

Subject SA6 — Investment Specialist Applications

September 2009 examinations

EXAMINERS' REPORT

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

R D Muckart
Chairman of the Board of Examiners

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Comments for individual questions are given with the solutions that follow.

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- (i) Basis risk – cash flows received may not match actual liability requirements (this could be a function of interest rate/inflation or longevity risk changing the nature and tenor of the liability cashflows compared with the model predictions)

Liquidity risk – pension is unable to earn NIBOR leading to a performance drag or loss, potentially due to a function of real interest rate risk, asset/credit risk or currency risk depending on what the underlying NIBOR generating investments are.

Investment risk – requirement to post collateral may force pension fund to realise assets at an inopportune time. This will also incur trading costs.

Credit risk is risk due to uncertainty in a counterparty's ability to meet its obligations.

Collateral risk – the assets posted may decline in value more than compensated for by the initial haircut, leading to a further margin call.

This can (and has been) a function of a general market risk, coupled with a specific event and/or counterparty/operational risk.

If 'in the money' then loss on actual investment when bank defaults as will not be entitled to that loss– realised loss.

Trading costs of repurchasing the swap in the market.

Opportunity costs associated with not being invested in swap for full duration.

There may also be a reputational risk associated with the frustration of the contract.

Counterparty would still have gone into default (as could other counterparties) which leads to loss where Collateral not sufficient to cover the gain.

- (ii) Each counterparty marks to market their exposure on a regular basis ie they record the price or value of a security, portfolio, or account on a regular basis, to calculate profits and losses or to confirm that margin requirements are being met.

Collateralisation is the process whereby assets are pledged by a counterparty to secure a loan or other credit, and subject to seizure in the event of default.

Collateralisation takes place on a (daily/weekly/monthly) basis to cover any unrealised gains/losses reflected in the variation margin. To make the process manageable, there will be an agreement on the minimum threshold amount before collateral needs to be posted to the other party and a minimum transfer amount.

In addition to an agreement (often based on a market/international standard e.g. ISDA) which sets out the terms of the transaction, the obligations of each party and the events that will lead to default and termination, there needs to be an agreement also on the acceptable assets to be pledged as collateral, typically cash or bonds. In order to protect the receiver from further deterioration in the value of the collateral posted, pledged securities are subject to a Haircut, being

the percentage at which collateral is discounted for valuation purposes to allow for volatility and default. The haircut applied will vary according to the organisation and its perception/tolerance of risk, competitive levels across other counterparties and the general market conditions i.e. haircuts set out in new contracts, even for government bonds, will have risen in 2007/8.

The agreement will also cover what the holder can do with collateral received and whether this can be pooled with other assets or needs to be held in a separate account.

The more risky the collateral in terms of potential default and volatility of price movement, both absolute and relative to the particular swap transaction, the higher the haircut that would be applied, i.e. the larger the discount factor applied. In decreasing order of haircut applicable, the most likely assets that are posted would be:

Equity – highest price volatility.

Corps – price volatility and default higher than Government bonds.

Government bonds – more price volatility than cash.

Cash – also can use cash to make additional returns by collateral re-investment.

Concentration risk can occur where portfolio is not well diversified and consequently has large exposure to one counterparty, asset class or individual stock. To reduce this risk can be reduced when accepting collateral there will be maximum limits set in terms of asset class, individual name or country exposure of the collateral received.

Similarly an entity's risk can be further reduced by ensuring contracts are diversified across counterparties i.e. a pension fund should transact with multiple counterparties rather than on an exclusive basis.

(iii)

- a. Target cash fund does not guarantee a return above NIBOR – apart from market performance and manager's selection capability, the fund management and transaction costs will act as a drag on performance. Many such cash funds have actually underperformed their benchmarks. In part this is down to the fact that they don't actually invest in just cash deposits but in also short dated corporate notes and other investments, which are subject to the same credit risks as all corporate bonds. There are also issues such as general market liquidity, widening of spreads and the universe of available securities to consider. There may be tax considerations, for example in terms of any deductions applicable to income on the underlyings.

The guaranteed fund will meet the required obligation with some profit potential on top net of costs but there is a reinvestment risk – what happens at the end of ten years – and is reliant on the ongoing creditworthiness of Stable to underpin the guarantee. There is also the increased concentration risk from bundling all hedges with Stable.

The liquidity terms of the cash fund are likely to be better than the guaranteed deposit. The latter is more likely to have a lock-up period of MVA applied if the guarantee bites against the bank, whereas the cash fund will usually be daily liquid at fund NAV (albeit, possibly showing a capital loss) – the investor must weigh up capital protection and illiquidity against the converse.

- b. You can make a case for either depending on the attitude to risk of the trustees, the availability of other assets/cash flow to make good the trustees' obligation, the size of the commitment, the perception of Stable Bank's future credit worthiness, the current state and prospects for the short paper market etc.

(iv) CDS are a swap designed to transfer the credit exposure of fixed income products between parties.

CDS have the following two uses.

- A CDS contract can be used as a hedge or insurance policy against the default of a bond or loan. An individual or company that is exposed to a lot of credit risk can shift some of that risk by buying protection in a CDS contract. This may be preferable to selling the security outright if the investor wants to reduce exposure and not eliminate it, avoid taking a tax hit, or just eliminate exposure for a certain period of time.
- The second use is for speculators to “place their bets” about the credit quality of a particular reference entity. With the value of the CDS market, larger than the bonds and loans that the contracts reference, it is obvious that speculation has grown to be the most common function for a CDS contract. CDS provide a very efficient way to take a view on the credit of a reference entity. An investor with a positive view on the credit quality of a company can sell protection and collect the payments that go along with it rather than spend a lot of money to load up on the company's bonds. An investor with a negative view of the company's credit can buy protection for a relatively small periodic fee and receive a big payoff if the company defaults on its bonds or has some other credit event. A CDS can also serve as a way to access maturity exposures that would otherwise be unavailable, access credit risk when the supply of bonds is limited, or invest in foreign credits without currency risk.

A combination of a government or high grade bond coupled with a CDS can also be used to access/maintain liquidity. Likewise, an investor can actually replicate the exposure of a bond or portfolio of bonds using CDS and government bonds. This can be very helpful in a situation where one or several bonds are difficult to obtain in the open market. Using a portfolio of CDS contracts, an investor can create a synthetic portfolio of bonds that has the same credit exposure and payoffs.

Characteristics

The buyer of a credit swap receives credit protection, whereas the seller of the swap guarantees the credit worthiness of the product. By doing this, the risk of default is transferred from the holder of the fixed income security to the seller of the swap.

It is similar to insurance because it provides the buyer of the contract, who often owns the underlying credit, with protection against default, a credit rating downgrade, or another negative “credit event.”

The seller of the contract assumes the credit risk that the buyer does not wish to shoulder in exchange for a periodic protection fee similar to an insurance premium, and is obligated to pay only if a negative credit event occurs. It is important to note that the CDS contract is not actually tied to a bond, but instead references it. For this reason, the bond involved in the transaction is called the “reference entity”. A contract can reference a single credit, or multiple credits.

The buyer of a CDS will gain protection or earn a profit, depending on the purpose of the transaction, when the reference entity has a negative credit event. When such an event occurs, the party that sold the credit protection and who has assumed the credit risk may deliver either the current cash value of the referenced bonds or the actual bonds to the protection buyer, depending on the terms agreed upon at the onset of the contract. If there is no credit event, the seller of protection receives the periodic fee from the buyer, and profits if the reference entity's debt remains good through the life of the contract and no payoff takes place. However, the contract seller is taking the risk of big losses if a credit event occurs.

CDS contracts are regularly traded. A trader in the market might speculate that the credit quality of a reference entity will deteriorate some time in the future and will buy protection for the very short term in the hope of profiting from the transaction. An investor can exit a contract by selling his or her interest to another party, offsetting the contract by entering another contract on the other side with another party, or offsetting the terms with the original counterparty.

The market for CDSs is OTC and unregulated, and the contracts often get traded so much that it is hard to know who stands at each end of a transaction. There is the possibility that the risk buyer may not have the financial strength to abide by the contract's provisions, making it difficult to value the contracts. The leverage involved in many CDS transactions, and the possibility that a widespread downturn in the market could cause massive defaults and challenge the ability of risk buyers to pay their obligations, adds to the uncertainty.

Pricing

The value of a CDS contract fluctuates based on the increasing or decreasing probability that a reference entity will have a credit event. Increased probability of such an event would make the contract worth more for the buyer of protection, and worth less for the seller. The opposite occurs if the probability of a credit event decreases.

CDSs are traded over the counter (OTC), involve intricate knowledge of the market and the underlying assets and are valued using complex computer

pricing algorithms and models, so they are better suited for institutional rather than retail investors, accepting the latter may use models too. Dealing costs are likely to deter retail investors too, given likely volumes.

(v) Assuming it is a large, mature pension fund (given by the size, nature of the swap profile prop), then probably we can reckon that the scheme has:

- Extremely long-dated (50+ years) Liabilities often linked directly or indirectly to inflation (Salaries, RPI/CPI and LPI), typical duration 20 years or more, probably biased in favour of pensioner and deferred members, especially if scheme closed or future accrual ceased.
- Scheme deficit on a realistic or insurance buy out basis.
- High but probably decreasing exposure to (global) Equities.
 - *Rewarded* risk, but
 - no interest rate immunising characteristics
 - probably actively managed
- May have exposure to alternative assets such as hedge funds, private equity and real estate – offers a more stable return profile due to relatively infrequent mark to market.
- Too few interest rate sensitive assets (bonds).
 - Often held with a passive manager.
- Too few inflation-linked assets (government bonds predominantly but may be some corporate issuance e.g. utilities).
- No material longevity risk protection unless partial buyout/buy-in or OTC swap.
- The nominal and real rate bonds that are held are too short in duration in any case (lack of real supply).
 - Leads to ineffectiveness and “curve” risk.
 - Pension scheme exposed to changes in the level and shape of the yield curve.
 - This is *unrewarded* risk.
- Increasing exposure to derivatives either to hedge liabilities or currency exposure or protect principal. This could require a significant cash/collateral pool to be held to meet obligations.
- Cash may be held as collateral to meet future margin calls or as a defensive asset in its own right (or to mirror short term obligations).

(vi)

- a. Variation is due to security (credit worthiness, size of issue outstanding, availability/liquidity of comparables at each tenor), local market levels (bonds and other assets) and other factors impacting currency

movements/differentials, type of utility, geographical bias, there may be tax considerations but these, if any, would be minor.

Need to also consider history and prospects of defaults by security, sector, issuer – refer to comment that utilities were nationalised previously

- b. Need to consider relevance of past yields as prospective indicator and whether historical data is long enough to reflect different economic circumstances and what period/data is most comparable.

Comment on economic cycle, relative regional/sector prospects and so future earnings/asset cover, market regulation, supply and demand, pricing/rating of securities/issues, perspective/regulation/operations of rating agencies (may tend to be over conservative now – as a reaction to perceptions of prior lack of caution – and so overstate prospective risk, downgrade issues accordingly so actual default rates per banding will reduce).

(vii) Although the candidate is not required to recommend or otherwise the proposal, a discussion of the relevant considerations should encompass:

- Strategic considerations – existing assets, funding objectives, sponsor covenant, regulatory and constitution controls, existing agreed investment principles/restrictions and guidance and so benchmark strategy target.
- Tactical/timing/implementation/portfolio management considerations (new managers needed?).
- Sponsor opinion
- Independent expert advice
- Internal resource requirements
- Alternatives (proposals/investment/counterparty) including “do nothing” and how you would rate/compare them.
- Due diligence
- Legal structure
- Counterparty exposure
- Liquidity – can this be unwound, how, when, with whom and what cost
- Valuation
- Concentration risks
- Costs of transition and investment
- Ongoing governance and monitoring commitments
- Any tax considerations

2

- (i) See spreadsheet = £350,522,460

Cashflow is invested prior to Q3 so get full return

The Benchmark return for each individual year

Year 1 = $1.05 \times 1.05 \times 0.98 \times 1.08 = 16.69\%$

Year 2 = $0.95 \times 1.08 \times .95 = -2.53\%$

Year 3 = $1.10 \times 1.05 \times 1.10 \times 1.02 = 29.59\%$

The fee payable under each fee arrangement for each year

See spreadsheet for calculations

Flat fee of 40 basis points	£3,500,088
Flat fee 10 basis points and 10% outperformance	£3,231,664
Watermark fee	£4,051,518

- (ii)

a.

Base fee

Simple, easy to understand and check that correct fees being paid.

Have more certainty as to level of fee to be/being paid.

Will not pay more than 40 basis points regardless of performance.

Does not encourage excessive risk taking as much as a performance related fee.

Pay high fee even when investment manager underperforms.

Does not align the investment manager's interests with the investor, lack of incentive to outperform.

Performance no watermark

Low fee if investment manager underperforms.

Incentivise the manager to seek out additional returns as the manager paid more if returns greater.

There is no cap on the level of fee payable.

May encourage excessive risk taking.

May pay out for one quarter of performance while next quarter the manager might underperform the benchmark but would have still received a performance fee.

Can be complex (e.g. smoothing fees at the start and end of mandates), difficult to understand. For exceptional performance, could cause cashflow issues for the investor if it has to meet a substantial fee invoice from existing assets.

Performance with watermark

Low fee if investment manager underperforms.

Incentivise the manager to seek out additional returns as the manager paid more if returns greater.

Watermark means for manager that has underperformance they will not be paid outperformance fee until returns over benchmark return to prior level and therefore, not pay for outperformance multiple times.

There is no cap on the level of fee payable.

May encourage excessive risk taking.

Conversely, after period of material underperformance, the manager has less incentive to perform as the performance fee could become unattainable.

Can be complex (e.g. smoothing fees at the start and end of mandates), difficult to understand. For exceptional performance, could cause cashflow issues for the investor if it has to meet a substantial fee invoice from existing assets.

b.

1. A passive investor is looking to achieve benchmark return. Paying a performance related fee would be the cheapest option as the base fee is lower. However, as the purpose of the investment is to track an index, including a performance related fee might incentivise a manager to seek additional returns. The usual basis is to pay the flat fee, although the current fee of 40bps looks high for a passive manager for a £200m investor and would look to reduce.
2. The investor would prefer the performance related fee with high watermark. If returns are highly volatile that might well be periods of negative performance relative to the benchmark. Under this arrangement the investor only pays for the performance above the benchmark over the long term rather than pay for performance in one quarter which could be lost during the next quarter.

(iii) Passive exposure

- A passive management of currency means the investor is looking to hedge the holdings to Sterling on a mechanical basis and not looking to make a profit.
- Investor needs to decide the hedge ratio they want to use.
- Investor could trade using futures or forward contracts.

- The investor would need to short the currency of the actual holding and be long the equivalent value in Sterling if they wanted to manage currency on a passive basis.
- To do this the investor would need to decide how frequently they want to manage the exposure (every trade) or on a periodic basis (weekly, monthly etc.) as a proxy.
- To manage the investor would need to get the holdings from the investment manager.
- Need to check that the fund does not already hedge to a base currency as then the investor only needs to hedge to the base currency and not the individual holdings.
- Could ask the investment manager to open a Sterling hedge version of the fund.

Active exposure

- The same as above applies for active manager.
- In addition active management of currency exposure means the investor is looking to profit from currency decisions.
- Would need to set limits for under and over exposure to any currency.
- Need access to research/data in order to make decisions on which currency to under or over expose.
- Active currency is not a particularly good strategy if the investor is looking to hedge investments back to Sterling.

(iv)

- For emerging markets there might not be a suitable future/forward contract for the currency of the underlying investment.
- Investor would need to have access to trading platform/broker network for foreign exchange.
- Investor would need to have access to liquid assets for margin requirements or for closing out contracts at a loss.
- Investor would need the technology to ensure can keep track of exposures and trades.
- Would require a considerable amount of time which the investor might not have to spare.
- Delays in receiving the holdings data from the investment manager which will mean that hedge is not to actual holdings.
- If the hedge is only carried out on a periodic basis, at anytime the hedge will be overhedged or underhedged relative to the actual holdings as the investment manager will be making trades and reinvesting income etc.

- If the manager is carrying out some hedging in the fund then possibly doubling of wanted currency exposure.

(v) Pooled Fund/large manager advantages

- Large manager likely to have long performance track record, boutique manager will not have a track record for European clients.
- Likely to be financially stable with strong infrastructure and strength in depth of investment team. Boutique manager by very nature is smaller and usually less well capitalised.
- Has history of dealing with client accounts, boutique manager is breaking into a new market so does not have experience of managing assets for European clients.
- Pooled fund easier to invest as buying units in a fund and not underlying investments.
- Larger pooled fund would likely have greater diversification of underlyings.
- No need for custodian for holding assets and processing corporate events and dividend payments.
- Overall costs are likely to be lower in pooled fund than segregated investment.
- Have client service infrastructure which is probably not in place for boutique manager only just starting to offer European investments.

Segregated account/boutique manager

- Boutique manager likely to have incentives more aligned to investors as employee ownership tends to be higher in boutique so rewards are linked to performance of funds.
- Client has more freedom on type of investment in segregated fund as not pooled with other investors.
- Boutique manager more likely to be flexible on performance target.
- More flexibility on restricting certain types of stock.
- May get a better fee deal in order for manager to attract assets.

Credit was given for other relevant points made.

3

- (i) An investor would buy a tradable allowance because they would expect the price of it to rise in the future...
...so that they could then sell it at a profit.

In a growing economy, it is likely that there will be a higher demand for carbon emissions, so the tradable price of the quota allowances may rise (i.e. price rises due to increased demand).

In addition, with ever increasing environmental pressures on governments...

...it is likely that the government of this country will seek to reduce, or at least hold steady, the total emissions allowance...

...therefore creating an artificial scarcity...

...with the aim of forcing industry to reduce and become more efficient in its emissions but which may also inflate prices of the tradable allowances (i.e. price rises due to limited or reduced supply).

Unlikely to be a speculative requirement, but this would give an opportunity to diversify from other investment types if it was felt the overall portfolio was too risky.

It's an opportunity to gain equity style exposure to industry and country (more economic growth implies higher prices for emissions; shares in industrial companies may not yet be widely tradable if the country is an emerging economy).

Excess profits may be available given it is an inefficient market (new investment type, so not much experience).

There may be tax advantages compared with other investments (may be initially low tax charge).

(ii) The demand for emissions allowance may fall in times of economic weakness.

The supply is decided by politicians, and politicians can change their minds depending on many different factors, none of which are in the control of the investor...

...and many of which cannot be foreseen by the investor...

...hence the supply of emissions allowances may be increased, which would make prices fall...

Also, the system only works if the government polices companies to ensure they stick to their quota of emissions allowances they have been allocated or purchased.

So if the government is unable to police it...

...or politically unwilling to police it...

...then again the price of the tradable allowances will fall.

Trading in emissions allowances is a very new asset class, and therefore it cannot be well-understood at this stage of its development...

...so that investing in it could be seen as a very risky enterprise...

...particularly as it is very difficult to quantify the risk and so understand the likely risk/return pay-off.

Trading in sufficient lot sizes may be infrequent so lack of liquidity may prevent realisation of profits and/or at high cost.

Government may change tax regime to manipulate market and impact profitable opportunity.

- (iii) Candidates need to consider “why” (or why not) the government should engage as well as how.

Governments generally say they don't like to take an active role in the securities market (except for regulating it); however, there are methods and policies by which the government's actions may have an indirect influence on the market.

Current level of industrial activity and carbon output – ability and propensity to change (and over what time level), perspective on other country/government commitments

Limiting emissions could slow economic growth.

Letting companies exceed their allowance by purchasing unused allowances from other companies may maximise economic growth while still letting the government achieve its overall target.

Current economic/political situation – can we afford to be green? Will it be a vote winner (or are jobs more important?).

What is role of government within this market and what is relative exposure of government sponsored/nationalised industry (could government activity crowd out/distort market, positively or negatively?).

Fiscal policies that affect the taxation of capital gains, dividends and interest gains may eventually have an effect on market activity.

The market can be affected by the bills and laws passed by the various levels of government. This can occur for those laws directed specifically at the securities market or those that have an indirect affect.

Taxing emissions may be effective if the government wants to encourage the growth of a service economy rather than an industrial economy.

Taxing emissions may encourage companies to invest in more environmentally-friendly technology.

Balance between achieving financial and non-financial objectives, free market, influence and regulation i.e. a compromise between profit, equality and ecological concerns.

END OF MARKING SCHEDULE