Capital Research

# FOXTEL'S special access undertaking

## Issues with imputation

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# A Overview

1 I have been requested by Freehills to provide an expert opinion in the matter of FOXTEL'S special access undertaking.

2 My qualifications and experience in relation to this expert opinion are as set out in the attached CV[1]. In relation to the current matter, I note that I have conducted research, lectured and appeared in court cases in matters involved in valuation, particularly the valuation of securities, over a period of approximately 30 years. I have been retained by major companies and the Australian Tax Office in relation to valuation issues. I have also been involved in ongoing research with my colleague Dr. Neville Hathaway on the valuation of the franking credits attached to franked dividends paid by companies resident in Australia.

3 In February 2003 I prepared an independent expert's report for C7 Pty Ltd in relation to the Section 152 ATA Anticipatory Individual Exemption Application lodged by FOXTEL Management Pty Ltd. In 2002 I prepared two independent expert reports for C7 Pty Ltd for the purpose of the arbitrations of its pay TV access disputes with, among others, Telstra Multimedia Pty Ltd and FOXTEL, dated 25 February 2002 and 12 August 2002 respectively.

# B Assumptions

4 Given the nature of the questions I have been asked to address, I have not been asked to assume any facts. The facts as presented in this report are facts I have discovered in my research with Dr Hathaway.

[1] A copy of my CV forms appendix 1 to this report.

# C Federal Court Guidelines

5 I have been given a copy of Practice Direction (69,750) Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia, which I have read and complied with in preparing this report.

6 In preparing these opinions I have made all the enquiries which I believe are desirable and appropriate and no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Court.

7 A list of the documents provided to me or which I have otherwise considered in preparing this report is contained in appendix 2.

8 In preparing this report, I have been assisted by Neville J Hathaway. He conducted the valuation calculations in accordance with our standard practices. I have checked those calculations and agree with them. All work carried out in the preparation of this report has been reviewed by me. All opinions expressed in this report are mine.

# D Questions referred

9 I have been asked by Freehills on behalf of Seven Network Ltd to answer the following questions:

(a) Do dividend imputation franking credits affect the cost of capital for Australian listed firms? – my response in Section F.

(b) Do dividend imputation franking credits affect the cost of capital of FOXTEL? – my response in Section G.

(c) Is FOXTEL'S gamma estimate of zero reasonable? – my response in Section H.

(d) Is there anything in Professor Stephens Gray's report on the *Effect of Franking Credits on FOXTEL'S Cost of Capital* that you would like to comment on? – my response in Section I.

10 I address each of these items in turn below.

# E Summary of my responses

11 The set of questions I have been asked to consider centre around the principal issue of whether or not franking credits have value and in particular how this affects the FOXTEL cost of capital.

12 In summary, I conclude that:

(a) The assertion that franking credits have no value is unsustainable.

(b) Prof. Gray's findings appear to be based on incorrect facts. He ignores relevant material about Australian stock broker business practice with respect to valuing Australian companies and their franking credits. He attributes excessive weight to the impact of his stylized foreign investor. He makes no distinction about the types of foreign investors and the consequent likely behaviour of each group. He also misapplies our study.

(c) Franking credits reduce the tax liabilities of Australian investors and effectively reduce the company tax rate.

(d) This indicates that franking credits do have value.

(e) That they have value is evidenced by the behaviour of many practitioners.

(f) The reduction in the effective company tax rate alters the after-tax cost of capital.

(g) So franking credits do affect the cost of capital.

(h) Whilst there is justifiable debate about the exact value of franking credits, placing zero value on the credits as proposed by Prof. Gray is not reasonable.

13 In contrast to Prof. Gray's findings,

(a) I observe that many equity analysts include a value for franking credits in their equity valuations.

(b) Many Australian companies pay a lot of attention to managing their capital by way of franking credits.

(c) Shareholders have redeemed in excess of $200 billion of franking credits since imputation was introduced in 1987.

14 The only rationale consistent with these observations is that franking credits are valuable, and, moreover, they will affect the cost of capital of a company.

# F Do dividend imputation franking credits affect the cost of capital for Australian listed firms?

15 In this section I will explain why franking credits do affect the cost of capital for listed Australian firms. I will first explain what is meant by the cost of capital and how it is used in practice in the Australian equity market. I then explain how imputation credits arise and then why imputation credits affect the cost of capital. After this background description I explain how credits are valued and hence how they affect the cost of capital.

**What is the cost of capital?**

16 Investors expect returns on their investments. The level of these expected returns will vary with the level of the perceived risks. Companies raise capital (the primary market) from investors by creating expectations of future income and capital growth. These expectations are the obligations to be met by companies. The cost of capital is the required return delivered by companies to meet these expectations by their investors. These returns will be delivered by a combination of cash dividends, franking credits and capital gains.

17 The investment returns can be any combination of these three factors. The nature of the business largely determines the risk and the form that investment returns are paid to investors. In turn, investors will gravitate to the investments in which the mix of returns meets their needs. This we call a clientele effect among shareholders.

18 Hence the cost of capital is the cost of servicing the capital (referred to as the capital base) of an asset, project or company that is supplied by investors. It is always forward looking in that it is meant to measure the required return for future investment outcomes. The historical return on investments is no more than a guide to what can be expected in the future. Hence the historical or book cost of capital is not the appropriate cost of capital.

19 Sometimes these obligations are contractual such as when investors in fixed interest securities are bound to receive a fixed coupon i.e. a predetermined periodic cash amount as an interest payment for debt capital. In other cases the return is neither contracted nor predetermined and the investors expect returns but realise that there is a risk that these returns may not materialise. Typically, the more uncertain are these expected returns then the higher is the return that investors require in order to undertake the investment of their capital.

20 If expectations of investors are not met, then the investors will either reprice their investments and/or migrate to different investments (in the secondary market). The disappointment of not meeting expectations could be any combination of revised dividend payment, dividend franking level or future growth prospects. This could cause an effective increase in the cost of capital to these companies.[2]

[2] If sufficient investors move out of a stock and cause downward price pressure on the stock price, then the expected future income represents a higher fraction of the now reduced price. This implies a higher investment return on the stock which means a higher cost of capital. For example, shareholders expect a dividend of $1 and appraise the risk as worth 10% return. This equates to a stock price of $10.00. The company disappoints and announces all dividends will be $0.50. Assuming the same risk of 10%, this equates to a stock price of $5.00. However, if selling pressure reduces the stock price to $4.00, then this equates to an expected 12.5% return on investment. In this case, investors have re-rated the stock as riskier than previously. This means the cost of capital for this firm has increased because the firm needs to deliver 12.5% to satisfy their investors.

**Using the Cost of Capital**

21 The cost of capital is often used as a discount rate to capitalise net cash flows to give a net present value. It is sometimes used as a bench mark rate of return, and by regulators in determining a rate of allowable return on capital.

22 All investments are valued by discounting future expected net cash flows at an appropriate discount rate commensurate with the perceived risk in these cash flows. This process is called capitalisation of future cash flows and is formally termed a discounted cash flow (DCF) analysis.

23 Many valuers implement abbreviated methods of the fundamental DCF approach, such as for example price earnings multiples. However, these are just shorthand implementations by practitioners of the fundamental valuation principles.

24 Many investors, particularly professional money managers, are appraised by their investment returns relative to a bench mark. The appropriate benchmark is chosen to reflect the investment risk in the portfolio.

25 In addition, companies use the cost of capital to bench mark whether or not prospective investments will deliver the required cost of capital. Projects which prospectively do not meet this bench mark are perceived as not meeting shareholders' expectations and so are rejected as viable projects.

26 In regulated businesses, essentially the regulator takes the capital base and the appropriate cost of capital in order to determine the allowed income and hence the allowed pricing for regulated services.

**Cost of capital and franking credits**

27 The cost of capital is the return expected by investors. Thus it comprises more than just the payment of dividends for shareholders and interest for bondholders. Investment returns comprise cash income as well as capital gains and capital losses. The cash income can be direct in the form of a dividend cheque and it can also be indirect in the form of payment (or credit) for one's liabilities such as a tax liability.

28 Franking credits are a form of pre-payment of one's personal tax liability[3] and, accordingly, I believe that franking credits do affect the cost of capital for Australian listed firms. I set out below the basis for my beliefs that imputation is valued inside Australian companies and this is based on the following logic and observations.

29 Typically valuations are performed on an after-company tax but before personal tax basis. Investors have to pay personal tax or its equivalent on the combination of cash dividends and franking credits (i.e. the grossed up dividend amount), see Gray section 2. Hence when valuing a company and deciding on the appropriate cost of capital, we have to add back the franking credits to the dividend cash flow received by investors in order to establish an after-company tax but before personal tax cash flow consistent with the discount rate.

30 Imputation credits are one form of rewarding investors. Until the introduction of a full imputation tax system on the 1st of July 1987, Australia had a classical company tax system. Under a classical company tax system the company is treated as a separate taxed entity and after the deduction of expenses and interest payments the balance is taxed at the company tax rate. The distribution of dividends to shareholders is then taxed at the shareholders full

[3] Prof. Gray in his section 2 sets out the mechanics of dividend imputation franking credits. I agree with this description but I do not accept his conclusion that the value of credits is not included in the value of Australian listed companies.

marginal tax rate. As a consequence, the income on which the dividends were derived is taxed twice, once at the company level and again at the personal tax level. In that regime, shareholders were rewarded with a mix of capital gains and cash dividend income. That tax system favoured retained earnings over paying out income because dividends were taxed twice.

31 In that previous tax system investors would have arranged themselves among the share registries of companies according to their preferences for capital gains or cash dividends – after they had taken into account the risk and reward characteristics of competing investments.

32 Since the introduction of imputation on 1 July 1987, $297 billion of company tax have been paid by companies. This means that $297 billion of franking credits have been created. All franking credits are credited to the Franking Account Balance of a company until they are paid out as a franked dividend. When this happens, the FAB account is debited the issued credits. Companies may also receive franked dividends from other companies and the accompanying credits are added to the FAB. Of all the credits created, just $92 billions still remain within the FAB accounts of companies. Over $200 billion has been paid out as franking credits.

33 Companies whose shareholders get no benefit from the tax credits i.e. offshore investors who pay no Australian income tax and therefore cannot use the tax credits and, until recently, tax exempt institutions who could not utilize the tax credits[4], essentially faced a classical tax system. It is the value of the franking credits which distinguishes an imputation tax system from a classical company tax system. Not all taxed shareholders will value the franking credits at the same rate. For example shareholders whose marginal tax rate is above the company tax rate can utilize companies as an effective tax shield by taking their rewards in the form of capital gains rather than dividends. For such shareholders, retained earnings have greater value than dividend payments because of the differential tax status of the two forms (dividends and capital gains) of return to equity. In contrast, shareholders whose tax rates are below the company tax rates e.g. superannuation funds, are anxious to access their tax credits and prefer dividends relative to retained earnings because they can utilize any excess tax credit not only to offset their dividend tax liabilities but also the tax liabilities on other forms of income.

34 Just because foreign investors cannot utilise franking credits whilst the stock is in their hands does not mean they will value franking credits as worthless for all the future dividends. This is because when they sell their stock into the market they will be selling into a market that does value franking credits. Hence they will accept including some value for the future franking credits embedded in the stock. Whilst it is true that they will not receive any value for credits paid out whilst the stock is in their hands, they will receive capitalised value for the future credits embedded in the stock price when they sell the stock into the market.

35 A simple analogy by way of real estate illustrates this point. A couple without any children may buy a house that has four bedrooms. The act of buying the house makes them the marginal buyer (or marginal investor). They can only utilise one bedroom themselves whilst they own the house but they will not get a purchase discount on the house because of this. They will have to buy the house in a market that does place a value on the four bedrooms. The market price of the house will be the clearing price based on the value that some people

[4] The imputation tax credits are subtracted from withholding taxes on income going to offshore investors but since withholding taxes are usually fully rebateable against income taxes in the offshore countries there is no direct net benefit in the credits to the offshore investors.

in the market impute for the value of the four bedrooms. They will be bidding against people some of whom place a value on the four bedrooms. The couple will have to pay for something that they cannot utilise while they own the house. They will not be permanently disadvantaged by this as they will be compensated when they sell the house back into the market which does place some value on the four bedrooms. The new buyer will be the new marginal investor. The couple will take this into account when they are bidding for the house. Only if the market was segmented so that only childless couples traded with other childless couples might we then propose that there was little or no value placed on the extra bedrooms. But this segmentation is not the case.

36 Nor is there segmentation in the stock market. Foreign investors trade in a market that consists of domestic and foreign investors. Foreign taxpaying investors cannot utilise franking credits whilst they own the stock. However, domestic taxpaying investors do value the credits and they are participating in the market. Hence the market places some value on franking credits. As such, the foreign investor recognises they will be on-selling into a market which values the credits so they will include a capitalised value for credits in their valuation of stocks. Only if the foreign investor is always trading with another foreign investor on the ASX will we expect to see no capitalised value for the franking credits inside the stock price on the ASX.

37 This is unlikely to be the case for most Australian listed stocks since we do not observe any clearly unpriced credits in share prices. Foreign investors must be selling into a market that is not so segmented and consequently into a market that does place some value on the embedded credits.

**Practical issues**

38 We observe Australian brokers taking franking credits into account when they value shares in their reports to Australian and foreign fund managers who manage Australian equity investments. They would not be including franking credits in their estimates of valuations for stocks unless they considered franking credits had value– see Tables 1-3 below.

39 We observe some major Australian companies structuring special dividends, sometimes as part of a capital reduction by way of an off-market purchase (a *buy-back*) that include very large franked dividend components. In some cases the franked dividend was the major component of the buy-back. Companies would not go to the expense of structuring such large transactions in this way unless they thought that shareholders valued the franking credits involved in the transactions – see Table 4 below.

40 It would be a very unusual listed company that only had one form of issued security. Many firms issue debt of various types and maturity, ranging from very short term debt (say 90 days maturity) through to very long term debt (typically ten years). Some of this debt is for fixed interest payments and some is for floating interest payments. Some interest payments are in nominal dollars and some take into account inflation as indexed bonds.

41 Equity securities issued by companies can be standard fully paid ordinary shares, they can be preference shares with various dividend payments promised and they can be contingent equity such as that in convertible warrants or convertible preference shares.

42 Hence, although we refer to the cost of capital of a company as a single item we need to consider the range of financial obligations that the company needs to meet. This leads us to consider the weighted average cost of capital (or WACC) which is meant to capture all these financial obligations in a combined estimate of the cost of capital.

43 There are many forms in which the weighted average cost of capital and the corresponding capital base can be expressed. For example, if tax is fully accounted for in the cash flow,

then it is not also included in the WACC. But if tax is not so fully recognised in the cash flow, a tax term must be included in the WACC. The introduction of the imputation tax system has exacerbated these permutations in that it has introduced another tax term that must be recognised – the amount of company tax recouped by shareholders as pre-payment of their personal tax. This is the "gamma" term in the WACC.

44 Provided each combination is consistent, a similar net present value would be determined when valuing an asset. I have published elsewhere a set of these combinations of cost of capital and the corresponding cash flow definition[5]. All of these costs of capital definitions recognise the impact of imputation. The cost of capital definition must be accompanied by the corresponding definition of the cash flow. Each combination must be considered as a unique pair so the "cost of capital" is really a combination of a cash flow definition and an expected return definition.

45 The simplest combination to use is the "vanilla" weighted average cost of capital (WACC) in which all tax terms and imputation credit allowance is included in the definition of the cash flow. In this case the cost of capital is the simple weighted sum of the cost of the financial obligations (typically debt and equity) that support the capital base. The weights are the market value proportions of the total value of the financial obligations side of the Balance Sheet.

46 In this vanilla form we see that whilst investors may value franking credits and hence value them inside the total asset value, they do not affect the corresponding cost of capital. They are an enhancement to the net cash flow received by the investors. However, when franking credits are either ignored or only partially included in the definition of the cash flow, then there will be a corresponding correction by making an appropriate allowance in the definition of the cost of capital.

47 The value of the tax credits cannot be ignored by just choosing to apply the vanilla WACC. They must then be included in the corresponding cash flow term that is appropriate for the vanilla WACC. Whichever combination of cash flow and WACC terms is used for the cost of capital, the franking credits via the gamma factor must be included.

48 In summary, in this section I have described the cost of capital as the expected return anticipated by investors. Meeting these expectations is treated as a cost from the point of view of the company. There are typically many investors who have to be satisfied by the company so we assemble them into a weighted average cost of capital. Further, many of these investors recognise and value franking credits as part of their investment returns so that in these circumstances the companies' cost of capital would include the value of these credits.

49 This is how imputation tax affects the cost of capital. It reduces the amount of tax collected as company tax.

## F.1 Broker Use of Credits in Valuations

50 In this section I will describe how many practitioners utilise credits in their valuations. I will demonstrate that many practitioners certainly do take into account franking credits.

51 The first item is a survey of the practices of some Australian broking firms conducted by the Australian Equities team of *County Investment Management* during 2000 as an in-house

[5] See Appendix 3: Officer, RR (1994) The Cost of Capital of a Company Under an Imputation Tax System, Accounting and Finance, Vol. 34, No. 1, pp. 1-17.

survey[6]. The brokers included were members of County's equity broking panel and hence provided research, valuations and transaction services to *County*. The following are the responses by the members.

**Table 1: Response to survey question on franking credits**

| *16. Do you value franking credits?* | |
|---|---|
| ABN Amro | Yes |
| CSFB | No |
| DB | Yes |
| JBW | Yes |
| JPM | Yes |
| Macq | Yes |
| ML | Varies |
| SSB | No |
| UBSW | No |

| *17. Do you value franking credits at face value or at a discount? (if applicable)* | |
|---|---|
| ABN Amro | 45% of face value |
| CSFB | Not applicable |
| DB | Between 37% and 63% of the face value of franking credits are valued - 37% for large cap industrials, 40% for small cap industrials and 63% for resource companies |
| JBW | 60% of face value |
| JPM | 50% of face value |
| Macq | 100% of face value |
| ML | Varies according to analyst |
| SSB | Not applicable |
| UBSW | Not applicable |

52 Abbreviations: (some of these corporate names have changed since the survey was conducted.)

**Table 2: Name abbreviations and new names**

| **Old name** | | **New Name** | |
|---|---|---|---|
| ABN Amro | ABN Amro | | |
| CSFB | CS First Boston | | |
| DB | Deutsche Bank | | |
| JBW | JB Were | GSJBW | Goldman Sachs JBWere |
| JPM | JP Morgan | | |
| Macq | Macquarie Equities | | |
| ML | Merrill Lynch | | |
| SSB | Salomon Smith Barney | Citi | Citigroup |
| UBSW | UBS Warburg | UBS | UBS |

53 There is no guarantee of uniformity among analysts within a broking firm. This reflects the point made above that there is some debate about the value of credits to be used in valuation

[6] *County* was a large fund manager owned by National Australia Bank. In 2001 County was sold to INVESCO Australia, a subsidiary of AMVESCAP, a large global fund manager. Dr Hathaway was employed by County and subsequently INVESCO.

projects. However, since most of the brokers mentioned above ascribe a positive value to the credits, in my view applying a zero value is not reasonable.

**Summary of Broker Valuations**

54 The second item is an analysis of some broker "Dailies" over the past three years in which the brokers report their recent and revised considerations of some listed companies. Not all "dailies" expressly state their assumptions about the value of franking credits. Typically brokers will only express the value they are attributing to franking credits when they are reporting dividend discount valuations. Where brokers are using price earnings multiples for valuations, a common valuation method, the value of credits will be implicit and it is not possible to extract their assumptions because the valuations are a composite of many assumptions. One would have to know all such assumptions before their implied estimate of franking value could be extracted.

**Table 3: Summary of Broker Valuations**

| Document | Broker | Comments | Example (see Appendix 4) |
|---|---|---|---|
| 1 | ABN Amro | They explicitly value the credits as a dollar amount. They report share valuations with and without credits. | |
| 2 | CSFB | They use 100% value of credit ("gross value of credit") | |
| 3 | GSJBW | They use 60% of franking credit, which is the survey response of 60%. | Toll Holdings and Patrick Corp. valuation 24 Jan 2006, pages 22-23 |
| 4 | ML | They use 70% of value of franking credit. | |
| 5 | Citi | They "do not allow" for franking credits but if they did they would use 60%. They leave it to the reader to make a choice. Presumably they think 60% is the appropriate value if they are to be counted. | |

55 In summary, most major brokers in Australia take into account the value of franking credits when valuing shares.

## F.2 Major Company Buy-Backs

56 There are more ways of distributing franking credits than just paying out franked credits with ordinary dividends. In this section I will describe some recent company buy-backs of their stocks that have involved very large amounts of franking credits. This mechanism has introduced a process of self-selection. Those investors who most value the credits can efficiently access them by selling their shares in the buy-back whereas those on higher marginal tax rates who prefer their returns through capital gains will not take up the buy-back offer. Effectively, this is a means by which the company can stream their dividends to maximize their value where they cannot directly pay separate dividend streams to different classes (with respect to tax) of shareholders.[7]

[7] Dividend streaming has been prohibited since the late 1980's. However, these buy-backs are a means of implementing a form of streaming as the individual shareholders can individually choose whether or not to participate.

57 Over the past few years the following major companies have successfully implemented large buy-backs with large franking credit components.

**Table 4: Some Buy-Backs**

| Company | Capital | Fully Franked Dividend | Franking Credit |
|---|---|---|---|
| BHP Billiton | $2.10 | $10.47 | $4.49 |
| Seven Network | $3.48 | $2.32 | $0.99 |
| CBA | $11.00 | $16.50 | $7.07 |
| TLS | $1.50 | $2.55 | $1.09 |
| IAG | $1.78 | $2.62 | $1.12 |
| Westpac | $4.00 | $15.13 | $6.48 |
| St George * | $6.54 | $19 (est) | $8.14 |

* to be completed 21 Feb 2006: Source: ATO, ASX

58 In my opinion, such major Australian listed companies would not be undertaking large buy-backs in these forms if they did not consider that a sufficient proportion of their shareholders placed substantial value on the associated franking credits.

# G Do dividend imputation franking credits affect the cost of capital of FOXTEL?

59 In this section, I will explain why I think that dividend imputation credits would affect the cost of capital of FOXTEL.

60 In my opinion, the value of imputation franking credits for FOXTEL is unlikely to be identified as different from the value of such credits for any other average Australian listed company.

61 We have to carefully separate the two questions of the value of FOXTEL'S franking credits and the amount of such credits that are likely to be generated by FOXTEL in the future. This issue is a function of the future payout ratio of FOXTEL and is separate from the value of a franking credit. This issue is taken up in Section I below.

62 FOXTEL has large and identifiable shareholders. These are Telstra (50%), PBL (25%) and News Corporation (25%). These in turn are companies publicly listed on the ASX except of course News Corporation which has now moved its listing to the USA. The value of franking credits generated within FOXTEL will ultimately be what they are worth when passed through to the investors in the shareholders of FOXTEL.

63 Telstra is a very large publicly listed company that has significant Australian resident shareholders. It has made it clear that its shareholders will value franking credits by its implementing a large off-market buy-back with a very significant imputation credit amount. It has made great store publicly with the future dividend yield expected from the company.

64 PBL is a large publicly listed company that has significant Australian resident shareholders. We can fully expect the PBL shareholders, to the extent that they reflect the average investor in Australian shares, to place value on franking credits. In addition, PBL is reported to be moving to derive income from overseas activities such as casinos in Asia. In this case it may very well be in a similar position to other Australian companies expanding off-shore in that these activities reduce its ability to create franking credits. In such a case it would value the ability of a domestic business to produce franking credits for its shareholders.

65 NewsCorp cannot now be expected to place much merit on FOXTEL producing franking credits but then NewsCorp was never a company that was viewed as a dividend paying investment. Its dividend yield has generally been about 0.2% over recent years so its shareholders will not have much experience at receiving any franked dividends from the company.

66 The shareholders in FOXTEL have investors who value franking credits. Hence I conclude that there will be a significant value to the franking credits of FOXTEL. There s no logical reason to conclude other than that any distributed franking credits of FOXTEL would be valued at the average of Australian companies.

# H Is FOXTEL'S gamma estimate of zero reasonable?

67 In this section I will explain that an estimate for gamma of zero is unreasonable.

68 The appropriate gamma of FOXTEL would be the product of the proportion of future taxable profits that they were planning to payout and the value of each associated credit.

69 The payout proportion is under the control of the Board of FOXTEL. If they never made any profits in the future then they would certainly have no earnings about which to decide upon a payout ratio. One would wonder why they would remain in business if they never planned to make any future profits.

70 If they did plan to make profits but retain all income for a period then in the interim all earnings would appear as capital gains and franking credits would be wasting assets. They would remain as a Franking Account Balance (a book entry called FAB) of the credits that FOXTEL could distribute or that its future owners could distribute.

71 One has to be very careful using a valuation model that is a perpetuity-based model. Nearly all the commonly used models for cost of capital are perpetuity models. It is quite unreasonable to assume that there will never be any future payout of earnings. Such a company is ultimately worthless if it always retains such a policy. All valuations are the present value of future cash flow. Increased capital values from retained earnings are only logical if ultimately the retained earnings lead to bigger cash flows that will be eventually realised.

72 Any delay or uncertainty in issuing the credits in the FAB will cause both a time discount and a risk discount for the value of gamma. We have no data upon which to base a reasonable estimate.

73 I notice that recently reputable analysts (Deutsche Bank) are reported to be predicting that FOXTEL will make a profit from 2006-2007 onwards. In this case we can expect FOXTEL to eventually create franking credits within their FAB. However, without sufficient detail from the report we cannot be clear whether or not this reported profit is before or after any prior losses are carried forward so we cannot be clear whether or not the FOXTEL Board could declare a profit and a subsequent dividend. However, this casts serious doubt on the assumption by Prof. Gray that FOXTEL will not make a profit in the future.

74 FOXTEL could easily issue fewer credits than the average listed Australian company but it is not logical to consequently ascribe a zero value for gamma for FOXTEL. This would assume that they would never in any circumstances pay out a franked dividend from their FAB.

75 In addition, the appropriate estimate of gamma to be used in the WACC for a regulated business should be based on the efficient utilisation of capital, not an arbitrarily chosen utilisation factor. If such a business could assert that it would only pay capital gains and never pay a franked dividend, it would be entitled on Prof. Gray's analysis to a higher regulated cash income due to not recognising the contribution to regulated returns via the franking credits. On this basis they would be over-recovering by the extent of the ignored credits or equivalently they would be achieving more than their cost of capital.

76 Because the regulatory review is over five years does not mean that one can use a five year view of gamma. The model the regulators typically use is a perpetuity model that is revisited at appropriate intervals. One has to use appropriate assumptions in that perpetuity model. It may very well be that FOXTEL will not make any profits over the next five years and so the cash flow stream will incorporate this. However, as the model is a perpetuity

model the WACC past the next five years is quite relevant and so a gamma estimate is needed.

77 A value of gamma of zero is unreasonable.

# I Comments on Professor Stephens Gray's report on the Effect of Franking Credits on FOXTEL'S Cost of Capital

78 In this section I will describe the issues where I agree and where I disagree with Professor Gray. There are many parts of Professor Gray's paper with which I would agree. I will briefly describe these. There are some important parts with which I disagree. I will describe in detail why I disagree with him in these cases.

79 I agree with much of the material in the sections 2 – 4 of his paper except the conclusions he draws in relation to the value of gamma. These describe the mechanics of imputation, the definition of gamma within the cost of capital and how franking credits affect the cost of capital.

80 I make no comment on section 5 where he takes issue with the 2003 parameter estimates by the ACCC.

81 I accept the description in section 6 re the marginal price-setting investor but I do not accept his conclusions that the marginal price setting investors is always a foreign investor and that such an investor never prices in franking credits. As I pointed out above, this would amount to assuming a segmented market of foreign investors always selling to foreign investors. I do not believe that is the case.

82 I accept the description of the rule changes as described in section 7. I do not believe these are material other than they describe the attempt by the ATO to reduce the amount of trading in credits by increasing the transaction costs for such trades.

83 I accept the description of the three methods of estimating the value of credits in sections 8 – 13. However I disagree with his conclusions about the merits of each of these methods.

84 I present my disagreements as three main comments on the paper. Prof. Gray:

(1) wrongly asserts that practitioners do not value franking credits.

(2) misunderstands the nature of the overseas institutional investor in Australia.

(3) misrepresents the analysis[8] of myself and Dr Hathaway and ascribes an error to us that is quite unfounded.

85 Professor Gray asserts that there are two sources of market practice from which to view how the market treats credits. He claims these are expert corporate valuers and Australian companies. He neglects the obvious and dominant people valuing shares and that is the Australian broker community and their advisers. They do not publish academic papers nor do they do the occasional corporate valuation. Rather, they estimate Australian stock valuations almost daily. Indeed, many of them publish their valuations in their "dailies" which are documents they distribute to their wholesale clients, typically fund managers. Professor Gray may rarely see them but they are prolific. Many of them do include franking credits in their stock valuations – see Tables 1-3. It is quite untrue to say that the dominant practice is to ignore franking credits. While some of them do not include credits, many do. Indeed, in my experience even those who do not explicitly take into account the value of credits do it because they find it too hard to estimate the value rather than a view that they are worthless. The reality is much more mixed than the dogmatic view put by Prof. Gray.

[8] See our latest research paper entitled: *"The Value of Imputation Tax Credits Update 2004"* 2 November 2004 and our earlier research paper entitled: *"The Value of Imputation Tax Credits"*.

86 Prof. Gray represents the international investor into Australia as the dominant marginal investor. He does not distinguish between institutional and personal international investors. The most likely dominant group are institutional investors. There are likely also to be corporate investors in Australian listed companies as strategic business investments. Sometimes these are Australian-listed subsidiaries of overseas companies. There are also some foreign personal investors in Australian stocks. Neither of these groups is at all likely to be a marginal investor. In my opinion, foreign owners of Australian businesses are very unlikely to be traders in the stock. They will be strategic holders and trade very little. Foreign personal investors are most unlikely to be marginal investors. This leaves the foreign institutional investors to play the role he has described.

87 In my experience, many of these foreign institutional investors place capital in Australia, not according to some strategic stock selection process, but rather allocate capital to Australia according to index weights. If the ASX represents 1.75% of the Morgan Stanley Capital Index (MSCI, a widely accepted index for world stock markets) then their benchmark allocation to Australia is 1.75% of their capital. They may go over-weight or under-weight Australia according to their view of the relative merits of the ASX against other world stock exchanges. But they typically do not do this on a stock selective basis – rather they buy the "market" or at least the liquid large part of the market (the MSCI includes only about 90 stocks in Australia). Foreign institutional investors typically do not play the role of marginal investors carefully picking over individual stocks with the possible exception of major mining stocks. They apply a weight of money into and out of the Australian market. To the extent that they do apply stock picking, they are likely to have Australian analysts supplying them with information on stock values – it is difficult to be a stock picker from overseas without domestic advice. And as we have seen, many of these advisers are well aware of the value of credits to the Australian investor and could be expected to price in the value of franking credits at market.

88 Prof. Gray has a criticism of our valuation method which is quite erroneous. He criticises a model we do not use in the form he asserts.

89 Professor Gray critiques the following model and rightly points out that this model has a statistical problem in that the dividend amount, D, is in two places on the right hand side of the model so both terms cannot be statistically identified because they are highly correlated.

$$\Delta P = \alpha D + \beta fc\ D + error$$

$$0 \leq fc \leq 1$$

90 We were quite aware of this and have never used this model right from our original paper in 1994 (and incidentally it may not have been published in a "Tier 1 Journal" but it is the most widely quoted paper in the area and has been used by many practitioners – as can be confirmed from a Google search.)

91 The model we estimate has the dividend amount divided through so that the dependent variable is not the amount of dollar price drop but rather the fractional drop-off of price relative to the dividend amount.

$$\Delta P/D = \alpha + \beta fc + error$$
$$\Delta P/D = \text{"DropOff"}$$

$$0 \le fc \le 1$$

Far from being statistically correlated, the independent variables we model are the franking credit fraction and the dividend cash relative drop. They are obviously not correlated logically (the proportion of franked dividend to unfranked dividend will be a function of the firms taxable profit and the Board's dividend policy) nor are they correlated in practice. This criticism of Prof. Gray is a straw man of his own making since he fails to acknowledge that the model he uses to depict the "multi-collinearity" is not the model used to estimate the value of franking credits. He depicts the model:

$$\Delta P = \alpha D + \beta F + error$$

But the model used removes D (dividend) from the right hand side of the above equation, the source of his claim of "multi-collinearity".

92 Prof. Gray asserts that his study is based on copious simultaneous trades between futures contracts and the underlying stocks and is "based on thousands of observations each year for each company, rather than the two observations per year that are available with the dividend drop-off method." Some observations on this claim are immediately obvious.

(1) No matter how frequently one measures trades, be they minute-by-minute or day-by-day etc, there are only at most two dividend events that can be priced into any contract. It is not transaction data that is critical but rather the economic data of the value of expected dividends and franking credits. Typically these events only occur twice per annum for a company.

(2) A long futures contract represents a future ownership of the physical stock with capital not paid until the maturity date but does not have any claim over the intervening dividends and credits. Thus the value of a futures contract logically should represent the present value of the stock minus the present value of missed dividends and credits but plus a time value of money. In practice there is also much noise between the futures prices and the physical stock prices. This is known as the basis risk.

(3) But in order to use futures contracts to estimate credit values, one must first start with a model that assumes how these dividends and credits are valued within the futures contract. The results derived must always be a combined result of both the parameter estimates and the veracity of the model. It is necessarily a joint outcome and I could equally assert that the model is incorrect rather than assert that the credits are not valued. In addition, very few ASX stocks have actively traded futures contracts so whilst such a study can have many data points by dint of observation frequency, it must have limited scope across the range of listed companies.

93 Prof. Gray says that the correct estimate to use for the gamma is the specific company combination of access fraction and utilisation fraction. Of course, if the data enabled individual industry sector or even company-specific estimates, we would use them.

However, in the presence of much noise as is always evident in financial transaction data, our default estimate is the average. Only when we can get reliable individual estimates would we move away from using average estimates.

94 A similar point can be made bout his criticism of the our results (Gray, Table 4,Section 10.4). We put an interpretation to these results but cautioned the reader against reading too much into sub-section results because of the small sample size relative to the "noise" in the data.

95 In summary, I believe the evidence is overwhelming that franking credits are priced into the Australian market and that they affect the weighted average cost of capital. It is unambiguous that credits can be used to reduce the tax liabilities of Australian taxpaying investors. It is testing creditability and commonsense to believe that the credits are valueless. Moreover, I would find it very difficult otherwise to explain the observations that:

- The average dividend payout rate of Australian companies went up significantly with introduction of the imputation tax system. If credits were valueless why would the payout rates change?
- Many equity analysts include franking credits in their company valuations.
- Many companies pay a lot of attention to managing their capital by way of franking credits.
- Shareholders have redeemed in excess of $200 billion in franking credits since 1987.

The only rationale consistent with these observations is that franking credits are valuable, and, moreover, they will affect the cost of capital of a company.

# J Summary

96 The set of questions I have been asked to consider centre around the principal issue of whether or not franking credits have value and in particular how this affects the FOXTEL cost of capital.

97 In summary, I conclude that:

(a) The assertion that franking credits have no value is unsustainable.

(b) Prof. Gray's findings appear to be based on incorrect facts. He ignores relevant material about Australian stock broker business practice with respect to valuing Australian companies and their franking credits. He attributes excessive weight to the impact of his stylized foreign investor. He makes no distinction about the types of foreign investors and the consequent likely behaviour of each group. He also misapplies our study.

(c) Franking credits do have some value.

(d) This is evidenced by the behaviour of many practitioners.

(e) Franking credits act to reduce the effective company tax rate.

(f) The reduction in the effective company tax rate alters the after-tax cost of capital.

(g) So franking credits do affect the cost of capital.

(h) Whilst there is justifiable debate about the exact value of franking credits, placing zero value on the credits as proposed by Prof. Gray is not reasonable.

98 In contrast to Prof. Gray's findings,

(a) I observe that many equity analysts include a value for franking credits in their equity valuations.

(b) Many Australian companies pay a lot of attention to managing their capital by way of franking credits.

(c) Shareholders have redeemed in excess of $200 billion of franking credits since imputation was introduced in 1987.

99 The only rationale consistent with these observations is that franking credits are valuable, and, moreover, they will affect the cost of capital of a company.

100 Signature:

Prof. R.R. Officer: .....

Dated: 14 February 2006

# Appendix 1 Prof. R.R. Officer's CV

## PERSONAL DETAILS


| | | |
|---|---|---|
| **NAME** | : | Robert (Bob) Rupert Officer |
| **HOME ADDRESS** | : | Unit 1504<br>'The Melburnian'<br>250 StKilda Road<br>Southbank<br>Victoria 3006 |
| **ADDRESS** | : | Capital Research<br>Kurrajong House<br>Level 5, 175 Collins Street<br>Melbourne 3000 |
| **TELEPHONE** | : | (03) 9654 6277 |
| **FAX.** | : | (03) 9654 1026 |
| **EMAIL** | : | rro@capitalresearch.com.au |


## POSITIONS HELD:

| | |
|---|---|
| 2003 - | Self employed<br>Emeritus Professor, University of Melbourne<br>Honorary Professor University of Queensland |
| 1986 - 2002 | Professor, Chair of Finance and Deputy Director<br>Melbourne Business School, University of Melbourne |
| 1993/4 | Visiting Professor<br>The Wharton School of the University of Pennsylvania |
| 1989 | Visiting Professor, Graduate School of Business<br>Stanford University |
| 1976-86 | Professor, Department of Accounting and Finance<br>Monash University |
| 1971-76 | Senior Lecturer then Reader<br>Department of Management<br>University of Queensland |
| 1967-71 | Graduate Student<br>University of Chicago |
| 1964-67 | Teaching Fellow<br>Department of Farm Management, U.N.E. |
| 1962-64 | Advisory Officer<br>Victorian Department of Agriculture |

## QUALIFICATIONS:

| | | |
|---|---|---|
| 1962 | University of Melbourne | BAgSc |
| 1967 | University of New England | MAgEc |
| 1969 | University of Chicago | MBA |
| 1971 | University of Chicago | PhD |

## AWARDS:

| | |
|---|---|
| 1958 - 1961 | Commonwealth Scholarship |
| 1967 | Australian Agricultural Economic Thesis Prize |
| 1970 | Beta Gamma Sigma Fraternity (Top 5% of MBA class) |
| 1967 - 1970 | Australian Meat Research Committee Overseas Fellowship |
| 1970 - 1971 | General Electric Fellow , University of Chicago |
| 1988 | Elected a Fellow of the Academy of the Social Sciences in Australia |
| 1990 | Appointed a Fellow of the Australian Society of Corporate Treasurers |
| 1991 | Honorary Life Member, Accounting Association of Australia and New Zealand |
| 1999 | Elected a Fellow of the Securities Institute of Australia |
| 2003 | Awarded Centenary Medal for services to the public sector. |

## OTHER RELEVANT POSITIONS HELD:

| From | | To | |
|---|---|---|---|
| 2004 | - | | Deputy Chair Investment Committee and Alternate Board Member, UniSuper (≈ $11b under management) |
| 2003 | - | | OFM Group Ltd., Board member. |
| 2003 | - | | Babcock & Brown Direct Investment Fund, Board Member |
| 1995 | - | | Chairman (2002- ), Deputy Chairman (1995-2001), Victorian Funds Management Corporation (≈ $25b under management) |
| 1993 | - | 2006 | Board of Management, Chairman from 1/12/97 to 2/01, Acting CEO 1/1/00to1/5/00, Victorian WorkCover Authority |
| 1999 | - | | Chairman, Acorn Ltd (funds manager of microcaps ≈ $600m under management) |
| 2001 | - | | Deputy Chairman, Tactical Global Management Limited (TAA Funds Manager) |
| Mar 1997 | - | Apr 1998 | Member of the Victorian Transport Accident Commission Board of Management |
| May 1996 | - | Mar 1997 | Member of Inner & Eastern Health Care Network Board |
| Mar 1996 | - | Jun 1996 | Chairman, National Commission of Audit |
| 1999 | - | 2001 | Chairman, MEAC, Securities Institute of Australia |
| 2001 | - | 2005 | Councillor, Securities Institute of Australia National Council |
| 2000 | - | | Director, Colonial Foundation |
| 1996 | - | 1999 | Appeal Panel Member, Victorian Office of the Regulator-General |
| 1995 | - | | Trustee, William Buckland Foundation |
| 1997 | - | 2003 | Member, Strategic Research Development Committee, NHMRC |
| 1998 | - | 1999 | Member, Merit Protection and Review Agency |
| 1995 | - | | Editorial Board Pacific Basin Finance Journal |
| Jul 1995 | - | May 1996 | Member of Eastern Health Care Network Board |
| Nov. 1992 | - | May 1993 | Chairman, Victorian Commission of Audit |
| 1993 | - | May 1998 | Board of the Bank of Melbourne |

| | | |
|---|---|---|
| 1993 | - 1997 | Member of Advisory Board, School of Business, Bond University |
| 1989 | - | Editorial Board of ABACUS |
| 1988 | - 2003 | Associate Editor of Journal of Banking & Finance |
| 1989 | - Jul 1998 | Member of the Council of Janet Clarke Hall |
| 1988 | - | Member of the Council, Institute of Public Affairs Limited |
| 1987 | - Jul 1998 | Member of the Council of International House |
| 1986 | - 1988 | Victorian Committee of Commercial Law Association |
| 1986 | - 1987 | President of the Accounting Association of Australia & New Zealand |
| 1985 | - 1987 | Member of the Executive of Australian Society of Corporate Treasurers (Victorian Chapter) |
| 1984 | - | Member of Advisory Council, Centre for Independent Studies |
| 1984 | - 1987 | Member of the Australian Government's Industrial Property Advisory Committee |
| 1977 | - 1985 | Editor of Accounting and Finance |

## AREAS OF EXPERTISE:

Consulted to a large number of public, private and government organisations on topics encompassing economics and finance generally.

Specific areas include corporate and international finance, valuation and investment appraisal, foreign exchange management, capital markets, industrial organization, takeovers, and anti-trust.

Has appeared as an expert witness before the Federal Court, Arbitration Commission, Supreme Court, Trade Practices Tribunal, and a number of other bodies of enquiry or arbitration.

## PUBLICATIONS:

In a wide variety of journals and topics including:

- Australian Journal of Management
- Journal of Business
- Journal of Financial Economics
- Accounting and Finance
- Journal of American Statistical Association
- Economic Record
- Australian Tax Forum
- Economic Papers.

## PUBLICATIONS:

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and

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## Appendix 2 List of material supplied

1. Guidelines for Expert Witnesses in Proceedings in the Federal Court

2. The Effect of Franking Credits on FOXTEL'S Cost of Capital, Professor Stephen Gray

3. FOXTEL submission to the Australian Competition and Consumer Commission in support of FOXTEL'S Special Access Undertakings.

## Appendix 3

***The Cost of Capital of a Company Under an Imputation Tax System***

**Accounting and Finance, Vol. 34, No. 1, pp. 1-17**

# THE COST OF CAPITAL OF A COMPANY UNDER AN IMPUTATION TAX SYSTEM

*by*

R. R. Officer
Graduate School of Management
University of Melbourne

*Abstract:*

One of the issues arising out of the introduction of an imputation tax for companies in Australia is the effect it is likely to have on the definition and measurement of a company's cost of capital. Insofar as there is a difference between the value of a dollar of franked relative to unfranked dividends, conventional definitions for the cost of capital are inappropriate and new definitions are required. This has implications for the measurement of a company's cost of capital and for the definition of net cash flows that are used in conjunction with the cost of capital. This paper sets out these definitions and an approach for measuring the cost of capital.

The new definition of the cost of capital replaces the effective company tax rate T with $T(1 - \gamma)$ where $\gamma$ is the value of personal tax credits. Further, the definition of the risk premium in the capital asset pricing model requires an adjustment for the capitalized value of personal tax credits to maintain consistency between the cost of capital and cash flows which are defined on an after-company tax but before-personal tax basis.

*Acknowledgments:*

I am indebted to the participants at a workshops at the University of Queensland and at the AGSM, University of NSW, particularly the latter, whose comments on an earlier draft cleared up a definition problem. I am also indebted to Frank Finn, Neville Hathaway and Rob Brown whose comments have helped the exposition of the problem and also to the very detailed and helpful comments of referees.

## Introduction

Australia has had a full imputation tax system for companies since July 1, 1987. Before this date the Australian corporate tax system was a classical tax system, the same as in the USA. Both Australia and New Zealand have full imputation tax systems; many other countries have a partial imputation system where only partial credit is given for the company tax.

Under an imputation tax system, credit is given to shareholders for the company tax implicitly levied on their dividend receipts, i.e. dividends are paid after company tax has been levied which implies that the dividends have been taxed at the company level. Under a full imputation tax system, tax that is implicitly being levied on the dividends can be credited against any further tax liabilities of the shareholder (the recipient of the dividend).[1]

The proportion of company tax that can be fully rebated against personal tax liabilities is best viewed as personal income tax collected at the company level. In effect, the tax collected at the company level is a mixture of personal tax and company tax, the company tax being that proportion of the tax collected which is not credited (rebated) against personal tax. If all the collection of tax from a company is rebateable, (in the Australian terminology if all the franking credits can be used against personal tax liabilities), then for that company's shareholders, company tax is effectively eliminated. The tax the company pays is simply the shareholders' personal income tax being collected at the company level.

One of the most vexing questions in relation to the change in the company tax system is its effect on estimates of a company's cost of capital. The standard analysis of a company's cost of capital, that appears in most textbooks on corporate finance, implicitly assumes a classical company tax system.

There are two basic issues associated with a change in the company tax system to an imputation tax as it affects the cost of capital for a company:

(i) What is the appropriate definition of a company's cost of capital? Most importantly, what is the implied definition of the cash flows consistent with that cost of capital?

(ii) How should a firm's cost of capital be measured?

The cost of capital reflects the required return by providers of capital and in this context, it is akin to a price. As such it will vary with supply and demand conditions in the capital market. Further, Australia's capital market is open so that Australian companies' costs of capital will be determined, in part at least, by world market conditions. However, the question still remains as to whether the measurement of this required return will differ under an imputation tax relative to a classical tax. Moreover, insofar as it is only the

1. A more complete description of the imputation tax system in Australia, its effect on various classes of investor, and its likely effect on dividend and financing policies of Australian companies is discussed by Officer (1990).

equities' return which is affected by an imputation tax system, it is the measurement of the cost of equity capital which is at issue.

The paper sets out the definitions of the costs of capital and appropriate net cash flows on a before and after company tax basis but before personal taxes. An appendix illustrates the definitions with a numerical example. The example is contrived and it is not intended to be a proof of the propositions developed in the paper. The paper also demonstrates the effect of the imputation tax on the measurement of the risk premium in the Capital Asset Pricing Model (CAPM), when that model is defined on an after company tax but before personal tax basis.

There are versions of the CAPM and definitions of the cost of capital e.g. Ashton (1989), which have been derived on an after personal tax basis. Such models are difficult to test empirically and, therefore, difficult to use because most securities are traded on an after company but before personal tax basis. The exception is equities under an imputation tax system but even in this case it is difficult to use an after-personal tax model because usually only *some* of the value of the personal tax liability is captured in the traded price. Also, such approaches are not consistent with, nor readily reconcilable with, the approaches adopted for a classical tax system. The approach outlined in this paper overcomes both of these problems.

### (i) Definition of a Firm's Weighted Average Cost of Capital

The operating income (earnings before interest and taxes) of a company is distributed amongst three claimants – the government, the debtholders (creditors) and the residual claimants or equity holders. It is implicitly assumed that all other costs associated with the production process have been paid out of revenues before the determination of operating income. In effect, operating income is that component of a company's revenues which is left to service its obligations to government and the providers of the company's capital, which in the first instance are the debtholders and then the residual claimants or shareholders[2]. This distribution of operating income is described in equation 1 below.

$$X_O = X_G + X_D + X_E \qquad (1)$$

where
$X_O$ is operating income,
$X_G$ is the government's share of operating income,
$X_D$ is the debtholders' share of operating income, and
$X_E$ is the equity holders' share of operating income.[3]

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2. The obligations to government typically are paid and rank after debtholders.
3. In the context that these variables are listed in this paper they are assumed to be perpetuities, i.e. constant amounts per period in perpetuity. In a practical context, they can be assumed to be perpetuity equivalent. The assumption is employed, explicitly or more typically implicitly, by all the conventional definitions of the cost of capital.

The amount of tax collected from the company by the government is found by applying the effective tax rate (T) to the operating income less interest, i.e. $X_O - X_D$.

This amount, i.e. $T(X_O - X_D)$, represents the amount of tax collected from the company but not all of this is company tax[4]. A proportion ($\gamma$) of the tax collected from the company will be rebated against personal tax and, therefore, is not really company tax but rather is a collection of personal tax at the company level. Therefore, if we wish to define the effective company tax collection, we need to reduce T by the proportion $\gamma$.

In these circumstances, the effective level of company tax paid, $X_G$, is defined by

$$\begin{aligned} X_G &= T(X_O - X_D) - \gamma \cdot T(X_O - X_D) \\ &= T(X_O - X_D)(1 - \gamma) \end{aligned} \tag{2}$$

where

T is the tax rate effective for the definition of assessable income as defined in (2), it is the effective tax rate which is levied at the company level and it is a mixture of company tax, $T(1 - \gamma)$, and personal tax, $T \cdot \gamma$, i.e. $T = T(1 - \gamma) + T\gamma$. Thus $\gamma$ is the proportion of tax collected from the company which gives rise to the tax credit associated with a franked dividend. This franking credit can be utilized as tax credit against the personal tax liabilities of the shareholder. $\gamma$ can be interpreted as the value of a dollar of tax credit to the shareholder.[5]

Further $X_E = X_E' + \gamma T(X_O - X_D)$ represents profit going to shareholders and consists of dividends, $X_E'$, plus the value of franking tax credits, $\gamma \cdot T(X_O - X_D)$.

Equation (2) distinguishes an imputation tax from a classical tax with respect to the amount of tax paid at the company level where $X_G = T(X_O - X_D)$. It has already been pointed out that under an imputation tax a proportion of the tax paid at the company level, $\gamma \cdot T(X_O - X_D)$, is really a withholding of personal tax and therefore to correctly define after company tax income this amount must be added back to equity income.

### A. *The Before-Tax Cost of Capital*

Recalling equation (1):

$$X_O = X_G + X_D + X_E \tag{1}$$

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4. In this context, company tax is defined as that tax paid by an entity because it is in a company structure as distinct from being held personally or in a partnership structure.
5. For example, if the shareholder can fully utilize the imputation tax credits then ("value") $\gamma = 1$, e.g. a superfund or an Australian resident personal taxpayer. On the other hand a tax exempt or an offshore taxpayer who cannot utilize or otherwise access the value in the tax credit will set $\gamma = 0$. Where there is a market for tax credits one could use the market price to estimate the value of $\gamma$ for the marginal shareholder, i.e. the shareholder who implicitly sets the price of the shares and the price of $\gamma$ and the company's cost of capital at the margin, but where there is only a covert market, estimates can only be made through dividend drop-off rates; see Hathaway and Officer (1992).

and substituting for $X_G$ from equation (2) we get:

$$X_O = T(X_O - X_D)(1 - \gamma) + X_D + X_E \tag{3}$$

Collecting $X_O$ on the LHS of the equation and simplifying we get:

$$X_O = \frac{X_E}{(1 - T(1 - \gamma))} + X_D \tag{4}$$

Further, in order to derive the standard form of the cost of capital it is necessary to adopt perpetuity definitions of value. Therefore define:

(a) $$S = X_E/r_E$$

where

S is the value of equity (shares),

$r_E$ is the required rate of return to equity holders after-company tax but before-personal tax, and

$X_E$ is the perpetuity equivalent of the share of operating income that goes to equity holders. It effectively adds back the value of imputation tax credits (also on a perpetuity equivalent basis) to give an after-company but before-personal tax definition of income.

Define:

(b) $$D = X_D/r_D$$

where

D is the value of debt,

$X_D$ is the perpetuity equivalent of debtholders' share of operating income,

$r_D$ is the required return to debtholders, i.e. the cost of debt capital.

In the context of a before-tax cost of capital define:

(c) $$V = X_O/r_O$$

where

$X_O$ is the perpetuity equivalent of operating income and

$r_O$ is the required return before taxes or the before-tax weighted average cost of capital (WACC).

Therefore substituting definitions (a) through (c) in equation (4) we get:

$$r_O = \frac{r_E}{(1 - T(1 - \gamma))} \cdot \frac{S}{V} + r_D \cdot \frac{D}{V} \tag{5}$$

*B. The After-Tax Cost of Capital*

The appropriate definition of a company's after-tax weighted average cost of capital (WACC) is determined by the definition used of after-tax operating income or really after-tax net cash flows (the terms are used synonymously here). Four alternative definitions of after-tax net cash flows (income) are considered:

(i) $X_O(1 - T)$, which is the standard after-tax definition of cash flows that is most frequently used. It assumes all operating income is taxed at the effective company tax rate.

(ii) $X_O(1 - T(1 - \gamma))$, which assumes that all operating income is taxed at the effective company tax rate but a proportion, $\gamma$, is really a withholding of personal tax; therefore, to obtain an effective after-company tax income this proportion must be subtracted from the tax collected from the company.

(iii) $X_O - T(X_O - X_D)(1 - \gamma)$, which represents the effective after-company tax income attributable to providers of capital (equity holders plus debtholders). It takes account of the tax deductibility of debt and the tax credits available under the imputation system.

(iv) $X_O(1 - T) + \gamma \cdot T(X_O - X_D)$, which is equivalent to the definition of the after-company tax income under a classical tax with the value of tax credits added back.

*(i) WACC where the after-tax net cash flows are defined as $X_O(1 - T)$.*

Solving for $X_O(1 - T)$ in equation (3) we get:

$$X_O(1 - T) = X_E + X_D(1 - T(1 - \gamma)) - \gamma \cdot T \cdot X_O \tag{6}$$

Further, if we define:

(d) $$V = X_O(1 - T)/r_i$$

and then substitute in equation (6) for $X_E$, $X_D$ and $X_O(1 - T)$ from definitions (a), (b) and (d) we get:

$$r_i = r_E \cdot \frac{S}{V} \cdot \frac{(1 - T)}{(1 - T(1 - \gamma))} + r_D \cdot \frac{D}{V}(1 - T) \tag{7}$$

It should be noted that the comparable definition of WACC for a classical tax system under the same definition of after tax net cash flows is:

$$r_i^C = r_E \cdot \frac{S}{V} + r_D \cdot \frac{D}{V} \cdot (1 - T) \tag{8}$$

A comparison of equations (7) and (8) and their respective definitions of after tax net cash flows indicates that if $\gamma = 0$, i.e. the tax credits have no value, then there is no difference between the WACCs under a classical or an imputation tax system.

*(ii) WACC where the after-tax net cash flows are defined as $X_O(1 - T(1 - \gamma))$*

Solving for $X_O(1 - T(1 - \gamma))$ in equation (3) we get:

$$X_O(1 - T(1 - \gamma)) = X_E + X_D(1 - T(1 - \gamma)) \tag{9}$$

Further define:

(e) $$V = X_O(1 - T(1 - \gamma))/r_{ii}$$

Adopting the above definitions (a), (b) and (e) and substituting in equation (9) enables us to derive the equation for the after-tax WACC under an imputation tax, i.e.

$$r_{ii} = r_E \cdot \frac{S}{V} + r_D (1 - T(1 - \gamma)) \frac{D}{V} \tag{10}$$

The comparable definition of WACC under a classical tax has already been defined as equation (8).

A comparison of equations (10) and (8) shows that if $\gamma$ is equal to zero then (10) collapses into (8) and there is no difference between WACC under an imputation tax and WACC under a classical tax.

*(iii) WACC where the after-tax net cash flows are defined as $X_O - T(X_O - X_D)(1 - \gamma)$.*

Adopting the definition of operating income defined by equation (3), i.e. where the government's share of tax ($X_G$) is defined to include the effective company tax but not any personal tax, and solving for:

$$X_O - T(X_O - X_D)(1 - \gamma) = (X_O - X_D)(1 - T(1 - \gamma)) + X_D = X_E + X_D \tag{11}$$

and adopting the previous definitions of rates of return, i.e. $r_E$ and $r_D$ and defining:

(f) $$V = [X_O - T(X_O - X_D)(1 - \gamma)]r_{iii}$$

then

$$r_{iii} = r_E \cdot \frac{S}{V} + r_D \cdot \frac{D}{V} \tag{12}$$

The WACC ($r_{iii}$) is appropriate as the discount rate for cash flows where the cash flows are defined as above. Using this definition of WACC the tax advantages of an imputation tax are reflected in the definition of after-tax net cash flows.

*(iv) WACC where the after-tax net cash flows are defined as* $X_O(1-T) + \gamma \cdot T(X_O - X_D)$

Solving equation (3) for the above definition of after-tax net cash flow we get:

$$X_O(1-T) + \gamma \cdot T(X_O - X_D) = X_E + X_D(1-T)$$

and defining:

(g) $$V = [X_O(1-T) + \gamma \cdot T(X_O - X_D)]/r_{iv}$$

then $$r_{iv} = r_E \cdot \frac{S}{V} + r_D(1-T) \cdot \frac{D}{V} \qquad (13)$$

which is equivalent to the after-tax cost of capital under a classical tax where the after-tax cash flows are defined as $X_O(1-T)$.

In this formulation the after-tax definition of cash flows has the value of the imputation credit, i.e. $\gamma \cdot T(X_O - X_D)$, added back. In many ways this formulation may be the easiest to work with since it requires only a change in the definition of cash flows but the "old" definition of the cost of capital can be used.

**(ii) Measurement of the Cost of Capital**

The cost of capital is the expected or required rate of return on capital adjusted for time and risk; it is an opportunity cost. For fixed interest securities, this rate of return is usually taken as a redemption yield on the security that has a promised "coupon" and is to be held until its redemption date. That is, given the security's value, it is the internal rate of return on the security, although this ignores default risk; see Officer (1981) for a discussion. For equity securities, where there is no such contract relating to payment or redemption, typically, the historical rates of return are used to derive an estimate of the expected rate of return.

Under an imputation tax, the expected return on debt securities is derived in the same manner as under a classical tax system, i.e. the imputation tax is not expected to directly affect the yields on debt. In contrast, equity returns will be affected because a proportion of the return on equity under an imputation tax represents credits against personal tax.

It is important to note that this does not imply that an imputation tax affects the cost of equity capital, which is measured on an after-company tax basis but before personal tax. In an open capital market, such as Australia, where the size of the market relative to offshore markets implies it is a price taker, we would not expect the cost of capital to change – the arguments to support this proposition have been made in Officer (1988)[6]. However, this

6. In open and frictionless capital markets, the risk-adjusted returns to investors after all taxes other than personal taxes will be equated, otherwise there would be opportunities for arbitrage. However, this does not imply some measures of the cost of capital will not change with a change in taxes. Those definitions which include some elements of tax will change.

does not imply that measured rates of return, as they are usually measured, have not altered.

Under the classical tax system, the after-company tax rate of return on equity will be measured for the single period t – 1 to t as:

$$r_t^c = (p_t - p_{t-1} + d_t)/p_{t-1} \tag{14}$$

where
$r_t^c$ is the equity rate of return observed under a classical tax system,
$p_t$ is the price or value per share at the end of the period t,
$p_{t-1}$ is the price or value per share at the start of period t, and
$d_t$ is any cash flow per share, e.g. a dividend, assumed to occur at the end of period t.

In contrast, under an imputation tax, the value, $p_t$, or the value of dividends, $d_t$, will reflect (capitalize) the value of any tax credits which reflect a pre-payment of personal tax. Therefore, equation (14) under the imputation system becomes, assuming dividends including imputation credits are paid:

$$r_t' = (p_t - p_{t-1} + d_t + \gamma \cdot C_t)/p_{t-1} \tag{15}$$

where
$r_t'$ is an after-company but before personal tax rate of return as in (14) but under an imputation tax system.
$\gamma$ has been previously defined.
$C_t$ is the amount of tax credits per share distributed at time t.
$d_t$ is a dividend (franked, partially franked or unfranked) per share.

However, if the conventional measure of rates of return is:

$$r_t = (p_t - p_{t-1} + d_t)/p_{t-1} \tag{16}$$

So that an adjustment is required for the value of the tax credits i.e.

$$\begin{aligned} r_t' &= r_t + \gamma C_t/p_{t-1} \\ &= r_t + \tau_t \end{aligned} \tag{17}$$

where
$\tau_t$ is the value of tax credits expressed as a rate or proportion of the initial value of the share.

Thus under an imputation tax equation (17) measures returns after company tax but before personal tax, whereas, under a classical tax system, equation (14) measures returns after company tax but before personal tax.

For example, when the Capital Asset Pricing Model (CAPM) is used to derive estimates of required returns to equity and we are using observed market rates ($r_{jt}$) determined under an imputation tax, the value of the tax credits should be reflected in returns, so that:

$$E(r'_{jt}) = r_{ft} + [E(r_{mt} + \tau_{mt}) - r_{ft}]\beta_j \qquad (18)$$

i.e. the required return on equity is a function of $E(r'_{mt})$, the expected return on the market portfolio after-company but before-personal tax. $E(r'_{mt})$ is equal to $E(r_{mt})$, the expected observed rate of return on the market portfolio, plus the value of tax credits ($\tau_{mt}$) in the market portfolio.

This raises the important question of whether we can use conventional measures of the risk premium, such as an x percent premium over the risk free rate, when the x percent is based on historical rates under a classical tax system. If the imputation tax does *not* affect the cost of capital on an *after-company tax basis* as I have argued, then we could estimate $E(r'_{jt})$ using historical rates estimated under a classical tax regime. However, where estimates of returns are derived under an imputation tax using equation (16), some personal tax payments will be capitalized into the risk premium which consequently will be lower. In these circumstances, an adjustment (add $\tau$) will be needed to include the personal tax credits so that the cost of equity capital is calculated to reflect an *after-company tax* but *before personal tax* return consistent with the definition of cash flows.

A question that might arise when measuring the costs of equity capital is: if the imputation tax credits are traded along with the price (capitalized into the price of the securities) and if we have a measure of the value of a dollar of imputation tax credit ($\gamma$), why cannot we define the cash flows and costs of capital after-company tax and after the element of personal tax paid by the company? Such an approach, if feasible, would enable us to ignore the element of personal tax paid by the company and we could proceed as under a classical tax.

However, this approach is not feasible because the level of personal withholding tax, paid at the company level, will vary between firms and between the firm and the market portfolio. Therefore, specific recognition of this fact is required in the level of franked dividends paid. Ignoring the relative proportion of franked dividends (relative to total dividends) will create errors because a franked dividend is clearly worth more than an unfranked dividend insofar as $\gamma > 0$.

Therefore, differences in the values of franked and unfranked dividends and differences in the proportions of franked dividends paid require specific recognition. Conventional measures of the costs of equity capital, where these differences are not recognised in either the net cash flow or in the discount rate (WACC), are inappropriate.

### (iii) In Conclusion

The effect of the imputation tax system on a company's investment evaluations can require adjustment of cash flows and/or the cost of capital. The adjustment is conceptually simple.

Either the net cash flows and/or the WACC need adjusting for the value of the franking tax credits. The principles involved are clearly demonstrated by the after-tax definition of net cash flows (ii) where the after-company tax cash flows require the *value* of the franking tax credit to be added back to the after-tax cash flows and the tax deductibility of debt suitably reduced because debt, under an imputation tax, is less effective as a tax shield. Similarly, for estimates of the expected or required returns to equity, the value of the personal tax benefits will need to be added back to the observed rates which are lower because of the capitalized value of such personal tax benefits.

On a before-tax basis, the WACC, through the cost of equity capital, is reduced by the relative value of tax credits compared to the cost of equity capital under a classical tax system, because the implied lower tax on equity under an imputation tax requires less "grossing-up" to go from an after-tax cost of equity capital to a before-tax cost of equity capital.

**Appendix**

The following example illustrates the consistency between the various definitions of the cost of capital when they are used with the appropriate definition of net cash flows.

The example is contrived to illustrate the use of the formulae; it is not a proof. It is designed to help the reader through some of the obstacles to going from theory to practice.

The example also contrasts the equations of the cost of capital under a classical tax system with those of an imputation tax system. In the example, it has been assumed that the value of imputation tax credit raises the value of shares which, of course, raises the value of the assets under the control of the company. The example does *not* illustrate the effect of introducing an imputation tax on dividend policy, financing or capital structure decisions.

**McKelly Corporation**

**Balance Sheet**

| | | $ |
|---|---|---|
| **Authorised Capital** | | |
| 50,000,000 ordinary shares of 50 cents each | | 25M |
| **Issued Capital** | | |
| 40,000,000 ordinary shares of 50 cents each | | 20M |
| **Reserves** | | |
| Share Premium Account | | 5M |
| Capital Profit Reserves | | 10M |
| Asset Revaluation Reserve | | 5M |
| General Reserves | | 10M |
| **Share Capital and Reserves** | | 50M |
| **Non Current Liabilities** | | |
| Debenture Stock | (Note 1) | 9.96M |

| | | |
|---|---|---|
| Term Loans | (Note 2) | 15M |
| Unsecured Notes | (Note 3) | 5M |
| Contingency for Product Liability | | 0.04M |
| | | 30M |
| **Current Liabilities and Provisions** | | |
| Trade Creditors | | 10M |
| Bank Overdraft | (Note 4) | 5M |
| Unsecured Loans payable within 12 months | (Note 5) | 1M |
| Mortgage Loans | (Note 6) | 2M |
| Provisions for: | | |
| Income Tax | | 3M |
| Long Service Leave and Holiday Pay | | 3M |
| Unpaid Dividends | | 2M |
| | | 26M |
| **Total Capital, Liabilities and Provision** | | 106M |
| **Assets** | | |
| **Non Current Assets** | | |
| Fixed Assets | | 70M |
| Intangible Assets | | 12M |
| **Investments** | | |
| Loans | | 10M |
| **Current Assets** | | |
| Stock on Hand | | 5M |
| Trade Debtors | | 4.5M |
| Short Term Deposits | | 4M |
| Cash on Hand | | 0.5M |
| **Total Assets** | | 106M |

Notes

1. 1M, $9.96 debentures, due in 5 years, rate paid on the debentures is 10 percent per annum, paid annually.
2. The average duration of the term loans is 3 years and the average rate paid on the loans is 15 percent per annum.
3. 1M, $5 unsecured notes paying 17 percent per annum and redeemable in 2 years.
4. This is the standard level of overdraft maintained by the company; current overdraft interest rate is 14 percent per annum.
5. These are loans which will be repaid in two months. They will not be renewed. They have been replaced by a recent issue of unsecured notes (see Note 3) and as a consequence they should not be included in the capital base for any cost of capital measure.
6. Mortgage loans payable in 6 months. The interest rate is 10 percent per annum. They will be replaced by comparable loans which currently have an interest rate of 15 percent per annum.
7. All debt is assumed to be "ex-coupon" or interest payment on balance date.

**Profit and Loss Statement**

| | | | |
|---|---|---|---|
| | Sales | | 150M |
| less | | | |
| | Cost of goods sold | | 85.04M |
| | Wages, directors' fees etc. | | 14M |
| | Depreciation | | 10M |
| | Provisions | | 1M |
| | Profit from operations (EBIT) | $(X_O)$ | 39.96M |
| less | | | |
| | Income tax expense | $(X_G)$ | 13.58M |
| | Interest paid | $(X_D)$ | 5.14M |
| | Dividends paid } | | 16.24M |
| | Transfer to General Reserves } | $(X_E)$ | 5.00M |

Assume:

1. The $\beta$ risk of McKelly Corp. shares is 1.2.
2. The expected risk premium on the market for equities is 6.0 percent over the risk-free rate.
3. The risk-free rate is 10.5 percent per annum.
4. The current interest rate on debentures is 14.5 percent per annum.
5. The current interest rate on term loans and the bank overdraft is 14 percent per annum.
6. The current interest rate on unsecured notes is 15 percent per annum.
7. The current market value of an ordinary share is $3.
8. Assume an effective corporate tax rate of 39 percent, i.e. $T = 0.39$.
9. Assume that 50 percent of the tax collected at the company level represents personal tax, i.e. 50 percent of tax credits can be utilized against personal tax liabilities so that $\gamma = 0.5$.

*IMPORTANT:*

ASSUME THAT THE PROFIT AND LOSS STATEMENT HAS BEEN RECONSTITUTED TO REFLECT THE COMPANY'S MAINTAINABLE OR SUSTAINABLE INCOME AND THIS IS CONSISTENT WITH DEFINITIONS OF CASH FLOW.

THE ESTIMATES ARE NOMINAL TO BE CONSISTENT WITH THE ESTIMATES OF COST OF CAPITAL.

**McKelly**

**Equity**

| | |
|---|---|
| Ordinary Shares | 40M @ $3 S = $120M under a **Classical Tax** |
| Cost of Capital Equity Ord. Shares | $E(R_e) = R_f + [E(R_m) - R_f]\beta$ |
| | $= 10.5 + [16.5 - 10.5]1.2$ |
| Cost of Equity | $= 17.7\%$ |

**Value of Debt**

**Debentures**

$$\text{Present Value} = \frac{\$9.960\text{M} \times 0.1}{0.145}\left[\frac{(1.145)^5 - 1}{(1.145)^5}\right] + \frac{\$9.960\text{M}}{(1.145)^5}$$

$$= \$8.440\text{M}$$

**Term Loans**

$$\text{PV} = \frac{\$15\text{M} \times 0.15}{0.14}\left[\frac{(1.14)^3 - 1}{(1.14)^3}\right] + \frac{\$115\text{M}}{(1.14)^3}$$

$$= \$5.223\text{M} + \$10.125\text{M}$$

$$= \$15.348\text{M}$$

**Unsecured Notes**

$$\text{PV} = \frac{\$5\text{M} \times 0.17}{0.15}\left[\frac{(1.15)^2 - 1}{(1.15)^2}\right] + \frac{\$5\text{M}}{(1.15)^2}$$

$$= \$1.382\text{M} + \$3.781\text{M}$$

$$= \$5.163\text{M}$$

Bank Overdraft = \$5M

**Mortgage Loans**

$$\text{PV} = \frac{\$2\text{M} \times 0.10/2}{1 + 0.15/2} + \frac{\$2\text{M}}{1 + 0.15/2}$$

$$= \$1.953\text{M}$$

**Total Debt Value**

D = \$8.440M + \$15.348M + \$5.163M + \$5M + \$1.953M = \$35.904M

**Weighted Average Cost of Debt**

$$r_D = \frac{0.145 \times 8.440}{35.904} + \frac{0.14 \times 15.348}{35.904} + \frac{0.15 \times 5.163}{35.904} + \frac{0.14 \times 5}{35.904} + \frac{0.15 \times 1.953}{35.904}$$

$$= 14.316\%$$

**Total Value (V)**

V = S + D = \$120M + \$35.904M = \$155.904M

**Cost of Capital and Estimates of Value**

**I. Classical Tax System**

*(i) Before-tax*

$$r_o^c = \frac{r_E}{(1-T)} \cdot \frac{S}{V} + r_d \cdot \frac{D}{V}$$

$$= \frac{17.7\%}{0.61} \times \frac{120}{155.904} + 14.316\% \times \frac{35.904}{155.904}$$

$$= 25.631\%$$

Definition of cash flow

$$X_O = \$29.960M \text{ (see profit operations)}$$

$$\text{Implied Value} = \frac{X_O}{r_k} = \frac{\$39.960M}{0.25631} = 155.9M$$

*(ii) After-tax*

(a) $$r_i^c = r_E \cdot \frac{S}{V} + r_D \cdot (1-T) \cdot \frac{D}{V}$$

$$= 17.7\% \times \frac{120}{155.904} + 14.316\% \times 0.61 \times \frac{35.904}{155.904}$$

$$= 15.635\%$$

Definition of cash flow:

$$X_O(1-T) = \$24.375M$$

Implied Value = \$24.375M/0.15635 = \$155.904M

(b) $$r_{ii}^c = r_E \cdot \frac{S}{V} + r_D \cdot \frac{D}{V}$$

$$= 16.921\%$$

Definition of cash flow

$$X_D = \$5.140M$$
$$(X_O - X_D)(1-T) + X_D = \$26.380M$$

$$\text{Implied Value} = \$26.38M/0.16921$$
$$= \$155.9M$$

**II. Imputation Tax System**

Ordinary shares 40M @ \$3.959 = \$158.36M under an **Imputation Tax**

*(i) Before-tax*

$$r_O = \frac{r_E}{1-T(1-\gamma)} \cdot \frac{S}{V} + r_D \cdot \frac{D}{V}$$

$$= \frac{17.7}{1-0.39(1-0.5)} \times \frac{158.361}{194.265} + 14.316\% \times \frac{35.904}{194.265}$$

$$= 20.570\%$$

Definition of before tax cash flows

$$X_o = \$39.960M$$

Implied Value = \$39.960M/0.20570
= \$194.265M

*(ii) After-tax*

I. $$r_i = r_E \cdot \frac{S}{V} \cdot \frac{(1-T)}{(1-T(1-\gamma))} + r_D \cdot \frac{D}{V}(1-T)$$

$$= 17.7\% \times \frac{158.361}{194.265} \times \frac{(1-0.39)}{(1-0.39(1-0.5))} + 14.316 \times \frac{35.904}{194.265} \times (1-0.39)$$

$$= 10.934\% + 1.614\%$$

$$= 12.548\%$$

Definition of after-tax cash flows

$$X_o(1-T) = \$39.960M \times 0.61$$
$$= \$24.376M$$

Implied Value = \$24.376M/0.12548
= \$194.265M

II. $$r_{ii} = r_E \cdot \frac{S}{V} + r_D \cdot (1-T(1-\gamma)) \cdot \frac{D}{V}$$

$$= 17.7\% \times 0.8152 + 14.316\%(1-0.39(1-0.5))(1-0.8152)$$

$$= 16.559\%$$

Definition of after-tax cash flows

$$X_O(1-T(1-\gamma)) = \$32.167M$$

Implied Value = \$32.167M/0.16559
= 194.265M

III. $r_{iii} = r_E \cdot \frac{S}{V} + r_D \cdot \frac{D}{V}$
$= 17.075\%$

Definition of cash flows

$(X_O - X_D)(1 - T(1 - \gamma)) + X_D = \$33.170M$

Implied Value = \$33.17M/0.17075
= \$194.265M

IV. $r_{iv} = r_E \cdot \frac{S}{V} + r_D \cdot (1 - T) \cdot \frac{D}{V}$
$= 16.043\%$

Definition of cash flows

$X_O(1 - T) + \gamma \cdot T \cdot (X_O - X_D) = \$31.165M$

Implied Value = \$31.165M/0.16043
= \$194.265M

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Officer, R.R. (1990) "The Australian Imputation System For Company Tax and its Likely Effect on Shareholders, Financing and Investment", *Australian Tax Forum*, pp. 353–375.

## Appendix 4 Goldman Sachs JB Were valuation of Toll Holdings and Patrick Corporation (see pages 22-23)

# The Daily Cable

Goldman Sachs JBWere Pty Ltd
ABN 21 006 797 897
www.gsjbwere.com

**Wednesday, January 25, 2006**

## Key Indicators Summary

| EQUITY MARKETS | Index (pts) | Change (pts) | Change (%) |
|---|---|---|---|
| ASX 200 | 4824.8 | 12.7 | 0.3 |
| ASX 300 | 4839.8 | 12.9 | 0.3 |
| SFE Futures 200 - O/N (Mar) | 4804.0 | 7.0 | 0.1 |
| FT 100 | 5933.8 | -27.1 | -0.5 |
| DAX 30 | 5334.3 | -14.4 | -0.3 |
| CAC 40 | 4748.3 | -3.7 | -0.1 |
| Dow Jones | 10740.8 | 52.0 | 0.5 |
| Volume (million shares) | 246.4 | | |
| S&P 500 | 1270.6 | 6.8 | 0.5 |
| NASDAQ | 2268.4 | 19.9 | 0.9 |
| Nikkei | 15648.9 | 288.2 | 1.9 |
| Hang Seng | 15530.6 | 66.8 | 0.4 |
| NZSX 50 | 3318.9 | 9.9 | 0.3 |

| INTEREST RATES | Rate (%) | Change (pps) |
|---|---|---|
| Aust. 90 day Bank Bill | 5.62 | 0.00 |
| Aust. 10 year Futures | 5.21 | 0.03 |
| US 90 day Treasury Bill | 4.29 | 0.02 |
| US 2 year Treasury Note | 4.37 | 0.03 |
| US 10 year Bond | 4.39 | 0.04 |
| US 30 year Bond | 4.57 | 0.04 |

| CURRENCIES | Rate | Change |
|---|---|---|
| A$ / US$ | 0.7517 | -0.0017 |
| A$ / £STG | 0.4202 | -0.0014 |
| Aust. TWI | 63.1 | -0.2 |
| US$ / YEN | 114.57 | 0.15 |
| US$ / CHF | 1.2599 | 0.0031 |
| US$ / SA Rand | 6.0238 | 0.0648 |
| EURO / US$ | 1.2292 | -0.0015 |

| EUROPEAN INDICES | Index (pts) | Change (pts) | Change (%) |
|---|---|---|---|
| Euro Telco Index | 180.66 | -2.35 | -1.5 |
| Euro Banks & Fin. Index | 243.51 | -0.99 | -0.4 |
| Euro Media Index | 111.53 | 0.43 | 0.4 |

| NORTH AMERICAN INDICES | Index (pts) | Change (pts) | Change (%) |
|---|---|---|---|
| S&P Consumer Discretionary | 263.57 | 2.04 | 0.8 |
| S&P Consumer Staples | 239.41 | 0.95 | 0.4 |
| S&P Energy | 420.39 | 0.43 | 0.1 |
| S&P Financials | 424.95 | 2.19 | 0.5 |
| S&P Health Care | 268.73 | -0.65 | -0.2 |
| S&P Industrials | 286.97 | 1.53 | 0.5 |
| S&P Information Technology | 336.90 | 1.49 | 0.4 |
| S&P Materials | 190.22 | 1.83 | 1.0 |
| S&P Telco Services | 118.68 | 1.47 | 1.3 |
| S&P Utilities | 166.43 | 0.83 | 0.5 |
| S&P Metals & Mining | 173.02 | 3.15 | 1.9 |
| S&P Gold | 133.58 | -1.19 | -0.8 |
| Philadelphia Gold & Silver | 140.43 | -1.00 | -0.7 |
| S&P Oil & Gas | 404.74 | 1.49 | 0.4 |

| COMMODITIES | | Index/Price | Change | Change (%) |
|---|---|---|---|---|
| RJ/CRB Index | | 343.60 | 0.83 | 0.2 |
| Oil - WTI (NYMEX) | US$/bbl | 67.85 | -0.19 | -0.3 |
| NY Gold | US$/oz | 558.20 | -1.30 | -0.2 |
| NY Platinum | US$/oz | 1048.80 | 2.00 | 0.2 |
| LME Copper | US¢/lb | 311.44 | -2.19 | -0.7 |
| LME Nickel | US¢/lb | 630.16 | -10.43 | -1.6 |
| LME Aluminium | US¢/lb | 109.23 | -0.23 | -0.2 |
| LME Zinc | US¢/lb | 78.38 | 0.83 | 1.1 |
| LME Lead | US¢/lb | 51.03 | 0.45 | 0.9 |

*Note 1) LME prices and NY gold & silver are on a cash basis.*
*Note 2) All prices/indices as at 24/1/06 8:04 am Australian Daylight Saving Time. "Change" is the daily movement from the previous trading session's close.*
Source (all tables): Bloomberg

**For Reg AC Certification see Disclosure of Interests.**
**IMPORTANT NOTE: Please read the Disclosures and Disclaimers toward the end of this publication.**



## Contents



| London Metal Exchange Pieske (tonnes) | Stocks/Pos. | Change | 24/01/2006 Change (%) |
|---|---|---|---|
| Copper | 103,075 | -1,600 | -1.5 |
| Tin | 14,975 | -75 | -0.5 |
| Lead | 33,275 | +1,375 | 2.9 |
| Zinc | 375,750 | -1,250 | -0.4 |
| Aluminium | 493,675 | +6,075 | 0.9 |
| Nickel | 26,516 | +138 | 0.4 |
| Al. Alloy | 30,300 | +240 | 0.7 |

# PATRICK CORPORATION LIMITED/ TOLL HOLDINGS LIMITED/ VIRGIN BLUE HOLDINGS LIMITED

*All figures in A$ unless otherwise advised*

## FINANCIAL SUMMARY – PATRICK CORPORATION

| Profit & Loss (A$m) Year End Sep | | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| **Sales** | | **1,250** | **2,342** | **3,393** | **3,637** | **3,854** |
| **Operating EBITDA** | | **236** | **351** | **569** | **709** | **869** |
| D & A (excl. G/Will) | | 71 | 113 | 192 | 232 | 240 |
| **Operating EBITA** | | **164** | **237** | **376** | **477** | **629** |
| Goodwill Amortisation | | 10 | 0 | 0 | 0 | 0 |
| Other (Non Operating Inc.) | | 1 | 5 | 3 | 3 | 3 |
| EBIT | | 156 | 243 | 379 | 480 | 632 |
| Net Interest Exp./(Rev) | | 20 | 49 | 97 | 107 | 99 |
| **PreTax Profit (pre NRI's)** | | **136** | **193** | **282** | **373** | **534** |
| Tax Expense (pre NRI's) | | 43 | 68 | 97 | 124 | 172 |
| Assoc./ JV NPAT | | 97 | 74 | 64 | 76 | 89 |
| Minorities (after Tax) | | 2 | 18 | 38 | 47 | 77 |
| Pref. Dividends | | 17 | 0 | 0 | 0 | 0 |
| Other Adj | | 0 | 0 | 0 | 0 | 0 |
| **Reported NPAT (Pre NRI)** [1] | | **171** | **182** | **211** | **278** | **374** |
| Non Recurring Items (after Tax) | | 27 | -12 | 0 | 0 | 0 |
| Reported NPAT (post NRI's) | | 198 | 170 | 211 | 278 | 374 |
| **GSJBW Adjustments:** | | | | | | |
| Reported NPAT (Pre NRI's) | | 171 | 182 | 211 | 278 | 374 |
| Goodwill Amortisation[2] | | 37 | 0 | 0 | 0 | 0 |
| **NET PROFIT (Adj.)** [3] | | **208** | **182** | **211** | **278** | **374** |
| Sales Growth | (%) | 13.6% | 87.3% | 44.8% | 7.2% | 6.0% |
| Op. EBITDA Growth | (%) | 18.7% | 48.7% | 62.1% | 24.7% | 22.6% |
| NPAT (Adj.) Growth | (%) | 19.0% | -12.8% | 16.4% | 31.9% | 34.7% |
| Op. EBITDA Margin | (%) | 18.9% | 15.0% | 16.8% | 19.5% | 22.6% |
| Op. EBITA Margin | (%) | 13.2% | 10.1% | 11.1% | 13.1% | 16.3% |
| D&A / Sales | (%) | 5.7% | 4.8% | 5.7% | 6.4% | 6.2% |
| **Interest Cover - EBIT** | (X) | **7.8** | **4.9** | **3.9** | **4.5** | **6.4** |
| Interest Cover - GCF | (X) | 9.7 | 10.9 | 5.5 | 6.7 | 8.9 |
| Tax Rate (pre Amort.) | (%) | 29.3% | 35.1% | 34.3% | 33.3% | 32.2% |
| **Return on Equity** [4] | **(%)** | **10.8%** | **13.5%** | **16.4%** | **18.9%** | **21.8%** |
| Reported EPS | (¢) | 35.8 | 24.5 | 30.0 | 39.2 | 52.5 |
| % Change | (%) | 52.8% | -31.5% | 22.5% | 30.5% | 33.8% |
| **EPS (Adj.)** | **(¢)** | **31.7** | **26.3** | **30.0** | **39.2** | **52.5** |
| % Change | (%) | 17.4% | -17.3% | 14.4% | 30.5% | 33.8% |

| Cash Flow Analysis (A$m) Year End Sep | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|
| Operating EBITDA | 236 | 351 | 569 | 709 | 869 |
| Change in Working Cap. | -15 | 364 | -32 | 12 | 8 |
| Other | -11 | -310 | 0 | 0 | 0 |
| **Gross Cash Flow** | **210** | **405** | **537** | **720** | **877** |
| Net Interest Paid | -22 | -37 | -97 | -107 | -99 |
| Tax Paid (inc. abs) | -32 | -73 | -97 | -124 | -172 |
| Other | 1 | 1 | 1 | 1 | 1 |
| **Operating Cash Flow** | **157** | **296** | **345** | **491** | **608** |
| Maint. Capex | -133 | -400 | -667 | -242 | -522 |
| **FREE CASH FLOW (Pre Div's)** | **25** | **-104** | **-322** | **249** | **86** |
| Dividends Paid | -87 | -117 | -391 | -159 | -197 |
| Expan. Capex | 0 | 0 | 0 | 0 | 0 |
| Acquisitions | -141 | 290 | 0 | 0 | 0 |
| Asset Sales | 4 | 5 | 0 | 0 | 0 |
| Dividends Received | 48 | 6 | 8 | 8 | 9 |
| Share Issues/Repurchases | 422 | 132 | 9 | 36 | 39 |
| Other (FX Adj, etc.) | 3 | -623 | 0 | 0 | 0 |
| **Inc. in Net Cash / (Debt)** | **273** | **-411** | **-696** | **134** | **-64** |
| Gross CF / Op. EBITDA | (X) | 0.89 | 1.15 | 0.94 | 1.02 | 1.01 |
| Maint. Capex / Sales | (%) | 10.6% | 17.1% | 19.7% | 6.7% | 13.5% |
| Total Capex / Sales | (%) | 10.6% | 17.1% | 19.7% | 6.7% | 13.5% |
| Maint. Capex / D&A | (X) | 1.86 | 3.53 | 3.47 | 1.04 | 2.18 |
| Total Capex / D&A | (X) | 1.86 | 3.53 | 3.47 | 1.04 | 2.18 |
| Maint. Capex / GCF | (%) | 63.2% | 98.8% | 124.2% | 33.6% | 59.6% |
| Growth Spend [5] | (A$m) | 141.5 | -289.7 | 0.0 | 0.0 | 0.0 |

| Divisional Analysis (A$m) Year End Sep | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|
| **Operating Revenue** | | | | | |
| Ports | 807 | 845 | 900 | 983 | 1072 |
| Rail | 405 | 519 | 558 | 599 | 642 |
| Air Services | 39 | 983 | 1935 | 2056 | 2140 |
| **Total Operating Revenue** | **1250** | **2342** | **3393** | **3637** | **3854** |
| **Consolidated EBIT** | | | | | |
| Ports | 122 | 136 | 170 | 208 | 239 |
| Rail | 30 | 49 | 63 | 72 | 84 |
| Air Services | 2 | 56 | 152 | 205 | 316 |
| Corporate/Other | 1 | 2 | -5 | -6 | -6 |
| **Total Consolidated EBIT** | **156** | **243** | **379** | **480** | **632** |
| **Associates/JV NPAT** | | | | | |
| Pacific National | 46 | 48 | 59 | 71 | 84 |
| Virgin Blue | 49 | 25 | 0 | 0 | 0 |
| Other | 3 | 1 | 6 | 5 | 5 |

| Balance Sheet (A$m) Year End Sep | | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| **ASSETS:** | | | | | | |
| Cash | | 1 | 122 | 122 | 122 | 122 |
| Trade Debtors | | 189 | 222 | 297 | 319 | 338 |
| Inventory | | 9 | 12 | 15 | 16 | 17 |
| Prop., Plant & Equip. (net) | | 812 | 2,065 | 2,539 | 2,550 | 2,832 |
| Intangibles | | 168 | 861 | 842 | 842 | 842 |
| Investments | | 1,220 | 1,223 | 1,281 | 1,349 | 1,432 |
| Other | | 93 | 179 | 179 | 179 | 179 |
| **TOTAL ASSETS** | | **2,491** | **4,683** | **5,276** | **5,378** | **5,762** |
| Debt | | 260 | 1,875 | 2,571 | 2,437 | 2,501 |
| Trade Creditors | | 63 | 254 | 279 | 299 | 317 |
| Provisions | | 63 | 207 | 189 | 189 | 189 |
| Other | | 135 | 330 | 353 | 367 | 377 |
| **TOTAL LIABILITIES** | | **521** | **2,667** | **3,392** | **3,292** | **3,383** |
| **EQUITY:** | | | | | | |
| Equity Reserves | | 1,248 | 983 | 992 | 1,028 | 1,066 |
| Retained Profits | | 344 | 364 | 295 | 438 | 647 |
| Minorities | | 11 | 302 | 230 | 253 | 298 |
| Preference Capital | | 367 | 367 | 367 | 367 | 367 |
| **TOTAL EQUITY** | | **1,970** | **2,016** | **1,884** | **2,086** | **2,379** |
| Capital Employed | | 1,065 | 3,611 | 4,088 | 4,052 | 4,208 |
| Net Debt / (Net Cash) | (A$m) | 259 | 1,753 | 2,449 | 2,315 | 2,379 |
| **Net Debt / Equity** | **(%)** | **13.2%** | **86.9%** | **130.0%** | **111.0%** | **100.0%** |
| Net Debt / (D+E) | (%) | 11.6% | 46.5% | 56.5% | 52.6% | 50.0% |
| Avg. Working Capital | (A$m) | 135 | -21 | 34 | 36 | 38 |
| Avg. Work. Cap./ Sales | (%) | 10.8% | -0.9% | 1.0% | 1.0% | 1.0% |
| D&A / PPE (net) | (%) | 8.8% | 5.5% | 7.6% | 9.1% | 8.5% |
| Debtors Turnover | (days) | 55 | 35 | 32 | 32 | 32 |
| Inventory Turnover | (X) | 137 | 199 | 222 | 222 | 222 |
| Creditors Turnover | (days) | 18 | 40 | 30 | 30 | 30 |

| DCF Valuation | (A$m) | ($ps) | | Current Price: | $6.04 |
|---|---|---|---|---|---|
| PV of Cash Flows | 5,614 | $7.71 | RF: | | 6.5% |
| Mkt Value of Inv. | 389 | $0.53 | MRP: | | 6.0% |
| (Debt) / Cash | -1,841 | -$2.53 | KE: | | 13.4% |
| Equity Value (Pre Imp.) | 4,163 | $5.71 | KD: | | 4.9% |
| Value of Imp. Credits | | $0.79 | Beta: | | 1.15 |
| **GSJBW DCF Valuation:** | | **$6.51** | **WACC:** | | **10.8%** |
| Shares on Issue (m) | 729 | | | | |

| ROCE Analysis Year End Sep | | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| Adjusted NOPAT | (A$m) | 118.0 | 162.2 | 394.2 | 458.4 | 560.2 |
| Avg. Capital Employed | (A$m) | 1024.5 | 1701.4 | 3849.7 | 4070.1 | 4130.1 |
| **ROCE** | **(%)** | **11.5%** | **9.5%** | **10.2%** | **11.3%** | **13.6%** |
| WACC | (%) | 10.8% | 10.8% | 10.8% | 10.8% | 10.8% |
| **ROCE Spread** | **(abs.)** | **0.8%** | **-1.2%** | **-0.5%** | **0.5%** | **2.8%** |
| Change in ROCE | (abs.) | 0.2% | -2.0% | 0.7% | 1.0% | 2.3% |

Source: Company data, IRESS, GSJBW Research estimates

(1) Reported NPAT (pre NRI's) is before abnormal & non recurring items & after CRANES Distributions.
(2) Includes equity accounted goodwill.
(3) Net Profit (Adj.) is before g/will amortisation, NRI's & Other Adjustments & after CRANES Distribution
(4) ROE excludes CRANES.
(5) Growth Spend represents Expansionary Capex & Acquistions

# PATRICK CORPORATION LIMITED/ TOLL HOLDINGS LIMITED/ VIRGIN BLUE HOLDINGS LIMITED



*All figures in A$ unless otherwise advised*

## FINANCIAL SUMMARY – TOLL HOLDINGS

| Profit & Loss (A$m) Year End | Jun | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| **Sales** | | **3,272** | **3,798** | **4,092** | **4,322** | **4,624** |
| **Operating EBITDA** | | **305** | **363** | **442** | **485** | **526** |
| D & A (excl. G/Will) | | 102 | 126 | 147 | 154 | 164 |
| **Operating EBITA** | | **202** | **237** | **295** | **331** | **362** |
| Goodwill Amortisation | | 12 | 0 | 0 | 0 | 0 |
| Other (Non Operating Inc.) | | 0 | 7 | 4 | 4 | 4 |
| **EBIT** | | 190 | 244 | 299 | 335 | 367 |
| Net Interest Exp./(Rev) | | 23 | 28 | 25 | 16 | 5 |
| **PreTax Profit (pre NRI's)** | | **167** | **216** | **274** | **319** | **362** |
| Tax Expense (pre NRI's) | | 39 | 51 | 60 | 84 | 110 |
| Assoc./ JV NPAT | | 45 | 46 | 59 | 72 | 85 |
| Minorities (after Tax) | | 5 | 7 | 9 | 9 | 11 |
| Pref. Dividends | | 8 | 16 | 16 | 16 | 16 |
| Other Adj | | 0 | 0 | 0 | 0 | 0 |
| **Reported NPAT (Pre NRI)** [1] | | **161** | **189** | **250** | **282** | **310** |
| Non Recurring Items (after Tax) | | 0 | 1 | 0 | 0 | 0 |
| Reported NPAT (post NRI's) | | 161 | 189 | 250 | 282 | 310 |
| **GSJBW Adjustments:** | | | | | | |
| Reported NPAT (Pre NRI's) | | 161 | 189 | 250 | 282 | 310 |
| Goodwill Amortisation | | 12 | 0 | 0 | 0 | 0 |
| **NET PROFIT (Adj.)** [2] | | **173** | **189** | **250** | **282** | **310** |
| Sales Growth | (%) | | 16.1% | 7.7% | 5.6% | 7.0% |
| Op. EBITDA Growth | (%) | | 19.2% | 21.6% | 9.7% | 8.5% |
| NPAT (Adj.) Growth | (%) | | 8.9% | 32.6% | 12.8% | 9.9% |
| Op. EBITDA Margin | (%) | 9.3% | 9.6% | 10.8% | 11.2% | 11.4% |
| Op. EBITA Margin | (%) | 6.2% | 6.2% | 7.2% | 7.6% | 7.8% |
| D&A / Sales | (%) | 3.1% | 3.3% | 3.6% | 3.6% | 3.5% |
| **Interest Cover - EBIT** | (X) | **8.2** | **8.7** | **12.0** | **21.4** | **74.2** |
| Interest Cover - GCF | (X) | 12.7 | 16.9 | 16.1 | 29.9 | 102.2 |
| Tax Rate (pre Amort.) | (%) | 21.6% | 23.6% | 21.7% | 26.5% | 30.5% |
| **Return on Equity** [3] | **(%)** | **19.6%** | **19.0%** | **21.3%** | **20.6%** | **19.6%** |
| Reported EPS | (¢) | 52.7 | 58.6 | 79.4 | 88.3 | 95.9 |
| % Change | (%) | 45.2% | 11.2% | 35.5% | 11.2% | 8.6% |
| **EPS (Adj.)** | **(¢)** | **54.1** | **57.4** | **74.7** | **83.7** | **91.3** |
| % Change | (%) | 41.5% | 6.2% | 30.2% | 11.9% | 9.1% |

| Cash Flow Analysis (A$m) Year End | Jun | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| Operating EBITDA | | 305 | 363 | 442 | 485 | 526 |
| Change in Working Cap. | | -55 | 6 | -30 | -16 | -21 |
| Other | | 6 | -1 | -12 | 0 | 0 |
| **Gross Cash Flow** | | **256** | **368** | **400** | **469** | **505** |
| Net Interest Paid | | -20 | -22 | -25 | -16 | -5 |
| Tax Paid (inc. abs) | | -29 | -34 | -60 | -84 | -110 |
| Other | | 1 | 3 | 14 | 2 | 2 |
| **Operating Cash Flow** | | **208** | **315** | **330** | **371** | **391** |
| Maint. Capex | | -164 | -234 | -198 | -207 | -229 |
| **FREE CASH FLOW (Pre Div's)** | | **44** | **81** | **132** | **163** | **163** |
| Dividends Paid | | -45 | -65 | -93 | -104 | -116 |
| Expan. Capex | | 0 | 0 | 0 | 0 | 0 |
| Acquisitions | | -152 | -167 | -14 | 0 | 0 |
| Asset Sales | | 34 | 112 | 55 | 50 | 50 |
| Dividends Received | | 1 | 4 | 2 | 2 | 2 |
| Share Issues/Repurchases | | 299 | 50 | 26 | 30 | 33 |
| Other (FX Adj, etc.) | | -235 | -9 | -6 | 2 | 0 |
| **Inc. in Net Cash / (Debt)** | | **-54** | **6** | **102** | **143** | **133** |
| Gross CF / Op. EBITDA | (X) | 0.84 | 1.01 | 0.91 | 0.97 | 0.96 |
| Maint. Capex / Sales | (%) | 5.0% | 6.2% | 4.8% | 4.8% | 4.9% |
| Total Capex / Sales | (%) | 5.0% | 6.2% | 4.8% | 4.8% | 4.9% |
| Maint. Capex / D&A | (X) | 1.60 | 1.86 | 1.34 | 1.35 | 1.40 |
| Total Capex / D&A | (X) | 1.60 | 1.86 | 1.34 | 1.35 | 1.40 |
| Maint. Capex / GCF | (%) | 64.0% | 63.7% | 49.4% | 44.3% | 45.3% |
| Growth Spend [4] | (A$m) | 152.5 | 167.3 | 14.0 | 0.0 | 0.0 |

Source: Company data, IRESS, GSJBW Research estimates

(1) Reported NPAT (pre NRI's) is before abnormal & non recurring items & after Pref. Div's.
(2) Net Profit (Adj.) is before g/will amortisation, NRI's & Other Adjustments & after Pref. Divs.
(3) ROE excludes Pref. Capital.
(4) Growth Spend represents Expansionary Capex & Acquisitions

| Divisional Analysis (A$m) Year End | Jun | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| **Sales Revenue** | | | | | | |
| Toll Networks | | 1247 | 1366 | 1502 | 1615 | 1728 |
| Toll North | | 540 | 639 | 690 | 745 | 801 |
| Toll Logistics | | 1070 | 1168 | 1238 | 1312 | 1391 |
| Toll New Zealand | | 415 | 626 | 662 | 649 | 704 |
| **Total Sales Revenue** | | **3272** | **3798** | **4092** | **4322** | **4624** |
| **EBIT Contribution** | | | | | | |
| Toll Networks | | 63 | 82 | 109 | 121 | 130 |
| Toll North | | 28 | 29 | 35 | 40 | 44 |
| Toll Logistics | | 61 | 69 | 80 | 85 | 90 |
| Toll New Zealand | | 42 | 60 | 81 | 93 | 108 |
| Corporate/Other | | -3 | 5 | -6 | -5 | -5 |
| **Total EBIT** | | **190** | **244** | **299** | **335** | **367** |

| Balance Sheet (A$m) Year End | Jun | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| **ASSETS:** | | | | | | |
| Cash | | 102 | 151 | 151 | 151 | 283 |
| Trade Debtors | | 390 | 358 | 404 | 426 | 456 |
| Inventory | | 16 | 17 | 18 | 19 | 21 |
| Prop., Plant & Equip. (net) | | 925 | 946 | 942 | 945 | 960 |
| Intangibles | | 186 | 193 | 193 | 193 | 193 |
| Investments | | 411 | 592 | 666 | 738 | 823 |
| Other | | 160 | 223 | 223 | 223 | 223 |
| **TOTAL ASSETS** | | **2,190** | **2,481** | **2,597** | **2,696** | **2,959** |
| Debt | | 419 | 462 | 380 | 217 | 216 |
| Trade Creditors | | 143 | 118 | 135 | 142 | 152 |
| Provisions | | 306 | 352 | 366 | 395 | 429 |
| Other | | 222 | 268 | 268 | 268 | 268 |
| **TOTAL LIABILITIES** | | **1,089** | **1,199** | **1,128** | **1,023** | **1,065** |
| **EQUITY:** | | | | | | |
| Equity Reserves | | 471 | 544 | 576 | 608 | 641 |
| Retained Profits | | 348 | 450 | 596 | 760 | 936 |
| Minorities | | 37 | 43 | 52 | 61 | 72 |
| Preference Capital | | 245 | 245 | 245 | 245 | 245 |
| **TOTAL EQUITY** | | **1,101** | **1,282** | **1,469** | **1,673** | **1,894** |
| Capital Employed | | 1,043 | 1,041 | 1,053 | 1,044 | 1,048 |
| Net Debt / (Net Cash) | (A$m) | 316.8 | 310.8 | 208.6 | 65.9 | -67.3 |
| **Net Debt / Equity** | **(%)** | **28.8%** | **24.2%** | **14.2%** | **3.9%** | **-3.6%** |
| Net Debt / (D+E) | (%) | 22.3% | 19.5% | 12.4% | 3.8% | -3.7% |
| Avg. Working Capital | (A$m) | 263.4 | 257.6 | 287.4 | 303.6 | 324.9 |
| Avg. Work. Cap./ Sales | (%) | 8.1% | 6.8% | 7.0% | 7.0% | 7.0% |
| D&A / PPE (net) | (%) | 11.1% | 13.3% | 15.6% | 16.3% | 17.0% |
| Debtors Turnover | (days) | 43.5 | 34.4 | 36.0 | 36.0 | 36.0 |
| Inventory Turnover | (X) | 208.4 | 218.7 | 222.2 | 222.2 | 222.2 |
| Creditors Turnover | (days) | 16.9 | 11.3 | 12.0 | 12.0 | 12.0 |

| DCF Valuation | (A$m) | ($ps) | Current Price: | $11.40 |
|---|---|---|---|---|
| PV of Cash Flows | 3,506 | $10.31 | RF: | 6.5% |
| Mkt Value of Inv. | 1,020 | $3.00 | MRP: | 6.0% |
| (Debt) / Cash | -466 | -$1.37 | KE: | 11.9% |
| Equity Value (Pre Imp.) | 3,942 | $11.59 | KD: | 5.3% |
| Value of Imp. Credits | | $1.46 | Beta: | 0.90 |
| **GSJBW DCF Valuation:** | | **$13.05** | **WACC:** | **10.8%** |
| Shares on Issue (m) | 340 | | | |

| ROCE Analysis Year End | Jun | 2004H | 2005H | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|
| Adjusted NOPAT | (A$m) | 157.4 | 183.7 | 231.1 | 244.6 | 253.6 |
| Avg. Capital Employed | (A$m) | 790.4 | 1042.3 | 1047.2 | 1048.9 | 1046.3 |
| **ROCE** | **(%)** | **19.9%** | **17.6%** | **22.1%** | **23.3%** | **24.2%** |
| WACC | (%) | 10.8% | 10.8% | 10.8% | 10.8% | 10.8% |
| **ROCE Spread** | **(abs.)** | **9.1%** | **6.8%** | **11.3%** | **12.5%** | **13.4%** |
| Change in ROCE | (abs.) | -2.5% | -2.3% | 4.4% | 1.3% | 0.9% |