rating agency standard and poor (S&P) but this rating is not found in the European rating system therefore the rating is got by a careful interpolation between reported portfolios in the European rating system. An interpolation between nearest rating within the European rating system gives the correspond value of 4. 63 that fall under a 10 years maturity period. Note that this value 4. 63 is the before tax cost of debt and has not much influence because tax has not yet been applied. Henkel A-rating indicates that it has a lowest default risk and classified under investment grade. Recent reporting from Henkel's website shows that the rating has moved from A- to A showing an improvement and a likely wood that most investor and firm will want to do business with Henkel. These also indicate that Henkel has gain trustworthiness from lenders which it can use to borrow or buy more bonds to expand its business. It is important to note that 10 years German Eurobond is preferred when one is to value a European company since German bonds have higher liquidity and lower credit risk than those of the rest of European countries. To determine the marginal tax rate we equate the earnings before tax to the taxes on income

and express it as a percentage as illustrated below[Taxes on income/Earnings before tax] x 100257/886 x 100 = 29% this is the marginal tax rate on income for the year 2009. Therefore we apply the cost of debt as follows; After tax cost of debt (kd) = pre-tax cost of debt x percentage of tax rateKd = I (1-T)Kd = 4. 63 (1- 29)

Kd = 3. 28 %

This value implies that tax has a significant impact on the bond rate because the bond rate has been reduced from 4. 63 to 3. 28 due to the application of tax. This was justified by the Modigliani and miller theory of 1963 where the impact of tax had an effect on the cost of debt and the WACC as a whole. To complete the cost of capital using the year end capital structure, we first calculate the cost of equity using the formula below. Ke = Rf + beta (Rm-Rf) but the market risk premium is given as 5% and beta is 0. 64, risk free rate 3. 38. Hence the cost of equity is therefore; Ke = 3. 38 + 0. 64(5)

Ke = 6. 58.

But the value of equity for Henkel is 13445. 2 and the value of debt is 3797. 0. Therefore we can now calculate the weighted average cost of capital as shown below, WACC = ke[ve/ve+vd] + kd (1 – T) [vd/ve+vd]WACC = 6. 58 [13445. 2/13445. 2+3797. 0] + 3. 28 [3797. 0/13445. 2+3797. 0]WACC = 6. 58[0. 779) + 3. 28 [0. 220]WACC = 5. 13 + 0. 72

WACC = 5. 85

If we have to consider the cost of capital without weighting, it will be the sum of the cost of equity (ke) and the cost of debt (kd) as illustrated below, Add (ke + kd) = 6. 58 + 3. 28 = 9. 85. This is higher than the WACC 5. 85.

Conclusion.

The purpose of this study is to discuss how to value Henkel AG using enterprise discounted cash flow. The important limitation to this study is by using only 2009 Henkel's financial information. This study encountered some problem scenario most importantly, the rating system of the US was used and some rates are not found within the European rating system. The solution to this was a careful interpolation within reported portfolios in the European rating system. A brief analysis was made on certain principles; risk free rate, market return, beta, an idea on Bloomberg adjusted beta, cost of capital, cost of equity and cost of debt, WACC, CAPM, bond rating and maturity date. Some theories we employed in specific areas, the Modigliani and miller and the trade-off theory. The study suggests that there is clear evidence that tax has an effect on bond rate and WACC which confirms the theory of Modigliani and miller 1963.

Recommendation

This study gives a brief analysis on how to value Henkel using enterprise discounted cash flow. In order for the company to prevent financial risk, the cost of capital should be review to ensure that it reflect the unstable condition of the market. They should practice hedging of rates to avoid future fluctuation in exchange rate.