

# STRATEGIC CORPORATE FINANCE

## PROFESSIONAL 2 EXAMINATION - AUGUST 2017

### NOTES:

**Section A** - Answer Question 1; and

**Section B** - Answer **any two** from Questions 2,3 and 4.

Should you provide answers to more questions than required in Section B, you must draw a clearly distinguishable line through the answer not to be marked. Otherwise, only the first two answers provided will be marked.

### STRATEGIC CORPORATE FINANCE TABLES ARE PROVIDED

#### Time Allowed

3.5 hours plus **20 minutes** to read the paper.

#### Examination Format

This is an open book examination. Hard copy material may be consulted during this examination subject to the limitations advised on the Institute's website.

#### Reading Time

During the reading time you may write notes on the examination paper, but you may not commence writing in your answer booklet.

#### Marks

Marks for each question are shown. The pass mark required is 50% in total over the whole paper.

#### Answers

Start your answer to each question on a new page.

You are reminded to pay particular attention to your communication skills. Care must be taken regarding the format and literacy of your solutions. The marking system will take into account the content of your answers and the extent to which the answers are supported with relevant legislation, case law or examples, where appropriate.

#### Answer Booklets

List on the cover of each answer booklet, in the space provided, the number of each question attempted. Additional instructions are shown on the front cover of each answer booklet.

THE INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS IN IRELAND

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### CASE STUDY – R & J McGarvey Ltd.

Jocelyn McGarvey wraps her coat tightly around her as she emerges from the cosy restaurant in which she has just had lunch. There is a cold wind blowing even though it is summer 2017 in Fermanagh. Jocelyn has been in Enniskillen to finalise what she hopes will be a deal to double the size of her company, R & J McGarvey Ltd.

Jocelyn, along with her husband, Ralph, founded R & J McGarvey Ltd. as a chemist shop in Ballymacgreevey, County Donegal about 20 years ago. Ralph is a qualified Pharmacist and when Jocelyn and himself purchased the shop, he expected to spend his working life as a rural pharmacist there. Jocelyn, who has an eye for a good business deal, had other ideas. After a couple of years in business, the opportunity arose to take over the pharmacy in a neighbouring town, Ballyfisteen. The pharmacist in Ballyfisteen had died suddenly and his widow was keen to sell the pharmacy and return to her native Limerick. Ralph and Jocelyn found that running two pharmacies was well within their compass. Jocelyn then observed that large supermarkets or even pharmacy chains had little interest in serving rural Ireland. Noticing that people always required medicines and that pharmacies are also associated with selling cosmetics, Jocelyn and Ralph bought up additional pharmacies in Co. Donegal and the surrounding counties of Sligo, Leitrim and Cavan. In late summer of 2017, R & J McGarvey has a total of 20 pharmacies spread over the four counties mentioned above. There are just two directors, Ralph and Jocelyn and the share capital is owned jointly by them.

Jocelyn's companions over lunch in Enniskillen were Peter and Ann Wrigley, in addition to her husband, Ralph. Peter and Ann are the proprietors of Wrigleys Pharmacies, or more precisely, Wrigleys Ltd. Similar to Jocelyn and Ralph, the Wrigleys built up a chain of rural pharmacies in contiguous counties. However, in the Wrigley's case, the counties involved are Fermanagh, Derry and Tyrone. Peter and Ann wish to retire and have decided to sell their business which comprises 19 pharmacies. The meeting in Enniskillen was intended to establish if it would be possible to construct a mutually satisfactory deal that would see R & J McGarvey Ltd. acquire all of the pharmacies trading under the Wrigley banner in Northern Ireland.

Ralph soon joins Jocelyn outside and as they drive home to Donegal they discuss the conversation with the Wrigleys. Ralph and Jocelyn agree that they would like to buy the Wrigley's pharmacies. However, this transaction would double the size of their business and, consequently, both are cautious. The Wrigleys are looking for in the region of £10 to £13 million for their pharmacies. R & J McGarvey Ltd. has €3 million in cash and short-term investments, and Ralph and Jocelyn have another €1 million in savings. If they are to buy the pharmacies they will have to consider how to raise the remaining €7.76 to €11.3 million (a rate of £0.85 to €1 has been used in making this calculation). They have promised the Wrigleys to let them know within a week if they are interested in purchasing the pharmacies. After that date, the real negotiations would begin. The Wrigleys have given Jocelyn and Ralph the accounts of their business up to 30 June 2017, together with annual projections until 2021. These accounts and projections are outlined in Table 1.

The following day, Ralph and Jocelyn visit their accountant, Bernard O'Hanlon. The McGarveys discuss the projections with Bernard and they all conclude from their knowledge of the pharmacy business that the projections appear reasonable. Bernard reckons that he will need to estimate the cost of capital of Wrigley pharmacies in order to arrive at an estimate of the value of the business. A quick internet search soon establishes an estimate for the beta of Walgreens Boots Alliance (WBA), the parent company of Boots, the most prominent high street pharmacy chain in the UK, is approximately 1.2. Bernard knows that the market risk premium ( $R_m - R_f$ ) in the UK is in the order of 5.5%. He also establishes that WBA, a US company, has net debt of about \$10 million and an enterprise value (value of debt plus market value of equity) of \$100 million. WBA is certainly different to Wrigleys since it operates in markets other than the UK. That said, Bernard is happy enough to use the WBA beta as representing the risk of owning equity shares in a company, levered as WBA, operating chemist shops in the UK. Given the figures mentioned earlier, Bernard takes £13 million as a first estimate of the market value of equity of Wrigley Pharmacies Ltd.

Bernard establishes that the London Interbank Offered Rate (LIBOR) is 0.25% or one quarter of one per cent. Wrigley Pharmacies can borrow at 3.75% plus LIBOR, and LIBOR can be used as the risk-free rate. Bernard knows that neither the Wrigleys nor Ralph and Jocelyn could be considered well-diversified investors. He also establishes that the correlation between the return on WBA's shares and the return on the market is 0.7. The corporate tax rate in the UK is currently 19%, but the UK government has signalled that this will fall to 18% by 2020.

**Table 1:**  
**Wrigleys Pharmacies Accounts and Projections for the Years Ended 30 June**  
**Statement of Profit or Loss and Other Comprehensive Income £'000**

	<b>2017actual</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Sales	40,000	41,000	41,820	42,656	43,510
Operating Expenses	<u>38,000</u>	<u>38,760</u>	<u>39,535</u>	<u>40,326</u>	<u>41,132</u>
Operating Income	2,000	22,40	2,285	2,330	2377
Interest	300	280	357	352	345
PBT	<u>1,700</u>	<u>1,960</u>	<u>1,928</u>	<u>1,978</u>	<u>2,032</u>
Taxation	340	392	386	396	406
Net Profit After Tax	1,360	1,568	1,542	1,583	1,625
Dividends	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>
Addition to Equity	<u>360</u>	<u>568</u>	<u>542</u>	<u>583</u>	<u>625</u>

**Statement of Financial Position £ '000**

	<b>2017 Actual</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Fixed Assets	11,000	12,300	12,546	12,797	13,053
Net Current Assets	7,000	8,200	8,364	8,531	8,702
Operating Assets	18,000	20,500	20,910	21,328	21,755
Cash & Short Term Investments	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>
Net Assets	<u>19,000</u>	<u>21,500</u>	<u>21,910</u>	<u>22,328</u>	<u>22,755</u>
Shareholder's Equity	12,000	12,568	13,110	13,693	14,318
Debt	<u>7,000</u>	<u>8,932</u>	<u>8,800</u>	<u>8,635</u>	<u>8,437</u>
Total Financing	<u>19,000</u>	<u>21,500</u>	<u>21,910</u>	<u>22,328</u>	<u>22,755</u>

Bernard and the McGarveys agree that the long-run growth rate for pharmacies is in the order of 2%.

Having established the information necessary to estimate the worth of Wrigleys Pharmacies, Bernard turns his attention as to how R & J McGarvey might finance this purchase. He asks Ralph and Jocelyn to provide their most recent accounts to 31 July 2017 and to estimate projections for R & J McGarvey until 2021. The information that Ralph and Jocelyn provide is outlined in Table 2. They have used the same assumption for the terminal growth rate that the Wrigleys used in their projections. Bernard establishes that the risk free rate in Ireland is 0.15%. He also establishes that the market risk premium is 5.4% in Ireland. The corporate tax rate is 12.5%.

Table 2 contains the abridged financial reports for R & J McGarvey Ltd., as at 31 May 2017. Table 3 contains the projected free cash flows, for R & J McGarvey Ltd. as computed by Bernard.

**Table 2: Financial Report R & J McGarvey Ltd. 2017**  
**Statement of Profit or Loss and Other Comprehensive Income**

	<b>2017</b>
	<b>€'000</b>
Sales	53,000
Operating Expenses	49,000
Operating Income	4,000
Interest	300
PBT	3,700
Taxation	463
Net Profit After Tax	3,238
Dividends	1,000
Addition to Equity	<u>2,238</u>

**Statement of Financial Position**

	<b>2017</b>
	<b>€'000</b>
Fixed Assets	14,000
Net Current Assets	8,000
Operating Assets	22,000
Cash & Short Term Investments	3,000
Net Assets	<u>25,000</u>
Shareholder's Equity	22,000
Debt	3,000
Total Financing	<u>25,000</u>

**Table 3: R & J McGarvey Ltd. (as stand-alone Company) Projected Free Cash Flow**

	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
	<b>€'000</b>	<b>€'000</b>	<b>€'000</b>	<b>€'000</b>
Computation of Free Cash Flow				
Operating Income After Tax	2,797	2,852	2,905	2,958
ΔNOA	4,580	532	542	553
Free Cash Flow (OI - ΔNOA)	(1,783)	2,320	2,363	2,405
Cash Flow Statement				
Dividends	1,000	1,000	1,000	1,000
Increase (Reduction) in Cash	(2,900)	400	200	300
Reduction (Increase) in Debt	(3)	800	1,075	1,059
Interest on Debt	120	120	88	45
FCF	<u>(1,783)</u>	<u>2,320</u>	<u>2,363</u>	<u>2,404</u>

Bernard spends a few days analysing the accounts and projections and works out first how much borrowings would be required to fund the acquisition of Wrigleys pharmacies. He also mentions an alternative method of financing the acquisition by undertaking a flotation of R & J Garvey on the ESM (Enterprise Securities Market). He is assuming that Wrigleys Pharmacies would be a wholly owned subsidiary R & J McGarvey. Bernard estimates the free cash flow to R & J McGarvey with a view to valuing it for a potential flotation on the ESM of the Irish stock exchange.

A week passes, and the McGarveys visit Bernard on the day before the scheduled meeting with the Wrigleys. Bernard has lots to discuss with them but first he needs to tease out a few items that may help them decide whether or not to proceed with the purchase.

Bernard has noticed that the McGarveys have not suggested that they can improve Wrigleys Pharmacies in any way: there appears to be no obvious synergies. This is a source of concern to him. Another source of concern to Bernard is the fact the McGarveys will have all of their wealth tied up in the enlarged R & J McGarvey Ltd. after the acquisition of Wrigleys Pharmacies. As a counter measure, he suggests a floatation on the ESM as a possible method of extracting some of their wealth from the business. However, he cautions that there are also downsides to this approach. The McGarveys would have to reflect on what portion of their enlarged business they wished to sell. There is no correct or incorrect amount here – it is down to personal choice and what they would like to do with the proceeds. Bernard shows Ralph and Jocelyn his estimates of the value of both businesses. His final warning is “*You need to have a plan to do something different to the Wrigleys Pharmacies. “Unlike the other sole traders that you have bought up until now, the Wrigley’s operation is quite professional so if you pay what it’s worth you are simply going to get a zero NPV investment without some plan to improve things”.*

**Additional Information:**

You may assume that the beta of bank debt is 0.1.

**END OF CASE STUDY**

## SECTION A - Compulsory Question

1.

### REQUIREMENT:

- (a) What is the appropriate cost of capital of Wrigleys Pharmacies from the perspective of (i) a well-diversified shareholder and (ii) an undiversified shareholder?

Explain and justify your choice of the cost of capital for Wrigleys Pharmacies.

(20 marks)

- (b) Does the price range requested by the Wrigleys represent a reasonable estimate of the value of their pharmacies? Justify your answer.

(30 Marks)

**[Total: 50 Marks]**

## SECTION B – Answer only 2 questions

2.

### REQUIREMENT:

- (a) An Irish company taking over a business in the UK faces new challenges and risks. Outline and critically evaluate the challenges and risks faced by Jocelyn and Ralph should they decide to take over the pharmacies in Northern Ireland. Recommend solutions to these challenges and risks.

(13 Marks)

- (b) It is clear from the case study that Ralph and Jocelyn are not diversified investors. The Capital Asset Pricing Model (CAPM) which is used to estimate the cost of capital assumes that all investors are fully diversified.

Given the above and the CAPM's other assumptions, critically evaluate its use in estimating the cost of equity capital in order to value private businesses.

(12 Marks)

**[Total: 25 Marks]**

3.

### REQUIREMENT:

- (a) Make the simplifying assumption that the asset beta of R & J McGarvey Ltd. is the same as that of WBA (Boots) and Wrigleys Ltd. Determine the cost of capital for R & J McGarvey Ltd. from the perspective of a diversified shareholder.

(4 Marks)

- (b) Using the cost of capital from (a) estimate the value of the enlarged R & J McGarvey Ltd. assuming that it takes over Wrigleys Ltd. and lists on the ESM. Outline all additional assumptions you make.

(8 Marks)

- (c) Suggest and justify an amount that R & J McGarvey Ltd. might raise on the ESM if it decides on this course of action.

(8 marks)

- (d) It is noted in the case study that Bernard is concerned that Ralph and Jocelyn don't have any specific plans to develop Wrigleys Pharmacies. Suggest any possible benefits or potential sources of synergy or value that may stem from the acquisition of Wrigleys.

(5 Marks)

**[Total: 25 Marks]**

**4.**

**REQUIREMENT:**

- (a) Critically evaluate the advantages to Ralph, Jocelyn and R & J McGarvey Ltd. of listing on the Enterprise Securities Market (ESM). (9 Marks)
- (b) R & J McGarvey Ltd. will face a number of corporate governance and other challenges if it floats on the ESM. It will have to make a number of fundamental changes to the manner in which the business operates. Critically assess these challenges and suggest potential solutions to overcome them. (8 Marks)
- (c) An alternative to floating on the ESM would be for R & J McGarvey Ltd. to borrow the required funding. Critically evaluate this option, outlining its advantages and disadvantages. (8 Marks)
- Suggest alternatives to borrowing or obtaining an ESM quotation. (8 Marks)

**[Total: 25 Marks]**

**END OF PAPER**

## SUGGESTED SOLUTIONS

# THE INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS IN IRELAND STRATEGIC CORPORATE FINANCE

PROFESSIONAL 2 EXAMINATION - AUGUST 2017

R & J McGarvey

### SOLUTION 1

- (a) We need to estimate the weighted average cost of capital (WACC) for Wrigley pharmacies in order to get a DCF valuation. We will first estimate the cost of equity capital assuming shareholders are fully diversified. That is, we will use the CAPM to estimate the cost of equity.

We note that we need appropriate (market value) weights for the cost of debt and cost of equity to compute WACC. This presents a problem since Wrigley is not a quoted company. We can however take the Wrigley estimate of £13 million as their market value of equity since this is the only estimate available to us: it is also likely that the Wrigleys have not pulled this number out of thin air.

Thus for the weights we have

	£'000
Market Value of Equity	13,000
Value of Debt	7,000
Value of Company (Enterprise Value)	20,000
E/V	0.65
D/V	0.35

Next we need to use WBA (Boots) to compute the cost of unlevered equity for a retail pharmacy business. Remember WBA has leverage so we must remove leverage from its beta to and get its asset beta which will represent the business risk only. We will then have to use Wrigley's own D/E ratio to relever to get the beta for computing the cost of equity for Wrigley.

We note that the asset beta is

$$\beta_A = \beta_E \frac{E}{V} + \beta_D \frac{D}{V}$$

$\beta_A$  is the asset beta

$\beta_E$  is the equity beta

$\beta_D$  is the beta of debt.

D is the value of Debt

E is the value of Equity

V is the value of the firm

If we are in an MM world with no taxation.

If we bring in corporation tax we have  $\beta_A = \beta_E \frac{E}{V} + \beta_D \frac{D}{V}(1-T)$

In the zero tax world we have  $\beta_A = 1.2 \frac{90}{100} + .1 \frac{10}{100} = 1.09$

In the "more realistic" world with taxes we have  $1.2 \frac{90}{100} + .1 \frac{10}{100} (1-.19) = 1.088$



So we end up with an asset beta of 1.09 regardless whether we adjust for taxation or not. It is pointless distinguishing between 1.088 and 1.09 – remember they are both estimates.

The lack of impact of taxation is because WBA has very low leverage and the UK corporate tax rate is moderate at 19%.

This beta of 1.09 represents the business risk of WBA, Boots, Wrigleys and RJG.

Now to get the equity beta for Wrigleys we must relever using Wrigley's leverage ratio. Taxation may matter here since the Wrigley D/V ratio is .35

To relever assuming no taxation we get  $\beta_A = \beta_E \frac{E}{V} + \beta_D \frac{D}{V}$  which we can rearrange to get

$\beta_E \frac{E}{V} = \beta_A - \beta_D \frac{D}{V}$  multiplying both sides by  $\frac{V}{E}$  we get  $\beta_E = \beta_A \frac{V}{E} - \beta_D \frac{D}{V} \cdot \frac{V}{E}$  which is

$\beta_E = \beta_A \frac{E}{E} + \beta_A \frac{D}{E} - \beta_D \frac{D}{E}$  or  $\beta_E = \beta_A + (\beta_A - \beta_D) \frac{D}{E}$  so here

$\beta_E = 1.09 + (1.09 - 0.1) (7/13) = 1.62$

Adjusting for UK corporate taxation at 18% (the rate from April 2020) we get  $\beta_E = 1.09 + (1.09 - 0.1) (7/13) (.81) = 1.52$ .

Since UK taxation is moderate let's compute the cost of equity as follows with and without taxes.

	<b>With Taxes</b>	<b>No Taxes</b>
Rf	0.25	0.25
Rm-Rf	5.5	5.5
Beta	1.52	1.62
Cost of Equity	8.61	9.16
Cost of Debt	0.032	0.04
	<b>£'000</b>	<b>£'000</b>
Market Value of Equity	13,000	13,000
Value of Debt	7,000	7,000
Value of Company	20,000	20,000
E/V	0.65	0.65
D/V	0.35	0.35
WACC	5.6077	5.968

We see that that adjusting both beta and the cost of debt for taxation makes a difference of about .36% is the WACC.

The UK tax corporate rate is to be 18% from April 2020 so let's see what difference this makes

Rf	0.25	0.25
Rm-Rf	5.5	5.5
Beta	1.52	1.62
Cost of Equity	8.61	9.16
Cost of Debt	0.0328	0.04
	<b>£'000</b>	<b>£'000</b>
Market Value of Equity	13,000	13,000
Value of Debt	7,000	7,000
Value of Company	20,000	20,000
E/V	0.65	0.65
D/V	0.35	0.35
WACC	5.60798	5.968

The answer is very little.

If we round to the nearest one per cent we get a WACC of 6% regardless!

However, we have ignored a vital assumption of the CAPM. The model assumes that all investors are fully diversified, that is they hold the market portfolio. Neither the McGarveys or the Wrigleys are diversified so we need to adjust the beta to reflect this. What we are going to do is calculate beta with respect to total risk rather than just systematic risk. The reason for this adjustment is that the Pharmacy owners are not diversified so face the total risk of the pharmacies not just the systematic risk as reflected in beta.

Remember that beta is  $\beta_j = \frac{\text{cov}(R_j, R_m)}{\sigma_m^2}$  so this can be written as  $\beta_j = \frac{\rho_{jm}\sigma_m\sigma_j}{\sigma_m^2} = \frac{\rho_{jm}\sigma_j}{\sigma_m}$ . This

method of writing the beta illustrates that the covariance between  $R_j$  and  $R_m$  is the correlation coefficient between the firm and the market  $\rho$  by the product of the their respective standard deviations. If we re-arrange the final version of the equation we get

$$\frac{\beta_j}{\rho_{jm}} = \frac{\sigma_j}{\sigma_m}$$

Thus dividing beta by the correlation coefficient gives a the marginal contribution to total risk rather than just the marginal contribution to systematic risk.

If the correlation between the retail pharmacy sector and the market is 0.7 then the unlevered or asset beta for a private company from an undiversified individual's perspective is the beta of Wrigley Pharmacies divided by 0.7. It is therefore 1.52/0.7 or 1.62/0.7 that is 2.2 or 2.3. This is rather a high beta but this is to be expected since it reflects both systematic and unsystematic risk unlike the traditional beta which just reflects systematic or market risk. The cost of capital can then be computed for Wrigley using the same market data as above. Therefore  $E(R_e) = 0.25\% + 2.3(5.5) = 12.9\%$  (say 13%). This is a very large increase in the cost of equity capital.

The WACC is then:

Adjusted for Tax	Not Adjusted for Tax
0.25	0.25
5.5	5.5
2.3	2.3
13	13
0.0328	0.04
<b>£'000</b>	<b>£'000</b>
13,000	13,000
7,000	7,000
20,000	20,000
0.65	0.65
0.35	0.35
8.46148	8.464

The cost of capital is then estimated at 8.5% or 9%. I will take 9% since the interest rates in the tables in the examination are only in whole numbers.

It would not be realistic if the adjustment for the McGarvey's lack of diversification was not made. The fact is that they are not diversified and so will demand a higher rate of return since they are liable to the total risk of the project and not just the systematic risk as assumed by CAPM. Thus 9% is the correct rate for the opportunity cost of funds from the perspective of the McGarveys.

**(b) Computation of Free Cash Flow**

	£'000	£'000	£'000	£'000
Operating Income After Tax	1,848	1,899	1,935	1,971
ΔNOA	2,500	410	418	427
Free Cash Flow (OI - ΔNOA)	(652)	1,489	1,517	1,544
<u>Cash Flow Statement</u>				
Dividends	1,000	1,000	1,000	1,000
Increase (Reduction) in Cash	0	0	0	0
Reduction (Increase) in Debt	(1,932)	132	165	199
Interest on Debt	280	357	352	345
FCF	(652)	1,489	1,517	1,544
FCF	(652)	1,489	1,517	1,544
Discount Factor	1.090	1.188	1.295	1.412
DFCF	(598)	1254	1171	1094
Terminal Value				
22501				
PVDFCF to 2019	2920			
PVTV	15,940			
Enterprise Value	18,861			
Value of Debt	6,000			
Value of Equity	12,861			
Operating Income Aft Tax	1,848	1899	1935	1971
Capital Charge	1,620	1845	1882	1920
ReOI	228	54	53	51
Discount Factor	1.090	1.188	1.295	1.412
Discounted ReOI	209	46	41	36
TV				746
PV of ReOI to 2019	332			
PV of TV	529			
Book Value	12,000			
Value of Equity	£12,861			

Thus the value of Wrigley from the perspective of RJG is slightly below the upper bound of the Wrigley's valuation. Accordingly, there is room for a deal to be negotiated. Wrigley Ltd. Will not be a massive bargain though. Especially since no potential synergies are mentioned in the case.

## SOLUTION 2

- (a) First since Wrigley Pharmacies is in the sterling area McGarvey's will be open to more foreign exchange rate risk. All of their wealth and the value of McGarveys is in euro: they will be buying a sterling asset. If sterling weakens this asset will be worth less in euro terms.

As far as the day to day management of FX risk here McGarvey's can keep the same suppliers that Wrigleys are using in the sterling area and therefore will not necessarily suffer any economic or transactions exposure. R & J McGarvey would be liable to translation exposure when it does its accounts each year since the Euro value of the Wrigley business will be uncertain.

There will also be the risks involved in operating in a different jurisdiction where the regulation of Pharmacies is different. Different prescription fees and cost of drugs and other products will also be a factor.

With the UK leaving the EU issues may emerge regarding the repatriation of any profits made by the Wrigley pharmacies to the Republic of Ireland.

There may be barriers to trade between the EU and the UK which will hinder integration of the Wrigley pharmacies with the RJG pharmacies.

A solution to the FX exposure is to borrow a sterling loan or raise money on the AIM.

- (b) The CAPM assumes that all investors are fully diversified, that is, they hold the market portfolio. This means that they only face systematic risk. All idiosyncratic, or unique risk is assumed to be diversified away so is not rewarded by the CAPM. If, as in the current case, investors are not fully diversified an adjustment must be made to the cost of equity to reflect the under-diversification of investors. (See answer to question 1 (a)). The CAPM essentially assumes that portfolio theory is correct and that investors actually follow it and diversify fully! An assumption of portfolio theory is that risk is captured by the standard deviation (or variance) of returns. This is a reasonable assumption but it must be admitted that risk is likely to be more complex than this.

More fundamentally the CAPM assumes that capital markets are perfect. This assumption is clearly not true. However, if the capital market is reasonably efficient the model should work well. A perfect capital market is by definition efficient and prices are correct but an efficient capital market may be susceptible to costly imperfections such as transactions costs, taxes and trading frictions. Ideally some allowance for these imperfections should be made in computing the cost of equity. It is noteworthy that the cost of debt is routinely adjusted for taxation.

The CAPM assumes that investors can lend and borrow at the same risk free rate. The model can be modified to work without any risk free rate. The so called zero-beta CAPM has a flatter empirical security market line than the original CAPM. Thus low beta stocks will give higher rates of return than predicted by the CAPM and high beta stocks will give lower returns than expected. There is much empirical evidence supporting the zero beta CAPM.

The CAPM is a one period model but it also works in continuous time.

Roll (1977) showed that if the market portfolio is mean-variance efficient then the CAPM works perfectly and beta is sufficient to explain the cross-section of return. The problem however is finding evidence that the market portfolio is mean-variance efficient. It can be argued that some research has shown that fund-managers cannot beat the market. Therefore the market is efficient and this constitutes evidence favouring the CAPM.

It is noteworthy that finance academics can no longer rely on the CAPM when attempting to provide evidence of abnormal stock price performance. They have to adjust for size, market-to-book value and even momentum.

In essence the problem with the CAPM is that it is too simple. Risk is not simply captured by beta. While beta is an important aspect of risk there are other dimensions to risk that are not captured by CAPM.

Furthermore private investors particularly those who make their living from a business tend not to be diversified. They are susceptible to the total risk of their business not just its systematic risk. This is clearly the case here so some adjustment must be made to beta in order that it reflects total risk and not just systematic risk.

### SOLUTION 3

- (a) The asset or unlevered beta of pharmacies was estimated at 1.09 in Question 1.

This is the same as the equity Beta given that RJG is not levered – Net Debt 3 Million less 3 Million in cash which is 0 debt.

The WACC is therefore the same as the cost of equity which is  $0.1\% + 1.09(5.4) = 0.15 + 5.88 = 5.98$  say 6%.

- (b) Estimate the value of the enlarged R & J McGarvey assuming that it takes over Wrigley Ltd. Outline any critical additional assumptions you make.

Assuming that there are no synergies through reduced costs due to economies of scale or the flexibility to use suppliers in different currency areas. We also assume that there are no costs due to Brexit. We will not take any consideration of any potential changes in the cost of debt given the greater equity base supporting Wrigley's net debt after the takeover.

We compute the value of RJG by discounting the FCF at 6%.

	€'000	€'000	€'000	€'000
FCF	(1,783)	2,321	2,363	2,404
Discount Factor	1.060	1.124	1.191	1.262
DFCF	(16,82)	2,065	1,984	1,905
Terminal Value				61,314
PVDFCF to 2019	4,272			
PVTV	48,566			
Enterprise Value	52,838			
Value of Net Debt	0			
Value of Equity	52,838			

Thus we have a value of RJG from the perspective of a diversified shareholder as €52.84 million.

We value Wrigleys from a similar perspective.

We take the FCF as previously and discount at the WACC we computed for a diversified shareholder in Q1(a) this is again 6%.

All figures used in the calculation of the value of Wrigley Ltd. are in sterling. We then translate the sterling value to euro.

	£'000	£'000	£'000	£'000
FCF	(652)	1,489	1,517	1,544
Discount Factor	1.060	1.124	1.191	1.262
DFCF	(615)	1,325	1,273	1,223
Terminal Value				39,377
PVDFCF to 2019	3,207			
PVTV	31,190			
Enterprise Value	34,397			
Value of Debt	6,000			
Value of Equity	28,397			

  

	£'000	£'000	£'000	£'000
Operating Income Aft Tax	1,848	1,899	1,935	1,971
Capital Charge	1,080	1,230	1,255	1,280
ReOI	768	669	680	691
Discount Factor	1.060	1.124	1.191	1.262
Discounted ReOI	725	596	571	547
TV				
17622				
PV of ReOI to 2019	2,439			
PV of TV	13,959			
Book Value	12,000			
Value of Equity	28,397			

We convert to Euros as using the FX rate of 0.85 to get €33.4 millions

We have effectively assumed that RJG is now owned by well diversified shareholders and both parts of its business RJG (Original) and Wrigleys are run as separate companies and there are not additional costs or synergies of the takeover.

We can just add the value of the enlarged RJG above €52.84 million to the value of Wrigley Ltd. (now owned by diversified shareholders) £33.4. This gives a combined value of about €86.25 million. It is clear from our revised values for Wrigley Limited that much of the increased value comes about from the Floatation which allows access to diversified shareholders and so lowers the cost of equity capital. Note the floatation will also allow Ralph and Jocelyn to diversify.

- (c) Here we are talking about RJG going public so we need a valuation for RJG. We have computed this valuation in 3 (b) above. The minimum Market Capitalisation of a company listing on the ESM is €5 million so RJG qualifies.

First we consider the funding needs of R & J McGarvey. They need €13 million to fund the takeover leaving their cash reserves of €3 untouched and €1 million in personal savings.

If they raise the €13 million this will sell  $13 / 86.25$  or 15% of RJG.

However, the lack of diversification of the McGarvey's is a concern and in order to be diversified as assumed it may well be worthwhile raising more funds to buy out some of the McGarvey's stake in the business. Then they will use this money to diversify.

However, we must remember that the investors using the ESM are likely to be well diversified from their perspective the cost of capital is much lower than that of the McGarvey's so we should use the lower cost of capital in valuing both McGarvey's and Wrigleys'. The professional and well-diversified investors will understand what they are doing for the McGarveys so are unlikely to value RJG at its full discounted value of €86.25 million. They will require a discount so let us assume that they value RJG at €75.

If Ralph and Jocelyn sell 40% of RJG (including Wrigleys) to the public or more likely institutions for €30 million. They can pay the Wrigleys €14 for their company and float the enlarged company and keep €16 million for themselves to diversify with.

Note that the above analysis does not quantify the costs involved in transforming the enlarged R & J McGarvey from a private company to a public company.

These costs include the ESM fees, Accountancy fees, Advisor fees, stockbroker fees, legal fees and investor relations costs.

- (d) It is noted in the case that Bernard is concerned that Ralph and Jocelyn don't have any specific plans to develop the Wrigley pharmacies. Can you suggest any possible benefits or potential sources of synergy or value that may stem from the acquisition of Wrigleys?

While R & J McGarvey (RJG) may not be able to source prescription medicine in Euro it is likely that they will now have more flexibility. So if there are cost advantages to buying in sterling RJG will now have sterling suppliers that it can use. Similarly if a cost advantage to buying drugs and cosmetics in euro emerges RJG can switch to purchasing in Euro from its existing suppliers.

The chain of pharmacies will have doubled in size so for some products where a common supplier is used RJG will have economies of scale and may have more power vis a vis the suppliers.

## SOLUTION 4

- (a) The advantages include getting in additional shareholders who will more than likely be well-diversified institutions. Ralph and Jocelyn can use the proceeds of the ESM listing to address the issue of their wealth being under-diversified. They can use it to take funds from the business and construct a diversified portfolio. R & J McGarvey will then have only diversified shareholders so the cost of equity will be lower and R & J McGarvey will be more valuable.

This is easily illustrated by taking 6% as the cost of capital and valuing Wrigleys Pharmacies using this.

Computation of Free Cash Flow	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>
Operating Income After Tax	1,848	1,899	1,935	1,971
ΔNOA	2,500	410	418	427
Free Cash Flow (OI - ΔNOA)	(652)	1,489	1,517	1,544
Cash Flow Statement				
Dividends	1,000	1,000	1,000	1,000
Increase (Reduction) in Cash	0	0	0	0
Reduction (Increase) in Debt	(1,932)	132	165	199
Interest on Debt	280	357	352	345
FCF	(652)	1,489	1,517	1,544
FCF	(652)	1,489	1,517	1,544
Discount Factor	1.050	1.103	1.158	1.216
DFCF	(621)	1,351	1,310	1,270
Terminal Value				52,503
PVDFCF to 2019	3,310			
PVTV	43,194			
Enterprise Value	46,505			
Value of Debt	6,000			
Value of Equity	40,505			
	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>
Operating Income Aft Tax	1,848	1,899	1,935	1,971
Capital Charge	900	1,025	1,046	1,066
ReOI	948	874	889	904
Discount Factor	1.050	1.103	1.158	1.216
Discounted ReOI	903	793	768	744
TV				30,748
PV of ReOI to 2019	3,208			
PV of TV	25,297			
Book Value	12,000			
Value of Equity	40,505			

We see that the value of Wrigleys is about £40 million to a well-diversified shareholder. It was only worth about £13 million to RJG as undiversified shareholders. The above gives some perspective on the benefits of diversification. Thus you can clearly see why companies float on exchanges to raise funds and reduce their cost of capital by attracting diversified investors.

The disadvantages to an ESM quote would be increased costs of disclosure as well as other transactions costs involved in the floatation. The scrutiny of the markets and the pressures that would bring including dealing with outside shareholders. The costs of further investment in terms of corporate governance. This will involve increased costs of transparency and disclosure. ESM companies do not have to comply with the UK Corporate Governance Code but in order to attract investors they must improve their governance.

It is an advantages for R & J McGarvey is getting diversified shareholders on board and reducing its cost of capital and hence value. If R & J McGarvey's value increases so does the value of Ralph and Jocelyn's shares in it.

When Ralph and Jocelyn come to retire the will have shares that are traded on a market and hence more liquid and more valuable than the Wrigley's shares. It will also facilitate further growth by providing access to finance for this growth.

The disadvantages include the cost of increased disclosure. Increased costs of corporate governance, compliance and regulation. There are also fees payable to the ESM (ISE).



There will be a loss of control. The extent of this depends on how much of the company is sold to outside investors. However, the improvements in corporate governance are a price for reducing the cost of capital. A more independent board will have to be appointed and funded – the non-executive directors (NEDs) will have to be paid. The improved governance will have advantages as well in that the expertise of the new NEDs will provide expertise to R&J McGarvey.

- (b) R & J McGarvey will face a number of corporate governance and other challenges if floats on the ESM. Critically outline these challenges and suggest some potential solutions to them.

In order to attract outside investors RJG will have to improve its Corporate Governance immensely.

It will have to appoint an independent board which will have to be headed by an independent chairman. The appointment of the independent chairman is crucial. A well respected figure who has chaired boards in the past (not necessarily of plcs). It does not matter crucially what area of business this person comes from. At least one additional board member will also be required. This person should have knowledge of retail pharmacies. Ralph and Jocelyn may find any traded associations or pharmacists useful in identifying someone with the requisite experience that is independent of them.

The accounting of an ESM quoted company must be of higher quality and more conservative than that of a private company. The accounts will be projected forward to estimate free cash flow and value the company. Accordingly, they plus other information released by the company must inform analysts and investors to allow them estimate future earnings and value the company.

Investors will be interested in growth potential so Ralph and Jocelyn will have to have a strategy for further expansion.

Fundamentally Ralph and Jocelyn now fully control RJG – they will no longer fully control it if RJG is quoted on the ESM. Ralph and Jocelyn will face additional responsibilities and scrutiny. There will be a greater need for transparency and disclosure.

To deal with the regulatory and accounting challenges an experienced Financial Controller may need to be appointed.

- (c) An alternative to floating on the ESM would be for R & J McGarvey to borrow the required funding. Critically evaluate this option outlining its advantages and disadvantages?

Are there any alternatives to borrowing or an ESM quotation?

This question can be answered simply by making the appropriate arguments. Little or no calculations are expected. However some calculations are provided by means of a tutorial.

Borrowing will increase the D/E ratio and hence the cost of equity capital.

Assuming that €12.9 is paid for Wrigleys then using the €4 in cash and Ralph and Jocelyn investing their €1 of savings gives a borrowing requirement of €8.9 million.

An advantage of borrowing is that there are no transactions costs. In addition there will be no loss of control or additional investment in accounting and corporate governance. Essentially we are talking about the pecking order approach to capital structure here.

Borrowing is allowed for tax. It is recommended therefore that the borrowing be done by Wrigley Ltd. since the UK tax rate is higher giving a greater tax shield. Of course this depends on the rate offered by a UK bank. If a good rate cannot be negotiated with a UK bank sterling could be borrowed by Wrigley from an Irish bank or a swap agreement could be put in place. The latter is likely to be expensive.

Another advantage of sterling borrowing is that it provides a natural hedge for the considerable investment in a foreign currency, sterling. Ideally such borrowing would be done at a variable rate for hedging purposes. However, with rates at historical lows then a fixed rate must be considered. The decision will depend on the relative variable and fixed rates quoted by the banks.

There are some alternative to raising equity or borrowing.

First is to raise money from a venture capitalist. The VC could have an exit mechanism be getting an ESM quote



in the future. This alternative could be used if RJG felt that it could not get an ESM quote in the near future.

Second there is the possibility of Mezzanine finance.