

Workshop Outline and Learning Methodologies

Session	Methodologies	Chapters covered	Guidance Notes
Workshop 1			Released on 1 Dec 10
1. Introduction	<ul style="list-style-type: none">• Presentation• Group discussion		
2. Ethics in business	<ul style="list-style-type: none">• Case study• Group Discussion	Ch. 1	P.g 1 – 10
3. Executive management	<ul style="list-style-type: none">• Case study• Formal presentations	Ch. 2	P.g 11 – 24
4. Management reporting	<ul style="list-style-type: none">• Case study• Formal presentations	Ch. 4 & 6	P.g 25 – 35
Workshop 2			Released on 10 Dec 10
5. Reboot	<ul style="list-style-type: none">• Presentation• Group discussion		
6. Treasury operations	<ul style="list-style-type: none">• Case study• Formal presentations	Ch. 8, 10 & 11	P.g 1 – 12
7. Corporate finance	<ul style="list-style-type: none">• Case study• Formal presentations	Ch. 12, 13, 14 & 17	P.g 13 – 29
8. Conclusion	<ul style="list-style-type: none">• Presentation• Group discussion		

Part D Treasury Operations

Solution

The pre-workshop exercise did not specify which ratios to calculate. Candidates were expected to read Chapter 8 of the CLP and decide which ratios were appropriate. The following ratios calculations should be expected:

Ratio Analysis	2009	2008	Comments
Current Ratio	1.07	1.16	Deteriorating
Quick Ratio	0.79	0.82	Deteriorating
Accounts Receivable Settlement Period (days)	45	54	Improving
Inventory Turnover (based on ending inventory)	6.1	4.9	Improving
Inventory Turnover Period (days)	60	75	Improving
Accounts Payable Payment Period (days)	106	111	Deteriorating
Sales Revenue/Net Working Capital Ratio (times)	28	13	Improving
Sales Turnover Increase	24%		Good
Non-current Asset increase	12%		Good?
Inventory increase	-1%		Good
Receivables increase	4%		Attention
Payables increase	18%		Attention

Supporting Calculations	2009	2008
Current Ratio	3735 / 3477	3436 / 2971
Quick Ratio	(3735-983) / 3477	(3436-994) / 2971
Accounts Receivable Settlement Period (days)	$((221+682) / 7301) \times 365$	$((235+637) / 5867) \times 365$
Inventory Turnover (based on ending inventory)	6008 / 983	4858 / 994
Inventory Turnover Period (days)	$(983 / 6008) \times 365$	$(994 / 4858) \times 365$
Accounts Payable Payment Period (days)	$((1081+663) / 6008) \times 365$	$((966+514) / 4858) \times 365$
Sales Revenue/Net Working Capital Ratio (times)	7301 / (3735-3477)	5867 / (3436-2971)
Sales Turnover Increase	$(7301-5867) / 5867$	
Non-current Asset increase	$(2408-2149) / 2149$	
Inventory increase	$(983-994) / 994$	
Receivables increase	$(221+682) - (235+637) / (235+637)$	
Payables increase	$(1081+663) - (966+514) / (966+514)$	

Note: Receivables and Payables are calculated to include both trade receivables/payables and bills receivable/payable. This reflects the fact that in the automobile manufacturing business, purchases are paid for using both normal trade credit and trade bills.

Answer guidance

- Both the current ratio and the quick ratio are at quite low levels, and have deteriorated from 2008 to 2009.
- This is offset to some extent by the existence of significant cash and cash equivalents (2009 – RMB 1,308 mil).
- Against that, the level of trade payables, bills payable, other payables, and short term borrowings is high.
- Supporting the previous point is the fact that the accounts payable period is 106 days. Note that this includes both trade payables and bills payable, so it is possible that 90 day bills are contributing to this.
- While the 2009 inventory turnover period of 60 days is quite high for an automobile manufacturer globally it is comparable to the rest of the PRC industry. It is far lower than the 75 days cycle experienced in late 2008 when the financial crisis first struck. Both KCC and the PRC industry generally would be looking for continuing improvement through 2010.
- Again, although 45 days is relatively high compared to the global market this is standard in the PRC industry. In 2008 at the height of the global financial crisis the accounts receivable settlement period was 54 days, also in line with the industry, This improving trend needs to be continued.
- The sales revenue to net working capital ratio has increased and this may suggest that the company's working capital resources are getting thin.

Part D Treasury Operations

Refer to the pre-workshop exercise on ratio analysis. The CFO of KCC, David Chan is becoming concerned about the management of the firm's working capital. He feels that the current ratio and quick ratio are reaching dangerous levels. He is also a little worried about the management of cash, receivables, inventory, and the funding of working capital.

There are four young CPAs in David Chan's finance team, and each has been assigned the task of examining one aspect of the management of working capital at KCC.

Required:

- (a) Calculate the company's cash operating cycle. Assume that the average time that raw materials remain in inventory is 33 days, the average time taken to produce the vehicles is 50 days, and the average time the vehicles sit in finished inventory is 20 days. Also suggest ways to improve cash management at KCC.
- (b) Comment on the management of inventory at KCC and suggest ways that this might be improved. Include a discussion of "lean" (JIT) manufacturing, and inventory control models.

Use the following production data for illustrative purposes: annual demand for a part – 10,000 units; set up costs per batch – RMB3,800; annual carrying costs for part – RMB 500.

Also use the following purchase data for illustrative purposes: annual demand for pick-up truck tyres – 328,985; ordering costs per order – RMB15; annual carrying costs per tyre – RMB12.

- (c) Comment on the management of receivables at KCC and suggest ways that this might be improved. Include a discussion of methods of assessing the creditworthiness of potential customers.
- (d) Examine to what extent the company's dividend policy and retained earnings policy can contribute to the funding of working capital at KCC.

Part D Treasury Operations

Solution

CLP reference

Chapter 8, Section 3, 6, 7 and Chapter 10, Section 2, 4, 6

(a) Cash operating cycle and cash management improvement

The **cash operating cycle** is the period of time that elapses between the point when cash starts to be spent on the production of a product and the collection of cash from a purchaser.

The cash operating cycle in a manufacturing business equals:

Average time that raw materials remain in inventory, minus
Average period of credit taken from suppliers, plus
Average time taken to produce the goods, plus
Average time goods sit in finished inventory, plus
Average time taken by customers to pay for the goods

Given the ratio calculations for the accounts receivable settlement period, the accounts payable payment period, and the information supplied in the question requirement, the current cash operating cycle for KCC is:

<u>Activity</u>	<u>Time (Days)</u>
Average time that raw materials remain in inventory	33
Average period of credit taken from suppliers	(106)
Average time taken to produce the vehicles	50
Average time vehicles sit in finished inventory	20
Average time taken by customers to pay for the vehicles	45
Equals KCC's cash operating cycle	<u>42</u>

The above analysis suggests some relevant comments with respect to **cash management**.

- First, in the likely event that **suppliers** demand quicker payment of their bills, the **period of credit for payables could be reduced significantly**. This would increase the cash operating cycle, and suggest such **other cash management strategies** as:
 - The average time that raw materials remain in inventory could be reduced.
 - The average time taken to produce the vehicles could be reduced.
 - The average time vehicles remain in finished inventory could be reduced
 - Attempting to reduce further the average time taken by customers to pay for their vehicles.
- **Inventory** management strategies are to be covered by another group, but **cash management strategies** to reduce the average time customers take to pay their bills include:
 - **Earlier billing**. An obvious but easily overlooked way to speed up collections is to get invoices to customers earlier.
 - **Reduce the duration of trade bills**. For example, if the trade bills are currently on 60 day terms, negotiate with customers a shorter term.
 - **Electronic banking**. Attempt to convert customers to electronic banking, This will reduce the “float” in the cash receipts system.
 - Use **detailed cash budgeting** to plan cash receipts, payments and balances. Some successful firms segment their cash budgets on a daily basis and monitor actual results against budgets on a daily basis.

- A further aspect of cash management is **managing short-term marketable securities**, sometimes referred to as “cash equivalents”. It is useful to think of the company’s portfolio of short-term marketable securities as a pie cut into three (not necessarily equal) pieces:
 - **Ready cash segment** – the balance of marketable securities held to cover probable future deficiencies in the firm’s cash account.
 - **Controllable cash segment** – the ideal balance of marketable securities held for meeting such known requirements as taxes and dividends.
 - **Free cash segment** – the marketable securities held for as yet unallocated purposes. KCC appears to have such a balance at the end of 2009.

When considering the purchase of short-term marketable securities, the company’s treasury manager needs to consider how each potential security relates to the **safety of the principal of the security, its marketability, its yield and its maturity date**.

There are a number of **sophisticated models** to assist in the management of cash and marketable securities. Among these are the Baumol model and the Miller-Orr model. It is not expected that candidates will cover such models.

(b) Inventory management

The **inventory turnover**, as measured by cost of sales divided by ending inventory, has **improved** from 75 days in 2008 to 60 days in 2009. This is in line with the industry standard which was 79 days at the end of 2008 and 60 days in 2009. The reduction in inventory days is encouraging trend, but is still probably capable of considerably more improvement. It is important to consider that inventory days improvement may also be reliant on factors external to KCC, including a double dip global recession or crisis, an internal Chinese crisis or any other factor which could work to move the general days trend upwards (or a positive trend continuing to move it downwards).

Let’s now turn to **internal factors** that could improve inventory management.

The **inventory turnover statistic is a very coarse measure** (when it is the only measure in inventory management) since the inventory on the balance sheet will include raw materials, work in process, and finished goods. The management of inventory needs to consider separately each of these categories, as well as optimising the throughput of the vehicle manufacturing facility. The following are common tools in inventory management.

Just in Time (JIT):

One of the ways to optimise this throughput is to adopt **just-in-time (JIT) manufacturing**. Sometimes called “lean manufacturing”, JIT involves attempting to receive or produce an item just when it is needed. That is, inventories of all types would be reduced to a bare minimum. The automobile manufacturing industry has been one of the leaders in this area for many years, with the initial impetus coming from Toyota in Japan.

JIT has a number of important features, including:

- It is a “**pull**” **method of production** in which the final demand for the product “pulls” the product through the factory.
- This implies a **uniform production rate** in order to eliminate bottlenecks.
- It requires **good knowledge of customer demand** for the finished goods - otherwise there is a danger of running out, or building excessive inventories of finished goods.
- It requires **small-lot raw material purchases** delivered on-time to the manufacturing facility. At Toyota this is often hourly direct to the factory floor. This in turn requires very

reliable suppliers, who can deliver when required, at the prescribed quality, under a supply contract which is not encumbered with complex accounting requirements.

- It requires **quick and inexpensive machine set-ups**.
- It demands **high quality** from suppliers, internal processes, and a skilled workforce.
- It needs **regular preventive maintenance** of machinery, because there is very little buffer inventory if machinery is down for any length of time.

Inventory Control Models:

Inventory control models can be used to help manage inventories in a manufacturing plant such as the ones operated by KCC. In the **production** area, the basic inventory control model is a version of the economic order quantity (EOQ) model:

$$EOQ = \sqrt{2DP/C}$$

Where D = annual demand, P = set up cost per production batch, and C = annual carrying costs.

Assume for a part produced by KCC: D = 10,000, P = RMB 3,800, C = RMB 500.

$$EOQ = \sqrt{(2 \times 10,000 \times 3,800) / 500} = 390.$$

In the absence of safety stocks, this equates to the production of (10,000 / 390) = **approximately 25 batches a year**. That is approximately two batches per month. In other word, the inventory cycle is 14.6 days (365/25) per batch. Clearly this is **not consistent with a JIT production system**.

Suggested improvement: Now **assume** that the company wishes to **move towards a lean manufacturing JIT system**. This requires a substantial decrease in set up time and costs – down to (say) RMB 600 per set up. Also, suppose that careful analysis reveals that carrying costs were previously underestimated – they should be RMB 1,200. Now the consequent number of production batches, would be:

$$EOQ = \sqrt{(2 \times 10,000 \times 600) / 1,200} = 100.$$

In the absence of safety stocks, this equates to the production of (10,000 / 100) = **approximately 100 batches a year**. That is over eight batches per month, or the inventory cycle is 3.65 days (365/100) per batch, and this represents a **significant move towards a lean JIT production system**.

Turning to JIT for **purchases**, it is essential for suppliers to be prepared to **deliver quality raw materials on a frequent basis**. This usually necessitates open-ended supply contracts, minimal checking of incoming goods, and electronic methods of transacting business. This will lead to very low purchase order costs, which in turn will justify frequent deliveries.

Refer to the table on page 3 of the KCC case study. The production and sales of pick-up trucks for 2009 was 65,797 units. Each truck requires **5 tyres** from a supplier, which equates to 328,985 tyres for the year. If we **assume** that the cost of placing an order is minimal (say RMB 15) and the annual cost of carrying a tyre in inventory is (say) RMB 12, we can use the EOQ model to examine optimal inventory management for tyres.

$$EOQ = \sqrt{(2 \times 328,985 \times 15) / 12} = 906$$

In the absence of safety stocks, this equates to the ordering of (328,985 / 906) = approximately 365 batches a year. That is an average of one order per day, or inventory cycle is less than one day, and this represents a lean JIT purchasing system.

The **net effect** of such lean or JIT purchasing, production and inventory management strategies as those outlined above, is very useful to reduce significantly the inventories of raw materials, work in process, and finished goods.

(c) Receivables management

The accounts receivable settlement period, where receivables are measured by the sum of trade receivables and bills receivable, has **improved from 54 days in 2008 to 45 days in 2009**. This is also in line with the general Chinese industry standard but is high when looking from a global viewpoint. This is an encouraging trend, but is still probably capable of further improvement.

One of the **constraints** on this improvement is likely to be the **credit terms** associated with trade credit and trade bills. Therefore, as a first cut at further improvement, some research needs to be done on the ability of KCC to arrange tighter credit terms with their customers. The ability to do this may be influenced by competitive factors, but some work in this area seems justified.

A further reason for the 45 days settlement period may be **slow paying customers**. Slow paying customers may again be due to external factors which saw receivables days increase generally during the height of the global financial crisis.

Let's now turn to **internal measures**:

- **Strict procedures to follow up in slow payers.** These procedures will encompass letters, e-mails, faxes, phone calls, personal visits and legal action. One of the principal policy variables is the amount of money and time spent on collection activities. Usually, the greater the relative amount expended, the lower the bad debt losses, and the shorter the average collection period.
- Another factor is the **quality of the account accepted**. The firm needs an appropriate policy with respect acceptable standards of creditworthiness of prospective customers. To some extent this may be influenced by the credit policies of the firm's competitors – can KCC afford to be stricter than its competitors? This risk may be offset by the quality and desirability of its product range. In analysing the creditworthiness of potential customers, the company may employ a variety of mechanisms:
 - Financial statements
 - Credit ratings and reports
 - Bank checking
 - Trade checking
 - KCC's own experience
 - Credit scoring systems.
- **Cash discounts.** The offering of a cash discount is a classic way of attempting to speed up collection of receivables. For example, it may be possible to offer a (say) 2% discount for payment within 10 days, otherwise normal 30 day terms apply. This will be attractive to some customers and will speed up collections, but it is costly in percentage terms as 2% discount for payment 20 days earlier is roughly equivalent to 36% per annum. On the other hand it might lead to increased sales and profitability.
- **Factoring and invoice discounting** are two other ways to speed up collection of receivables.
 - Factoring is an arrangement to have debts collected by a **factoring company**, which advances a proportion of the money it is due to collect. Factoring involves turning over responsibility for collecting the company's debts to a specialist institution.
 - Invoice discounting is the purchase of a selection of invoices at a discount. It is related to factoring and many "factors" will provide an invoice discounting service.
 - Both factoring and invoice discounting are attractive to companies with significant liquidity problems, but are expensive in terms of their effective cost. **Neither are likely to be appropriate for such a financially sound company as KCC.**

(d) Dividend policy and the funding of working capital

To the extent that KCC expends cash to pay dividends, their **dividend policy will have a direct impact on cash balances** and therefore on working capital.

Another way of stating this is to say that **retained earnings can be an important source of funding** for a company and must be assessed as part of the company's dividend policy. This leads us to consider factors which may influence the dividend policy of the company.

From a practical perspective there are a number of **advantages of using retained earnings** to finance working capital:

- Retained earnings are a **flexible source of finance** as a company is not tied to specific amounts or specific repayment patterns.
- Using retained earnings does **not involve a change in the pattern of shareholdings** and no dilution of control.
- Retained earnings have **no issue costs**.

But there are also **disadvantages** of using retained earnings:

- **Shareholders may be sensitive** to the loss of dividends that will result from retention for reinvestment, rather than paying dividends.
- There is a **misconception** that retaining profits is a cost-free method of obtaining funds. There is an opportunity cost in that if dividends were paid, the cash received could be invested by shareholders to earn a return.

There are a number of **theories about dividend policy**:

- **Dividend irrelevance** - The dividend payout policy of a firm does not affect its share price.
- **Bird-in-the-hand** - Investors prefer certain cash now, i.e., high dividend / low retention to uncertain future capital gains, i.e. low dividend / high retention.
- **Signalling** - Managers use the dividend payout policy to convey to investors information about the firm's future prospects. An increase in dividends signals an expected future improvement in profitability. Non-payment of dividends in any year can also signal information to investor's about how the company is funding retained earnings or using monies to make capital/R&D investment. Non-payment of dividends, although often considered a negative, is not always viewed by the market as such. It is a viable option.
- **Tax preference** - Favourable tax treatment of capital gains versus dividends may lead investors to prefer low dividend payouts (or vice versa).
- **Agency theory** - Dividend payments reduce potential agency costs by reducing the likelihood of management wasting surplus cash; and by forcing the firm to seek more funding from external capital markets, where the firm will come under greater scrutiny.

Survey research to establish the views of CFOs in the USA found the following:

- Most CFOs believe that dividend policy does affect the value of the firm (contrary to the dividend irrelevance theory).
- There is limited support for the bird-in-hand argument.
- There is general agreement with the signalling theory
- Many CFOs are uncertain about which shares attracted specific types of investors.
- There is mixed support for agency theory explanations of dividend policy.
- The industry in which the firm operates has little influence on the CFOs' view of dividend policy.

Note: Given the fact that KCC's dividend payout in 2009 was RMB 43 million (p.8 of the case) out of a net profit after tax of RMB 248 million (a payout ratio of only 17%), the company is already using significant internal financing. If KCC is planning to **increase the dividend payout ratio** in the future, rather than decrease it. That is, internal sources of funding for working capital will not be a viable alternative.

Part D Treasury Operations

Scenario

David Chan wishes to look into the possibility of using interest rate futures to minimise the financial risk from interest rate fluctuations, and include this in a brief paper to the Board. He is motivated to do this as the company is expected to have a temporary cash surplus arising in February 2011. It is expected that HK\$200 million will be available for investing for six months in money market deposits. Since it is now October and David is concerned that interest rates will fall before February next year, he has asked you to assess the situation.

You gather the following data:

- Interest rates available from **money market deposits**:
 - Today's rate for 6 month deposits 2.50%
 - Today's rate for 9 month deposits 2.00%
- **Interest rate futures** for 3 months for HK\$1 million contracts (points of 100%):

Future Date	Price
Dec 2010	97.55
Mar 2011	96.90
Jun 2011	96.24
Sep 2011	95.78

Required:

- (a) Using the data above, show how KCC can hedge interest rate risk by using interest rate futures.
- (b) Assume that by February 2011, the 6 month deposit rate has either risen to 3.55% or fallen to 1.45% and that the relevant interest rate futures prices are 95.95 and 97.85 respectively. Show the effect on interest earned over the 6 month period using an interest rate future to hedge the company's exposure to short term interest rate movements.
- (c) Recommend the actions for Board's approval.

Part D Treasury Operations

Solution

CLP reference

Chapter 11, Section 8.6, 9.6.3

(a) Hedging with Interest Rate Futures

All of the basic principles relating to currency futures apply equally to interest rate futures. However there are two important points to note before considering the use of interest rate futures to hedge exposure to interest rate movements:

- As with all futures contracts an **interest rate future is** an agreement to buy or sell a commodity at some future point in time at a price agreed today. In the case of interest rate futures the commodity is government loan stocks (Hong Kong Exchange Fund Bills).
- It is important to understand the relationship between market interest rates and the price of Exchange Fund Bills. **As interest rates go up the price of the bills goes down and vice versa.** If you do not understand this relationship you will not understand derivative hedges for interest rate risk.

The procedure for constructing a hedge with interest rate futures is the **same as for foreign exchange risk:**

- Ask “given my underlying trading position, what am I afraid of?” As a potential investor KCC should be afraid that interest rates will fall i.e., Exchange Fund Bill prices will rise.
- Take up a position in the futures market such that if the thing you fear were to happen you make a profit on the futures deal. KCC is afraid that interest rates will fall, and that bill prices will rise. To make a profit when prices rise, it is necessary to buy futures contracts, before the price rises. A lender will hedge interest rate risk by buying interest rate futures. Similarly a borrower will hedge risk by selling interest rate futures.

As with foreign exchange risk, hedges using **interest rate futures protect you if** the interest rate (or exchange rate for foreign exchange hedges) moves against you. Any loss you suffer on the underlying trading position is offset by the profits on the futures deal. However should interest rates move for you, and they might, any gain on the underlying trading position is wiped out by the loss on the futures deal. With a futures hedge you cannot lose but you cannot win either. A **further disadvantage** of hedging with futures is that it is rarely possible to obtain a perfect hedge i.e. it is rarely possible to eliminate all of the risk the business is exposed to, partly because futures contracts are only available in fixed amounts.

Note: Many commercial organisations may choose interest rate swaps in preference to interest rate futures and this is also a viable option. Students may discuss swaps as an viable alternative. The question itself and all answers provided apply to the interest rate futures scenario.

(b) Evaluating the Futures Hedge

At today's 6 month deposit rate KCC could expect to earn HK\$200m x 2.50% x (6/12) = HK\$2,500,000 on its deposit.

Constructing the hedge

Amount to be deposited: HK\$200,000,000.

Contract size: HK\$1,000,000.

No. of contracts to be purchased: $200,000,000 / 1,000,000 \times 6 / 3^* = 400$

(*This is because the period of deposit is to be 6 months and the futures are for 3 month notional deposits).

Use the March 2011 contract, which is the first one to expire after the money is available for deposit. Therefore purchase **400** March 2011 contracts at **96.90**.

The value of a **one tick movement** in the future price is:

0.01% x HK\$1,000,000 x 3 / 12 = HK\$25.

Next, calculate how many ticks movement has occurred in the futures price:

<u>Interest Rate Movement</u>	<u>Rise</u>	<u>Fall</u>
Six month interest rate in February 2011	<u>3.55%</u>	<u>1.45%</u>
Sell future at February 2011 price	95.95	97.85
Bought future at	<u>96.90</u>	<u>96.90</u>
Gain (loss) on futures market	(95)	95 ticks

The gain (loss) made on the futures market is: No. of ticks x **HK\$25** x 400 contracts

<u>Interest Rate in February</u>	<u>3.55%</u>	<u>1.45%</u>
	<u>HK\$</u>	<u>HK\$</u>
Gain (loss) on futures market (95 x \$25 x 400)	(950,000)	950,000
Actual interest earned (HK\$200m x interest x 0.5 years)	<u>3,550,000</u>	<u>1,450,000</u>
Net receipt	2,600,000	2,400,000
Target interest (HK\$200m x 2.50% x 0.5 years)	<u>2,500,000</u>	<u>2,500,000</u>
Surplus (shortfall)	<u>100,000</u>	<u>(100,000)</u>

(c) Recommendation

So, whether or not there has been a significant movement in interest rates, the hedge has had the effect of producing returns reasonably close to the target interest (\$2.5M), thus minimising KCC's exposure to movements in interest rates. KCC may use the futures to hedge interest income.

However, hedging policy must be endorsed by the Board before entering into any contracts.

Part E Corporate Finance

Solution

CLP reference

Chapter 13, Section 5 and Chapter 17, Section 5

(a) Meaning of WACC and evaluation of investment advisors' WACC

Meaning of WACC

Companies raise money from both equity investors and lenders in order to fund investments. Both groups of investors make their investments expecting to earn a return. The **return required by equity investors** is called the "cost of equity", and should include a premium for the equity risk in the investment. Similarly, the **expected return that lenders** seek to make on their investments should include a premium for default risk, and this required return is called the "cost of debt". Thus a company's composite cost of financing will be a weighted average of the costs of equity and debt, and is called the "**weighted average cost of capital**" usually known by the acronym "WACC".

The **cost of equity** consists of a risk free rate plus "beta" multiplied by the "equity risk premium". This is captured in the "capital asset pricing model" (CAPM), and involves a measure of the riskiness of a share called the "beta coefficient" or just simply "beta". This is a measure of the systematic risk of the shares being valued, i.e. the riskiness of an individual share relative to the overall equity market. The equity risk premium represents the extra return that investors require to induce them to hold the market portfolio of listed shares rather than the risk free asset.

The **cost of debt** measures the current cost to the firm of borrowing funds to finance projects. The cost of debt involves the current level of interest rates, the default risk of the company, and the tax advantage associated with debt. Thus the cost of debt is calculated by multiplying the pre-tax cost of debt for the company by $(1 - \text{tax rate})$.

The **weights** associated with equity and debt should ideally be based on the market value of these two items. Where both the firm's shares and debt are traded on recognised exchanges, the market values can be obtained with relative ease. In the case of private companies, such as KPL, where neither equity nor debt is traded, valuers have to resort to book values as a basis for measuring the weights.

Investment advisors' WACC calculation

There are some **flaws in the investment advisors' WACC** calculation:

- Given current conditions in capital markets in China and Hong Kong, the **risk free rate** seems a little high. In mid-2010 the exchange bill rate in Hong Kong was about 2.8%
- The **market risk premium** is shown as 5.1%. Where did that come from? Does it reflect current market conditions? Can it be applied to such an unlisted company as KPL.
- The **beta** employed is 0.90. Where did this come from? KPL is unlisted. In any event, it seems to suggest that the KPL has low risk, whereas the reverse is likely to be the case. A beta greater than 1.00 would be appropriate.
- The **pre-tax cost of debt** needs to be checked against current rates. It is possible that the rate used is too low.
- The **tax rate** used in the calculation is 16.5% - the rate in Hong Kong, whereas the KPL is located in China where the corporate tax rate is 25%.

All this means that the **WACC** calculated by the investment advisors is **probably too low**. At the very least it should reflect current interest rate conditions, the tax rate in China, and should probably also be risk adjusted to reflect the fact that KPL is a private company.

The following is a suggestion for a revised WACC calculation:

Risk free rate	2.8%
Market risk premium (say)	5.1%
Beta (say)	1.40
Cost of equity	9.9%
Pre-tax cost of debt (say)	6.0%
Tax rate (China)	25.0%
After-tax cost of debt	4.5%
Equity (RMB mil)	155
Debt (RMB mil)	345
Projected Book Value of Firm (RMB mil)	500
Equity weight	31.0%
Debt weight	69.0%
WACC: $0.31(9.9\%) + 0.69(4.5\%)$	6.17%
WACC (Rounded Up)	7.0%

Note: Candidates may suggest alternative calculations, but any alternative suggested needs to be above the 6% WACC in the investments advisor's report.

(b) Meaning of FCFF and evaluation of investment advisors' FCFF

Meaning of FCFF

The FCFF method of valuation is based on **estimates of future cash flows** expected to be generated by the company. These cash flows are then **discounted back to the present** using an appropriate WACC. Estimation of future cash flows is not a precise science. The estimate depends on forecast growth rates in a defined time period, and an estimated terminal value at the end of the defined period.

The discounted expected future cash flows will provide an estimate of the total value of the firm, known as the “**enterprise value**”. The value of long term debt is deducted from the enterprise value to give the total value of the equity in ordinary shares. This dollar number is divided by the number of shares outstanding to give an estimated value per share.

Evaluation of investment advisors firm's FCFF valuation

Aside from the inappropriate WACC, there are some other flaws in the investment advisor firm's FCFF calculation:

- The **forecast growth rate in EBITDA** over the period 2010 – 2014 appears high. While growth in the Chinese economy is high, an annual growth rate of 10% for an auto parts manufacturer seems unduly optimistic.
- The **growth rate in depreciation and amortisation** is also 10%, and needs more justification.
- Good candidates may pick up that the **growth rate in capital expenditure and working capital** is also 10%. There appears no logical reason why this should be so.
- The **terminal growth rate** is estimated at 5.0%. In effect, this is a growth rate into perpetuity. It is unlikely that any company would grow at this rate for ever.

(c) Alternative FCFF Valuation

Risk free rate	2.8%
Market risk premium	5.1%
Beta	1.40
Cost of equity	9.9%
Pre-tax cost of debt	6.0%
Tax rate (China)	25.0%
After-tax cost of debt	4.5%
Equity (RMB mil)	155
Debt (RMB mil)	345
Projected Book Value of Firm (RMB mil)	500
Equity weight	31.0%
Debt weight	69.0%
WACC	6.19%
WACC (Rounded Up)	7.0%
EBITDA & Depn Growth Rate 2010-2014	9.0%
Terminal Growth Rate	3.0%

	----- Forecast -----				
	2010	2011	2012	2013	2014
EBITDA	134	146	159	174	189
Depreciation & Amortisation	79	86	94	102	112
EBIT	55	60	65	71	78
EBIT (1-t)	41	45	49	53	58
Depreciation & Amortisation	79	86	94	102	112
Capital expenditure	59	64	70	76	83
Change in net working capital	11	12	13	14	16
FCFF	50	55	60	65	71
Terminal value(*)					1,826
Total FCFF	50	55	60	65	1,897
Present value factor	0.93458	0.87344	0.81630	0.76290	0.71299
Present value of FCFF	47	48	49	50	1,353
Enterprise Value					1,546
Net long term debt					345
Value of equity					1,201
Number of shares (mil)					3.10
Value per share					387

(*) $V_0 = FCFF_0(1+g)/(WACC-g) = [70.9 \times (1.03)]/(7\%-3\%) = 1,826$ (rounding)

This valuation is based on more plausible assumptions regarding WACC and future growth rates in EBITDA, and provides a better indicative valuation than that prepared by the investment advisor. But this valuation may still be subject to some criticism, especially with regard to the assumed rate of growth in capital expenditure, depreciation, amortisation, and working capital.

Part E Corporate Finance

Additional industry data

Comparable auto parts manufacturers	Market Cap RMB mil	EV / EBITDA	EV / EBIT
Guizhou Guihang Automotive Components Co. Ltd (SHSE:600523)	677	33.9	40.8
Harbin Dongan Auto Engine Co., Ltd. (SHSE:600178)	1,138	232.5	349.8
Lingyun Industrial Corp. Ltd. (SHSE:600480)	608	14.5	13.9
Shandong Binzhou Bohai Piston Co. Ltd. (SHSE:600960)	249	11.5	26.9
Wanxiang Qianchao Co., Ltd. (SZSE:000559)	1,160	15.5	28.6
Zhejiang Wanfeng Auto Wheel Co., Ltd. (SZSE:002085)	493	27.0	69.2

Required:

Refer to the pre-workshop exercise, the data above provides data on comparable auto parts manufacturers to KPL. Your group is required to create an alternative valuation using the comparables method and to make a final recommendation to the Board on whether to acquire KPL as part of its operational efficiency improvement strategy.

Part E Corporate Finance

Solution

CLP reference

Chapter 17, Section 6

Alternative valuation using the Comparables Approach

As a start, candidates might attempt a Comparables Approach valuation based on the **auto company data provided**. Clearly, the **Harbin Dongan** Auto Engine Company is an **outlier** and should be excluded from the analysis. This would result in valuations as follows:

Comparable auto parts manufacturers	Market Cap	EV / EBITDA	EV / EBIT
Guizhou Guihang Automotive Components Co. Ltd (SHSE:600523)	677	33.9	40.8
Harbin Dongan Auto Engine Co., Ltd. (SHSE:600178)	1,138	232.5	349.8
Lingyun Industrial Corp. Ltd. (SHSE:600480)	608	14.5	13.9
Shandong Binzhou Bohai Piston Co. Ltd. (SHSE:600960)	249	11.5	26.9
Wanxiang Qianchao Co., Ltd. (SZSE:000559)	1,160	15.5	28.6
Zhejiang Wanfeng Auto Wheel Co., Ltd. (SZSE:002085)	493	27.0	69.2
Average comparable (Including Harbin Dongan)		55.8	88.2
Average comparable (Excluding Harbin Dongan)		20.5	35.9

Valuation of KPL (Average)

Target EBITDA or EBIT (RMB mil)	134	55
Multiple (Excluding Harbin Dongan)	20.5	35.9
Enterprise Value (RMB mil)	2,747	1,975
Less Long Term Debt (RMB mil)	(345)	(345)
Value of Equity (RMB mil)	2,402	1,630
Number of Shares Outstanding (mil)	3.1	3.1
Value per Share (RMB)	775	526

However, such a valuation as this is disingenuous because all comparables are **public** companies and seem larger than the KPL.

Good candidates will recognise that **some form of discount is needed** to account for the three factors above. The size of such a discount may be debated, but a possibility is shown below.

Discounted Comparable	EV / EBITDA	EV / EBIT
Average comparable (Excluding Harbin Dongan)	20.5	35.9
Discount for size and unlisted private company (say)	5.0	10.0
Discounted comparable	15.5	25.9

A **Comparables Approach** valuation based on a discount for size and unlisted status is shown as follows.

Valuation of KPL (Discounted)	EV / EBITDA	EV / EBIT
Target EBITDA or EBIT (RMB mil)	134	55
Discounted multiple	15.5	25.9
Enterprise Value	2,077	1,425
Less Long Term Debt	(345)	(345)
Value of Equity	1,732	1,080
Number of Shares Outstanding	3.1	3.1
Value per Share	559	348

Recommendation to the Board

KCC may consider to acquire KPA at a price of between **348 to 559 RMB per share**.

In coming to a **final valuation**, candidates need to recognise that **valuation is not a precise science**, and that what is expected is a plausible valuation that can be justified with a well-reasoned argument.

That said, the reasons for the final valuation price are as follows:

- The additional industry data would suggest that the investment advisor firm's **valuation of RMB 2,014 per share is far too high**.
- A **Comparables Approach valuation around RMB 453** $[(559+348)/2]$ per share seems justifiable, but is a little suspect due to the lack of truly comparable companies with which to compare KPL.
- A **reworked the FCFF valuation** suggests a figure around **RMB 387 mark**.
- The real issue is the difficulty on how to approach the valuation of KPL and how to justify the methodology and assumptions used. Answers from candidates who justify a valuation in the **348 to 559 range would be acceptable**.

Note: In practice, the owners of KPL will employ their own valuer, who will wish to argue for a higher price. In these situations often a compromise is reached, sometimes by "splitting the difference".

Other financial and non-financial considerations which support the decision to buy are as follows:

- KCC is cash-rich, has no long-term debt, is financed by working capital and is looking to innovate through product development. Improving organisational efficiency and cost reduction is also a clearly identified strategy.
- Acquisition fits the business strategy of **development of new products**. KPL already makes auto parts for the small passenger vehicles which KCC needs in order to launch new products in this area and break into new markets. This means that this acquisition is **purchasing the knowledge** of the KPL staff and the necessary infrastructure.
- KPL is well-located. It is in Kunming which means KCC can initially operate it separately and then incorporate it into existing sites as part of its **cost control strategy**.
- The acquisition and any integration will be **easily achieved culturally**.

- The ethical problems with the Romanian joint venture shows that KCC is not ready for overseas JVs with little KCC oversight or management, and with such **varying operational cultures**. The purchase of KPL allows KCC to **exact absolute control over operations**, staffing and costing at a time when acquisition is still a relatively new strategy.
- Alternatively, KPL is still a Chinese manufacturer meaning acquisition is still strongly focus on domestic market. It has been identified through strategic planning that the domestic market is the key market.

Final recommendation: Candidates should be recommending an ultimate decision to acquire KPL.

Part E Corporate Finance

Scenario

The Board of Kunming Coyote Cars (KCC) has decided to start negotiations with Kunming Parts Limited (KPL) for the acquisition. They have now agreed a price of **RMB 500** for each of the 3.1 million shares of KPL. This will result in a total price of RMB 1,550 million.

In the second half of the 2009 financial year, KCC has undertaken an extensive programme of capital expenditure, and this, coupled with additional planned investments in plant assets and working capital, means that RMB 1,500 million needs to be raised to finance the acquisition of KPL on 1 Jan 2010.

You are David Chan, the Chief Financial Officer (CFO) of KCC. Timothy Chai, the Managing Director, has approached you for further advice on the financing of the proposed takeover of KPL.

Two weeks ago, Timothy engaged the services of a leading investment bank, Acquisition Finance Limited (AFL), to prepare a set of financing alternatives. Their report identifies two viable alternatives:

1. A 1:3 renounceable rights issue at a subscription price of RMB 15.00 (HK\$17.10) per share.
2. An interest only term loan for three years of RMB 1,500 million (HK\$1,710 million) from KCC's bank at an interest rate of 5.50%.

Timothy goes on to tell you (David) some additional facts.

- KCC's share price seems to have settled at around HK\$21.00 in recent weeks. This price is equivalent to approximately RMB 18.40. AFL feels that the rights issue, at a discount of approximately 19% to the current market price, will ensure a high level of support from existing shareholders.
- Timothy has been in discussions with the bank over a possible bank financing arrangement. In these discussions, the bank manager revealed that he would look unfavourably on any term loan request that pushed three of KCC's critical financial ratios over a given threshold. These critical thresholds are:
 - Total Liabilities / Total Assets 65%
 - Non-current Liabilities / Total Assets 30%
 - Times Interest Earned (EBIT/Interest) 2.0 Times

You agree to prepare a report for the Board of Directors, which examines the financial implications of each of the two financing alternatives. You plan to conclude the report with a recommendation of the most appropriate alternative.

Required:

- (a) In your group, restate the forecast financial statements to show the impact of each of the two financing alternatives. Refer to the forecast financial statements template attached to this handout. Note that the relevant parts of the “Left” column are already completed as a guide to you. Also compute the following ratios:
 - (i) Earnings per share (EPS)
 - (ii) Times interest earned (EBIT / Interest)
 - (iii) Total Liabilities / Total Assets
 - (iv) Non-current Liabilities / Total Assets
- (b) In your group, evaluate the financing alternatives. Use the FRICT framework for the evaluation.
- (c) Conclude with a justified recommendation as to which financing alternative to employ.

Financing Template

Note: The “Left” column has been completed in the templates. You will observe that not all the cells need to be filled in to provide the numbers you need.

Forecast Balance Sheet 2010 – Part 1	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Assets			
Current assets			
Cash and cash equivalents	784	734	
Pledged bank balances and time deposits	201		
Trade receivables	250		
Bills receivable	770		
Prepayments, deposits and other receivables	410		
Inventories	1,110		
Total current assets	3,525	3,475	
Non-current assets			
Property, plant and equipment	2,859		
Lease prepayments	76		
Intangible assets	194		
Goodwill	55		
Other long term assets	132		
Deferred tax assets	97		
<i>Investment in Subsidiary (Kunming Parts Ltd)</i>		1,550	
Total non-current assets	3,413	4,963	
Total Assets	6,938	8,438	

Forecast Balance Sheet 2010 – Part 2	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Liabilities and Equity			
Current liabilities			
Trade payables	1,221		
Bills payable	749		
Other payables and accruals	985		
Interest-bearing borrowings	243		
Income tax payable	90		
Provisions	62		
Total current liabilities	3,350	3,350	
Non-current liabilities			
Interest-bearing borrowings	1,047		
Provisions	14		
Deferred tax liabilities	7		
Total non-current liabilities	1,068	1,068	
Total Liabilities	4,418	4,418	
Equity			
Issued capital	903	1,903	
Reserves	819	1,319	
Retained profits	749		
Proposed final dividend	49		
Total Equity	2,520	4,020	
Total Liabilities and Equity	6,938	8,438	
Forecast Abbreviated Inc Statement 2010	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Net operating profit (EBIT)	289		
Less			
Interest expense, net	50		
Add			
Non-operating income	128		
Net profit before tax	367		
Taxation @ 25%	92		
Net profit after tax (NPAT)	275	275	

Part E Corporate Finance

Solution

CLP reference

Chapter 14, Section 4

(a) Forecast financial statements and ratios

Forecast Balance Sheet 2010 – Part 1	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Assets			
Current assets			
Cash and cash equivalents	784	734	672*
Pledged bank balances and time deposits	201	201	201
Trade receivables	250	250	250
Bills receivable	770	770	770
Prepayments, deposits and other receivables	410	410	410
Inventories	1,110	1,110	1,110
Total current assets	3,525	3,475	3,413
Non-current assets			
Property, plant and equipment	2,859	2,859	2859
Lease prepayments	76	76	76
Intangible assets	194	194	194
Goodwill	55	55	55
Other long term assets	132	132	132
Deferred tax assets	97	97	97
<i>Investment in Subsidiary (Kunming Parts Ltd)</i>		1,550	1,550
Total non-current assets	3,413	4,963	4,963
Total Assets	6,938	8,438	8,376

Note: Only the highlighted numbers are strictly necessary for this solution.

(*): Cash and case equivalents Rmb 672 = 734 – 62 (additional loss)

Forecast Balance Sheet 2010 – Part 2	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Liabilities and Equity			
Current liabilities			
Trade payables	1,221	1,221	1,221
Bills payable	749	749	749
Other payables and accruals	985	985	985
Interest-bearing borrowings	243	243	243
Income tax payable	90	90	90
Provisions	62	62	62
Total current liabilities	3,350	3,350	3,350
Non-current liabilities			
Interest-bearing borrowings	1,047	1,047	2,547
Provisions	14	14	14
Deferred tax liabilities	7	7	7
Total non-current liabilities	1,068	1,068	2,568
Total Liabilities	4,418	4,418	5,918
Equity			
Issued capital	903	1,903	903
Reserves	819	1,319	819
Retained profits	749	749	687*
Proposed final dividend	49	49	49
Total Equity	2,520	4,020	2,458
Total Liabilities and Equity	6,938	8,438	8,376

Note: Only the **highlighted** numbers are strictly necessary for this solution.

(*) Reserves Rmb 687 = 749 – 62 (additional loss)

Supporting calculations

	Pre - Fin	Rights	Loan
Additional shares			
Finance needed		1,500	
Divide by issue price		15.00	
Additional shares to be issued		100	
Number of shares issued after financing (mil)	90.3	190.3	90.3
Times par value (RMB)	x10	x10	x10
Equals Issued Capital (RMB mil)	903	1,903	903
Increase in Issued Capital (RMB mil)		1,000	0
Equity Capital raised (RMB mil)		1,500	
Additional Reserves (Share Premium – RMB mil)		500	

Forecast Abbreviated Inc Statement 2010	Pre - Fin	Rights	Loan
	RMB mil	RMB mil	RMB mil
Net operating profit (EBIT)	289	289	289
Less			
Interest expense, net	50	50	133*
Add			
Non-operating income	128	128	128
Net profit before tax	367	367	284
Taxation @ 25%	92	92	71
Net profit after tax (NPAT)	275	275	213

Note: Only the **highlighted** numbers are strictly necessary for this solution.

(*): Interest expense Rmb 133 = 50 + (1,500 x 5.5%)

Ratios

	Pre - Fin	Rights	Loan
EPS (NPAT/Shares outstanding)	3.05	1.45	2.36
Times interest earned (EBIT/Interest)	5.78	5.78	2.18
Total Liabilities/Total Assets	64%	52%	71%
Non-current Liabilities/Total Assets	15%	13%	31%

(b) FRICT Analysis

The FRICT framework is a useful tool for analysing capital structure issues that arise when a firm raises long-term finance and is faced with several alternatives. The acronym FRICT stands for **Flexibility, Risk, Income, Control and Timing**, and users of the tool assess a range of issues under each heading.

Flexibility

- The **rights issue** will require a **prospectus** to be issued, raising the costs of the issue.
- Similarly, the **term loan** from the bank can be arranged at **relatively short notice**. It is also possible to negotiate loan terms and restrictions with the bank.
- On one hand, the term loan does not make sense given that it will push KCC's **Total Liabilities/Total Assets ratio** above the level its bankers are comfortable with.
- On the other hand, funding with **equity** now might leave open the **possibility for further funding via debt in the future**.

Risk

- The **term loan** will push KCC's **Total Liabilities/Total Assets ratio to 71%**, above the level of 65% that the bank has indicated.
- **Interest coverage will decline** from 5.78 to 2.18 under the term loan option. Therefore debt financing increases KCC's financial risk.
- The rights issue may not be welcome to shareholders as it may **dilute the value of the shares**, or **signal to the market that the company is in financial difficulty**.

Income

- **Earnings per share (EPS)** are highest under the term loan alternative and are reduced under the equity alternative.
- **Times interest earned** is poor under the term loan option, as it is lowered close to the "2 times" threshold.
- **Net profit after tax** is lowest under the term loan option. The cash position is roughly the same under all alternatives.

Control

- A **rights issue** will **preserve existing ownership proportions** if all shareholders take up their entitlements.
- On one hand, the **term loan option** might lead KCC's bankers to impose **restrictive covenants** on the company, which may limit management's to operate the company.
- On the other hand, KCC is able to **negotiate loan terms and covenants** which may **mitigate this risk**

Timing

- The **rights issue** will reduce KCC's debt ratio to well below the industry average **immediately**, producing a more optimal capital structure. And this is in line with the bank's wishes.

(c) Discussion and Recommendation

- Overall, the rights issue looks the more attractive alternatives when considering financial considerations only. And further debt is unlikely as this will breach the bank's recommended targets for KCC.
- Ignoring issue costs, the rights issue appears to have little impact on the wealth of existing shareholders.
- Earnings per share are higher under the term debt alternative. However, the increased financial risk of the rights issue may result in a decrease in KCC's share price, as the market reacts to the perceived higher risk caused by significantly increased term debt.
- Note, however, that the term loan is a better financing structure particularly if KCC were able to negotiate better loan terms.

Recommendation: On balance the **rights issue** appears to be the best alternative at this time. However, other alternative financing, e.g. private placement may be considered before reaching for a decision.

Note: Some candidates may argue that rights issue is not appropriate as shareholders dislike the idea of paying money to the company. It should be acceptable as long as they are able to argue the case effectively.