Chapter 2
Australian financial markets

Learning objectives

After completing this chapter, you should be able to:

- identify the major Australian financial markets
- understand the importance of these markets via selected statistics
- describe the basic legal and physical environment in which the markets operate
- be aware of the historical performance of each of the major Australian asset classes
- identify the securities associated with each Australian asset classes
- appreciate the basics of the Australian tax system, with particular emphasis on the dividend imputation system.

Key points

1 The major Australian financial markets (and the assets commonly traded in each market) are the equity market (shares), money market (cash securities), bond market (fixed interest securities) and the property market (real estate assets).

2 The discussion focuses on the following key issues. How are securities traded in each market? How is each market regulated? What has the historical performance of each market been? What tax issues are associated with the disposal of securities in each market?

Chapter outline

2.1 Introduction

1 This chapter is organised around the four major Australian financial markets. Note that the debt market classification is dealt with in its constituent parts, namely the money and fixed interest markets.

2 These markets can be either formal in nature (such as the ASX and ASX 24, Chi-X, NSXA and SIM VSE) or less formal (such as dark-pool and over-the-counter markets).

2.2 Equity markets in Australia

1 The major equity market in Australia is the Australian Stock Exchange (ASX), formed in 1987. It allows trading of long-term equity investments.

2 Trading through SEATS system. Common types of trades include limit orders, market orders and short sales.

3 Regulation is via the *Corporations Act 2001* and ASX self-regulation.

4 Historical equity performance is measured through an index. These indices incorporate market-breadth (number of shares), weighting systems (equal, price or value-weighted), capitalisation changes (rights and/or bonus issues) and dividend effects.

5 Australia operates a dividend imputation system whereby investors receive a tax rebate for tax already paid by the company.

2.3 Australian debt markets

1 Australian debt markets are comprised of money markets (where short-term pure-discount instruments are traded) and bond markets (where longer term coupon paying instruments are traded).

2 Examples of money market securities include bills of exchange (e.g. bank accepted bills), promissory notes, certificates of deposit and treasury notes. Bond market securities include Commonwealth Government bonds, local or semi-government bonds, corporate bonds (e.g. debentures) and securities products (e.g. mortgages).

2.4 Australian property markets

1 Australian property market assets can be traded either directly or indirectly.

2 Direct property investments involve purchasing real estate or property, where the asset is held by the investor.

3 Indirect property involves the purchase of shares or units in a company that invests in property.

Solutions to text problems

Problems

1 There are basically two markets in equity securities. The first is the primary market. This market involves the issue of new securities whether they are initial public offers or further issues. The secondary market allows the purchase and sale of existing securities. The Australian Stock Exchange (ASX) is a centralised body, which provides a secondary market, facilitating trade in corporate and some government and semi-government financial assets. Ordinary shares of publicly listed corporations are the best known assets traded on the ASX though corporate, government and semi-government debt is also traded.

2 The two most common types of trades on the ASX system are market orders and limit orders. Market orders are to buy or sell a security at the prevailing price whereas limit orders specify the price to be traded.

3 Trading is conducted on either of two systems: ASX (based on the stock exchange system) and ASX 24 (based on the futures market system). ASX permits automated order processing

for a range of products including equities, exchange-traded options, exchange-traded funds, warrants, index options, interest rate securities and Australian Government bonds. ASX 24 provides 24-hour trading in a range of contracts for difference, futures contracts and options contracts written on futures contracts. The ASX 24 traded futures contracts include the ASX SPI200, certain agricultural products, energy and interest rate related contracts.

A number of alternative organised securities markets have been recognised by the ASIC in an effort to encourage greater competition in securities trading. By the end of 2013 the organised securities markets available to investors included the two ASX trading systems, ASX and ASX 24, as well as Chi-X which started trading on October 2011. There are also smaller markets recognised by ASIC. These include the National Stock Exchange of Australia (NSXA) which focuses on small to medium companies and SIM Venture Securities Exchange (SIM VSE) which started trading in September 2007.

4 The introduction of competition and the closer regulation of the market by ASIC is argued to result in lower trading costs for those trading in shares. ASX is the primary share market in Australia at present, but Chi-X is offering a viable alternative, particularly in off-market trading and this will prove important for the large institutional investors who are seeking to minimise their trading costs and to maximise returns to investor. Further, ASIC requires that brokers seek out the best price for their clients and so there is now an expectation that brokers will at least look at all options when executing client trading requests. However, the ultimate benefits to investors will depend on a number of factors, such as the costs of information technology and compliance, and will likely be observed indirectly through a narrowing of the bid-ask spread, which will in turn depend on the market share of Chi-X as it seeks to establish itself in the Australian market.

5 The limit order book shows the number of outstanding buy and sell orders in the SEATS system that are yet to be traded. As such, by comparing the number of buy and sell orders in the order book, an investor is able to obtain an indication of market sentiment regarding a particular stock.

6 Short selling involves the borrowing and sale of an asset coupled with return of that asset at some agreed future date. This is useful for arbitrageurs and speculators as it allows a profit to be made by selling an asset, which is not owned. If it was believed that the price of an asset was going to fall then a profit could be made by borrowing the asset and selling it now at the high price and then buying the asset back on the market at the low price and returning it to the lender. Essentially a profit is made and an equivalent asset is returned to the owner. The ASX imposes strict restrictions on the short-selling of listed shares.

7 Centralisation of the state stock exchanges began in the 1960s with the introduction of Uniform Listing Requirements in 1962, culminating in the formation of the ASX Limited in 1987. The ASX Limited was formed out of the six existing state stock exchanges and effectively created one national market. The chalkboard gave way to screen trading and in 1990 trading floors were abolished. The ASX launched the Stock Exchange Automated Trading System (SEATS) in 1996. Following the merger of the Sydney Futures Exchange (SFE) and the Australian Stock Exchange in 2006, the SEATS platform was replaced by CLICK XT. CLICK, known as the Integrated Trading System (ITS), permits automated order

processing for all ASX listed products (including equity, interest rate securities, warrants, options index options, index futures and commodity futures).

Changes in the clearance and settlement procedures have resulted in an increased speed of settlement (settlement within five business days of trade or T+5) and the option of uncertificated shareholding under Flexible Accelerated Security Transfer (FAST) culminating in Clearing House Electronic Sub register System (CHESS) have had a dramatic impact on both the speed and efficiency of clearance and settlement.

FAST provided a substantial improvement on the previous share certificate based system giving the shareholder the option to hold shares held in a 'passbook' like system. This avoids the physical transfer of share script from one party to another. The stock exchange also introduced features that improved the speed of the payment procedure.

CHESS extends the concept of FAST with the aim of settlement within three business days (T+3). CHESS relies on the large-scale computerisation of both clearance and settlement procedures. Thus the ASX has overseen dramatic improvements in processing and recording of share trading.

The other key transformational events for the Australian market occurred in 1996, 1998 and 2006. Following demutualisation in 1996, the Australian Stock Exchange began trading as a listed entity on the Australian Stock Exchange in 1998, though it was not until 2002 that the Sydney Futures Exchanges listed on the stock exchange. The final merger of the two entities took place in 2006. Since the merger, trading has been conducted on either of two systems, ASX or ASX 24. By the end of 2013 the organised securities markets available to investors included ASX and ASX 24, as well as Chi-X, which started trading on October 2011.

8 Brokers buy and sell securities for clients and provide access to a system that allows rapid and low cost matching of buyers and sellers. They may also provide financial advice to clients. Brokers may specialise in particular areas such as setting up initial public offers or takeovers. Brokers may also have particular industry expertise and focus on particular types of investment. The size of the broking firm tends to determine the breadth of the services offered. Small brokers often specialise in providing a personal service to small clients. The larger firms may concentrate on large corporate clients.

Brokers must be properly qualified to hold the position. There are also restrictions on the activities of share market intermediaries arising from the Corporations Act 2001. A share broker must be licensed to deal in securities and provide investment advice. Generally brokers join together in partnerships consisting of a number of qualified brokers.

The cost of using a broker for purchase or sale of securities includes stamp duty and brokerage. Stamp duty is payable by both the buyer and the seller whether the transaction is on market or off market. Brokerage has been negotiable since 1 April 1984 with individual shareholders often facing large brokerage costs on smaller one-way transactions. This cost reduces with higher transaction value such that large transactions or institutional dealers may face much lower brokerage on a one-way transaction.

9 The primary market allows companies to raise initial and subsequent capital requirements from the public. These issues are subject to the Corporations Act 2001 and the requirements of the Australian Securities and Investments Commission (ASIC), especially issues to the public. Generally, for an initial public capital raising, or float, the company issues a prospectus via an underwriting broker. Investors subscribe for the shares and the company then allots shares to these subscribers. The shareholders may then choose to hold the shares or to sell them on the secondary market. When follow-on capital is required the company might make a rights issue or may choose a private placement. In the case of a rights issue the existing shareholders are invited to invest further capital in the company with the price generally set at a discount to the current market price. This right, if renounceable, can then be sold on the market if the shareholder does not wish to make a further investment.

A private placement avoids the need for a prospectus but requires a small number of large investors to subscribe for the shares. By its very nature this approach is less formal, requires less marketing and provides quicker access to funds than is generally available under a rights issue.

Dividend reinvestment schemes have proven an important method of maintaining capital since the introduction of dividend imputation. Dividend imputation has resulted in Australian resident taxpayers tending to favour companies with high franked dividend payout policies. Dividend reinvestment has provided one means of maintaining a high dividend payout policy without the need for regular and costly capital raising to fund new projects.

10 There are four main bodies concerned with the regulation of financial markets in Australia and these make up the Council of Financial Regulators. The four members are the Reserve Bank of Australia (RBA), the Australia Prudential Regulation Authority (APRA), ASIC and Australia Government Treasury. The most active regulators in Australia financial markets are ASIC and the RBA.

The Australia Stock Exchange is the operator of two licensed markets, ASX and ASX24, as well as being responsible for clearing and settlement functions for a range of assets and so it is subject both to ASIC and RBA regulation. The Corporations ACT is designed to ensure that the Australia Stock Exchange meets its responsibilities in terms of the effective and responsible operations for the market. As such, the Corporations ACT also provides a framework within which the Australian Stock Exchange operates. The Trade Practices ACT 1974 (Cth) also has an impact.

11 'Dark pool' refers to the informal markets for securities that operate outside the normal securities exchanges.

12 The weighting systems used in index construction refer to the way in which weights are placed on the individual share components. An equal-weighted index implicitly assumes that every share has equal importance and influence over the index, irrespective of the size of the underlying company. The Statex-Actuaries Index is an example of an equal-

weighted index. An alternative to equal weighting is to use a value-weighting scheme whereby each stock is given a proportionate weight in accordance with that company's overall market value. Hence, a value-weighted index assigns greater weight and therefore greater emphasis on the larger companies. Another term for a value-weighted index is a capitalisation-weighted index. Most share indices are value weighted such as the indices produced by the ASX. A third type of weighting scheme involves weighting by share price. A price-weighted index is usually similar to a value-weighted index as larger companies typically have larger share prices. However, some companies may have few shares on issue and a high share price, which results in them receiving a heavier weighting in a price-weighted index when compared to a value-weighted index. The DJIA30 is an example of a price-weighted index.

13 In order to measure movements in the Australian market, we ideally require a broad-based index. However, a broad index can be subject to problems of infrequent trading, particularly at a daily frequency, and returns may be distorted. The index should measure both capital and dividend returns and therefore an accumulation index is appropriate. The index should also be value weighted to reflect the true influence of individual stocks.

In Australia, the most commonly quoted index is the S&P/ASX 200 share price index though the All-Ordinaries Index or AOI is also popular. While the S&P/ASX 200 index consists of around 200 of the largest shares traded on the ASX, the AOI presently consists of around 500 of the largest shares in the ASX. The S&P/ASX 200 covers about 80% and the AOI captures approximately 99% of the total capitalisation of the Australian equities market. The coverage of the large liquid stocks is reflected in the use of the S&P/ASX 200 index as the underlying asset for the share price index (SPI) futures contract which is traded on ASX24. Another market index is the Small-Ordinaries, which was designed to capture performance of small-sized companies.

14 A price index reports on the average level of prices of the shares in the index. However, for investors, returns not only accrue through price increases but also through the receipt of dividends. A price index implicitly ignores dividend receipts and therefore understates the total level of return to the investor. Accumulation indices are an alternative to price indices. Accumulation indices include the receipt of dividends in their computation. On every ex-dividend date, the value of the dividend is assumed to be reinvested back into that share which paid the dividend. Implicitly, the dividend is assumed to be utilised to purchase more shares in that company at the prevailing market price. Therefore, the dividends accumulate at the same rate of return as that which applies to the stock. The growth that is induced through the reinvestment of dividends makes an accumulation index grow faster than the corresponding price index.

15 Not all shares trade with the same frequency. This is particularly true of the Australian market where the largest shares trade every minute, whereas the smallest shares may not trade for weeks. The problem then arises when shares with different trading frequencies are combined into the one portfolio or index. Price changes in shares that are thinly traded will lag the price changes of the more heavily traded shares. If a share trades only once in a week, then that share will have a zero price change for four days but a price change on the fifth day. This fifth day price change will actually capture the entire week's

price movements. Hence, the inclusion of thinly traded shares creates lumpy price movements, which are not indicative of the true state of affairs. Thinly traded shares create time-dependence in portfolio price movements, which leads to correlation across time periods (known as autocorrelation). Adjustments for the effects of thinly traded shares are available, but they are complex. The easiest way to remove thin trading problems is to ensure that the index only contains actively traded shares. But even this comes at a cost because such an index cannot typically be broadly based and may not be representative of the true market.

16 Gearing an equity investment implies that investors are borrowing money (through a margin loan for instance) to invest in shares (or other financial instruments), using the investor's existing investments as security (collateral) for the loan. Investors might do this because investing the extra borrowed loans can have the effect of magnifying any gains. However, by the same principle, the risk is that any losses will also be magnified. Substantial losses may result in the investor being required to contribute additional funds as collateral (known as a margin call).

17 a A bill of exchange is defined under the Bills of Exchange Act 1909 as:

> An unconditional order in writing, addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand, or at a fixed or determinable future time, a sum certain 'in money to' or 'to the order of' a specific person, or 'to bearer'.

The face value for bills of exchange has tended to be $100 000, $500 000 or $1 million and generally issued for periods of 30 days, 90 days or 180 days. The parties to the bill are: the drawer who is the party issuing the order; the acceptor to whom the bill is addressed; and the payee who is to be paid under the bill. Bills can be discounted, or sold, in the money markets as they are negotiable instruments. Each time the bill is discounted it is endorsed by the seller so that an endorser can demand payment from any preceding endorser, or from the drawer or the acceptor on dishonour of the bill. When the bill is discounted it is sold and so becomes an investment for a purchaser. Often the bill is a bank-accepted or bank-endorsed bill. This provides an investment that avoids the difficulties of assessing the risk of the ultimate borrower because the risk of the bill is directly related to the risk of the bank that accepted or endorsed the bill.

The major users of the bill market are the banks, other financial institutions, pension funds, insurance companies, stockbroking firms, semi-government authorities and local government authorities. Bills are traded via telephone. Trading is rapid with reliance on trust, though tape recording is common to aid with dispute resolution. After a 'firm deal' is agreed professional traders generally use Austraclear, a computer system, to finalise settlement.

b Promissory notes are 'one name' paper as only the issuer can be relied upon for repayment. Promissory notes have the same legal status as bills of exchange and are generally priced at some margin over the bank bill rate. Term to maturity is generally

90, 120 or 180 days and the market is used both by private sector and public sector authorities.

The Bills of Exchange Act 1909 defines a promissory note as:

> An unconditional promise in writing made by one person to another, signed by the maker, engaging to pay, on demand or at a fixed or determined future time, a sum certain in money, to or to the order of a specified person or to bearer.

Promissory notes are in bearer form. This means the securities are transferable by delivery and there is no need for endorsement. Promissory notes have been sold at auction with banks as underwriters and a panel of bidders buying the notes. An issue could also be backed with a letter of credit. These enhancements have provided flexibility, which allows smaller issuers to enter the market though the large corporations tend to make the majority of issues. These larger issuers generally deal directly with the market.

c Certificates of deposit (CD) are bearer instruments (like promissory notes). These securities are basically promissory notes issued by banks and only the bank name appears on the certificate. There are three broad categories: negotiable, convertible and transferable CDs. The period of the borrowing may range from a few days to several years. The negotiable certificates of deposit generally have a term of 90 or 180 days while the transferable certificates of deposit may have a term to maturity of up to five years. Since 1983, with the floating of the Australian dollar and the relaxation of foreign currency restrictions, foreign currency certificates of deposit have also been issued.

d Treasury notes are notes issued by the Commonwealth Government. In the past these securities have been issued with terms of five weeks, 13 weeks or 26 weeks. The main purchasers of these notes are trading banks, savings banks, authorised money market dealers and overseas investors. These are sold via weekly tenders with the note buyers bidding for securities. Treasury notes are generally traded between banks and authorised money market dealers, though notes of less than 91 days to maturity can be converted to cash at any time by rediscounting the notes back to the Reserve Bank. Treasury notes are the least risky of the short-term securities due to Federal Government backing.

18 Larger investors in the economy include money market corporations, authorised money market dealers, cash management trusts, life insurance offices, superannuation funds outside life insurance offices, managed funds and public unit trusts. Assets are generally classified into short term or long term. Short-term assets include cash at bank or other institutions, certificates of deposit, bills of exchange, promissory notes and treasury notes. Long-term assets include Commonwealth Government securities, local government securities, semi-government securities, and securities of other public authorities, debentures and long term corporate debt.

19 Commonwealth bonds, debt securities sold by local government authorities, semi-government authorities and other public authorities and debentures offer a range of risk and return tradeoffs in the Australian debt market. Securitised products offer a further

alternative. Commonwealth government bonds have tended to dominate the long-term market though local and semi-government debt is becoming more important.

20 Commonwealth bonds pay regular six monthly coupon payments and vary in term to maturity. Commonwealth bonds are issued by periodic tender or auction. There is a secondary market in bonds with specialist market makers available to make a trade during periods of thin trading. The Reserve Bank also takes part in this market with its open market operations. Commonwealth bonds can either be bought or sold on the stock exchange using a broker but the majority of trading is through a dealer via telephone in a less formal secondary market.

21 Local government and semi-government debt is usually sold to finance infrastructure such as railways, electricity, water and telecommunications or to provide local government services. Although initially reliant on the final backing of the Commonwealth government, semi-government authorities are now receiving individual credit ratings, which have an impact on their ability to raise funds.

Three approaches have been used by these issuers for fund raising: through retail markets; institutional markets via tenders; and institutional markets via private placement. The majority of debt is raised either via tenders or private placements while debt offered to the retail market generally amounts to only a small proportion of total borrowing.

The majority of semi-government securities mature in one to 15 years. These are generally fixed coupon securities though some issues of indexed, floating rate and zero coupon bonds have been made. Issues to the public are generally made at face value though issues made to institutional investors are generally offered at a discount. Issues at a premium are also feasible. The liquidity of this market has improved dramatically since the creation of central borrowing authorities.

22 Debentures provide a source of funds for financiers and industrial companies with a term ranging from one to five years. They are issued at face value and pay coupons, or interest, at regular intervals. Issues are made either to the general public via a prospectus or to existing shareholders and debenture holders. These issues are generally made under the terms of a trust deed, which determines security, and ranking of the security holders on liquidation. The major investment risks are associated with the risk of the issuing company and thin trading in the secondary market.

23 Direct property investment involves the purchase of real estate, where the asset is held 'directly' by the investor. Examples include the purchase of a house or a rental property, both of which generally involve a large initial outlay. In contrast, indirect property investment involves the trading of shares or units in property assets. These shares and units are often traded on a liquid secondary market (such as a stock exchange) and as such this method of investment avoids many of the costs associated with direct property investment.

24 Negative gearing is associated with investing in direct property. Property investments have both a capital gain component (from the changes in the value of the underlying property

asset) and an income component (rental income). Under Australian tax law, any interest that arises from borrowing funds to invest directly in an investment is tax deductible. An investment is said to be 'negatively geared' in the case where the interest from borrowing funds for the investment exceeds the net rental income.

The benefits of negative gearing are that it helps to reduce the loss associated with the income earned by the asset. This only occurs if the investor has had expenses greater than their income. That is, if the investor has no (or insufficient) taxable income, then there will be no (reduced) benefit from negative gearing. However, negative gearing causes cash flow implications and it is only viable in the short term, as the benefits of such a strategy require investors to incur a loss. Additionally, it is also important to consider the capital gain component: that is, whether the price of the investment property will increase or decrease in value over time. Negative gearing is a valuable profit-making tool in a rising market. Investors can only make money from negative gearing if potential future capital appreciation is higher than the cash flow loss incurred today. Further, a common negative gearing strategy is to focus on blue-chip properties that are used to attract high paying occupants; however, when the economy contracts, premium tenants with high paying salaries are at a high risk of being retrenched. If this happens, tenants will seek cheaper accommodation leaving investors owning expensive properties that are unable to be negatively geared.

25 The important national markets available to investors relate to the four major assets classes discussed in the chapter. Investors in equity are able to trade these securities on the Australian Stock Exchange. Similarly, the money and bond markets allow investors to trade cash and fixed interest securities, respectively. Finally, real estate investments are traded on property markets or through the ASX.

26 Different tax treatment applies to the components of Australian equity investment such as capital gains and dividends. The capital gain from an equity investment is subject to tax under the capital gains tax legislation introduced in Australia in 1985. Australia also has a dividend imputation tax system which allows franked dividends (dividends paid out of the company profits taxed) to be used by Australian investors as a credit for the tax already paid at the company level. The benefits of franking are not available to foreign investors. Dividends that are unfranked are taxed under the classical tax system whereby the company pays tax on its profits, and dividends paid from these profits are subject to tax at the investor level. Hence, unfranked dividends are effectively taxed twice, whereas franked dividends are taxed once. Therefore, return from an investment in shares can come in four forms, which are all subject to different rates of tax. These are franked dividends, partially franked dividends, unfranked dividends and capital gains (or a combination thereof).

The tax treatment of Australian debt instruments differs from that of equity instruments. The primary difference is that any associated gain or loss from trading these instruments does not typically attract capital gains tax. Instead, these gains or losses are subject to taxation at the investor's individual tax rate and are not usually treated as capital gains or losses.

Similar to equity investments, property investments have both a capital gain component (from the changes in the value of the underlying property asset) and an income component (rental income). Disposal of both direct and indirect property investments invokes the capital gain provisions. Further, under Australian tax law, any interest that arises from borrowing funds to invest directly in an investment is tax deductible. In the case where the interest from borrowing funds for the investment exceeds the net rental income, the direct property investment is said to be 'negatively geared'.

27 Consider the following limit order book:

Orders to buy		Orders to sell	
Price	**Quantity**	**Price**	**Quantity**
$2.00	10 000	$2.10	3000
$1.95	5000	$2.15	20 000

Suppose an at-market sell order arrives for 5000 shares. The sell order is matched with the highest available buy order, which is for 10 000 shares at a price of $2.00. As there are sufficient shares at that price to fill the order, 5 000 shares will be traded at a price of $2.00, after which the order book will look as follows:

Orders to buy		Orders to sell	
Price	**Quantity**	**Price**	**Quantity**
$2.00	5000	$2.10	3000
$1.95	5000	$2.15	20 000

28 Consider the following limit order book:

Orders to buy		Orders to sell	
Price	**Quantity**	**Price**	**Quantity**
$2.00	10 000	$2.10	3000
$1.95	5000	$2.15	20 000

a If an at-market buy order arrives for 5000 shares; the buy order will be matched with the lowest available sell order (i.e. 3000 shares at $2.10). As there are insufficient shares, the remaining 2000 shares will be traded at the next lowest sell order of $2.15. The price for the shares is therefore 3000 shares at $2.10 plus 2000 shares at $2.15, making an average price of (3000/5000) x $2.10 + (2000/5000) x $2.15 = $2.12.

The limit order book after the transaction would be as follows:

Orders to buy		Orders to sell	
Price	**Quantity**	**Price**	**Quantity**
$2.00	10000	$2.15	18 000
$1.95	5000	$2.20	50 000

b If a limit order buy order is placed for 5000 shares at $2.10, then this would be matched with the available sell orders at $2.10. As there are insufficient sell orders at that price to fill the order (i.e. the order was for 5000 shares, where only 3000 shares are available for sale at that price), the remaining shares would remain in the order book as a limit order after the trade has been completed.

The investor therefore would purchase 3000 shares at a price of $2.10 per share. The limit order book after the transactions would be as follows:

Orders to buy		**Orders to sell**	
Price	**Quantity**	**Price**	**Quantity**
$2.10	2000	$2.15	20 000
$2.00	10 000	$2.20	50 000
$1.95	5000		

29 If an investor buys $10 000 worth of shares in the company, there are insufficient shares available at the lowest selling price of $2.10. Therefore, a broker would buy $630 at $2.10 a share giving 300 shares, $4300 at $2.15 a share giving 2000 shares, and the remaining $5070 at $2.20 a share giving 2304 shares. The average price paid for these shares would be (300 x $2.10 + 2000 x $2.15 + 2304 x $2.20)/4604 = $2.17, or approximately ($2.17/$2.10) – 1 = 0.0333 or 3.33% of the ask price.

30 Short-selling allows an investor to gain from a future fall in price.

Should the share fall in value from $4.20 to $4 as expected, the return on the short position would be:

$$(4.20 – 4.00)/4.20 = 0.0476 \text{ or } 4.76\%.$$

If the share price rises to $4.50, the investor's return would be:

$$(4.20 – 4.50)/4.20 = –0.0714 \text{ or } 7.14\%$$

31 An equity-weighted index assumes that an equal amount be invested in each share at the end of December 2010. Assume some nominal sum of money that is equally invested in each share, such as $3000 of which $1000 is invested in shares A, B and C. The index at the end of December 2010 has a value of $3000, which comprises:

333 shares in A at $3.00 = $1000
62 shares in B at $16.00 = $1000
83 shares in C at $12.00 = $1000

At the end of December 2011, prices have moved and the index has a value of:

333 shares in A at $2.90 = $965.7
62 shares in B at $15.20 = $942.4
83 shares in C at $11.60 = $962.8
Total Value = $2870.9

Hence, the return over 2011 year is:

$$r_{t+1} = \ln(Value_{t+1} = Value_t)$$
$$r_{2011} = \ln(2870.9/3000) = –0.0440 \text{ or } –4.4\%$$

Value-weighted index assumes that an amount is invested in each share at time t proportional to the relative market value or size of each company. That is, we assume that we purchase 1% of the market value of each company. Hence, the value of the investment is dependent on the relative market values.

The index at the end of December 2010 has a value of $1340, which comprises:

100 shares in A at $3.00 = $300
50 shares in B at $16.00 = $800
20 shares in C at $12.00 = $240

At the end of December 2011, prices have moved and the index has a value of:

100 shares in A at $2.90 = $290
50 shares in B at $15.20 = $760
20 shares in C at $11.60 = $232
Total Value = $1,282

Hence, the return over 2011 year is:

$$r_{t+1} = \ln(Value_{t+1} = Value_t)$$
$$r_{2011} = \ln(1282/1340) = –0.0442 \text{ or } –4.42\%$$

Price-weighted index assumes that an amount is invested in each share at time t proportional to the relative prices of each share. That is, we assume that an equal number of shares are purchased in each stock. Assume we purchase 100 shares in each of A, B and C. The index at the end of December 2010 has a value of $3100, which comprises:

100 shares in A at $3.00 = $300
100 shares in B at $16.00 = $1600
100 shares in C at $12.00 = $1200

At the end of December 2011, prices have moved and the index has a value of:

100 shares in A at $2.90 = $290
100 shares in B at $15.20 = $1520
100 shares in C at $11.60 = $1160
Total Value = $2970

Hence, the return over 2011 year is:

$$r_{t+1} = \ln(Value_{t+1} = Value_t)$$
$$r_{2011} = \ln(2970/3100) = –0.0428 \text{ or } –4.28\%$$

32 Share purchase for $5. Investor receives a dividend of $0.40 at the end of two months and a further dividend of $0.50 at the end of eight months. At the end of 12 months, the share is sold for $4.80. What is continuously compounded return over 12 months?

There are three approaches that could be followed. The first method involves a simple assumption that the intermediate returns are received at the end of the holding period. This is a conservative approach when positive returns accrue as it ignores the time value of money associated with the intermediate returns. In the question, we assume that the three-month and nine-month dividends are received at the end of 12 months, thereby giving a total of $5.70 ($0.50 + $0.40 + $4.80). The continuously compounded return is:

$$r_t = \ln(5.70/5) \times 100 = 13.10\%$$

The second method requires an assumption be made about the reinvestment of the intermediate returns. Assume in the example that the intermediate returns can be reinvested at monthly intervals at 12% per annum. The investor in our example receives $0.40 at the end of two months, which can be reinvested for a further ten months. Similarly the investor receives $0.50 at the end of eight months, which can be further reinvested for a further four months. Therefore assuming monthly compounding, the value of the dividends at the end of 12 months is:

$$\text{Value of reinvested dividends} = [\$0.40 \times (1 + 0.12/12)^{10}] + [\$0.50 \times (1 + 0.12/12)^{4}]$$
$$= \$0.9622$$

These dividends are then added to the value of the share at the end of the 12 months, which is $4.80, thereby giving a final value of $5.76 ($0.96 + $4.80). Hence, the continuously compounded return is:

$$r_t = \ln(5.76/5) \times 100 = 14.15\%$$

Note that this return is higher than with the first method as the dividends are assumed to be reinvested at a positive rate of return, whereas the first method implicitly assumed that the dividends were reinvested for zero return.

The third method involves breaking the holding period into smaller holding periods that coincide with the receipt of intermediate returns. In the question, we would have three holding periods that would cover: (1): zero to two months; (2) two to eight months; and (3) eight to 12 months. The 12-month return would then be an aggregate of the three smaller sub-period returns. Under this method, we would need to measure the value of an asset at the end of each sub-period returns (i.e. two and eight months) or, alternatively, make an assumption about the value of the asset at the end of each sub-period.

The second method, which assumes dividend reinvestment, is the most technically correct. The second method takes into account the time value of money and the difference in the magnitude of the intermediate cash flows.

33 Market value cum-rights is $3.00 per share or $15.00 for five shares.
Add subscription price of $2.20 and portfolio of five shares is worth $17.20.
Ex-rights, this portfolio is now represented by six shares.
Hence, the ex-rights share price is $17.20/6 = $2.87 per share.

34 Market value cum-bonus is $3.00 per share or $15.00 for five shares.
Ex-bonus, this portfolio is now represented by six shares.
Hence, the ex-bonus share price is $15.00/6 = $2.50 per share.

35 Note: using continuously compounded returns:
Return (Day 2) = ln(1.25/1.10) = 12.8%
Return (Day 3) = ln [(1.20 + 0.10)/1.25] = 3.9%
Return (Day 4) = ln(1.32/1.20) = 9.5%

Note: using discrete returns:
Return (Day 2) = (1.25 – 1.10) /1.10 = 13.6%
Return (Day 3) = (1.20 + 0.10 – 1.25)/ 1.25 = 4.0%
Return (Day 4) = (1.32 – 1.20)/ 1.20 = 10.0%

36 a

Month	**Price relative**
Feb	(1.3 + 0.02)/(1.20) = 1.100
March	(2x0.70)/1.30 = 1.077
April	0.6/0.7 = 0.857
May*	0.6/0.583 = 1.029

* Cum-rights portfolio of five shares at $0.60 = $3.00.
Plus subscription price of $0.50 = $3.50.
Ex-rights portfolio of six shares at P = $3.50.
Hence, ex-rights price P = 3.50/6 = $0.583.

b Return = ln(Price relative)

Month	**Return (%)**
Feb	9.53
March	7.42
April	–15.43
May	2.86

37 Corporate profit $500 000
less tax @ 30% 150 000
After tax profit 350 000
Dividend $350 000

a

Personal tax @ 45%	225 000
less tax rebate	150 000
Net tax	75 000
Net dividend	$275 000

b	Personal tax @ 30%	150 000
	less tax rebate	150 000
	Net tax	0
	Net dividend	$350 000

c	Personal tax @ 0%	0
	less tax rebate	150 000
	Net tax	(150 000)
	Net dividend	$500 000

The above answers show that the effective rate of tax under the dividend imputation system is the investor's personal marginal rate of tax. Investors with a marginal tax rate less than the corporate rate receive a net tax credit which can be used against other assessable income or refunded where the investor has insufficient taxable income against which to offset the tax credit. As a very general rule, investors with low tax rates will prefer shares with high dividend yields.

38

	Geared Portfolio	**Ungeared Portfolio**
Initial Investment	100 000	100 000
Borrowed Funds	50 000	0
Portfolio Value	150 000	100 000
Scenario 1:	50% rise in the value of the portfolio	
Portfolio Value	225 000	150 000
Less: Loans Outstanding	50 000	0
Net Portfolio Value	175 000	150 000
% Return	75%	50%
Loan to Value (LVR)	22%	
Scenario 2:	50% fall in the value of the portfolio	
Portfolio Value	75 000	50 000
Less: Loans Outstanding	50 000	0
Net Portfolio Value	25 000	50 000
% Return	–75%	–50%
Loan to Value (LVR)	67%	

In scenario 1, the portfolio value increases by 50% over the investment period to $150 000, resulting in a return of ($150 000/$100 000) – 1 = 50% return to the ungeared portfolio. For the geared portfolio, the 50% return increases the portfolio value to $225 000, which after subtracting the $50 000 loan value results in a return to the investor of ($175 000/$100 000) –1 = 0.75 or 75%. In this scenario, the LVR at the end of the holding period is 22%.

In scenario 2, there is a 50% fall in the value of the portfolio over the investment period. As expected, the ungeared portfolio return is simply –50%, calculated as ($50 000/$100 000) – 1 = –0.5. However, the geared portfolio falls in value to $75 000, which after subtracting the $50 000 loan outstanding leaves a net portfolio of just $25 000. The investor's return in this scenario is therefore ($25 000/$50 000) –1 = –0.75 or –75%. This fall in share prices has increased the LVR to 67%. Note that the borrowed funds also attract interest. These interest payments are typically added by the lender to the loan outstanding on a monthly basis.

39 Over the next year, the unit earns income of $15 000. The interest cost on the borrowed funds is $36 000 (9% x $400 000). This is in excess of the rental income by $21 000, which means the property is negatively geared (recall negative gearing implies that the interest from borrowing funds for the investment exceeds the net rental income).

To determine the benefits to the investor, we must determine how much negative gearing can reduce the tax liability on their other assessable income by the investment property's loss of $21 000. The tax benefit will depend on the investor's marginal tax rate. With the marginal tax rate at 38%, the tax savings would be $21 000 x 0.38 = $7980 and effectively the loss on the property would be reduced to $13020 (that is, $21 000 – $7980).

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Key word: *Dividend Imputation*

Chapter 2 provides an overview of the Australian Financial Market. The Australian market, like most financial markets, has many unique characteristics, one of which is dividend imputation.

1 With respect to the material presented in the chapter, summarise the key points regarding dividend imputation and in particular differentiate between how Australian and foreign investors view dividends paid by Australian companies.

Australia has allowed dividend imputation since 1987. Through this system the tax authorities are notified that a company has already paid the required income tax on the income it distributes as dividends. Then the shareholder does not have to pay tax on the dividend income.

In any other country, corporate dividends are taxed twice, which occurs when both a company and a shareholder pay tax on the same income. The company pays taxes on profits and subsequently distributes a dividend out of its after-tax profits. Shareholders must then pay tax on the dividend received. The double taxation system can cause corporations to prefer debt over equity, makes companies more likely to retain their earnings, and drags down economic growth.

2 Similarly, the article *Wrong way on dividend washing*, by Daryl Dixon, published in *The Australian* newspaper, on 1 March 2014 provides a practical illustration of this issue. Summarise the key points from the article.

Two government decisions have caused the opportunities to trade in imputation credits can be accessed twice on the same time. First is the approval of the cum-dividend market. Second is the longstanding benign attitude of both the regulators and ATO to tax avoidance benefits of share lending.

Two decisions both have benefits, such as generating large immediate savings, and reducing tax avoidance opportunities.

All the changes ensure that the value of the imputation credits would not be transferred by the loan of shares.