CISI Diploma

Winter 2011

CHIEF EXAMINER'S REPORT-

BONDS AND FIXED INTEREST MARKETS

PLEASE NOTE: Due to a printing error, only 98 marks were shown on the question paper. Steps have been taken to make sure this does not happen again. The Chief Examiner was aware of the situation when marking the paper and the fact was taken into account in the results determination process so that no candidates were disadvantaged.

General comments

54% of candidates passed the examination for which they should be congratulated. Two candidates scored more than 70 marks.

The four candidates who scored between 40 and 50-marks should, with some work be more successful should they decide to retake the examination.

It can be seen that the average scores were either 52% or 53% for each section. The statistics are slightly skewed by the candidate who attempted one question before deciding that he/she was not suitably prepared to sit the examination:

Well done to the candidates who have been successful! Commiserations to the candidates who were close but not quite close enough. Specific comments are contained in the following pages.

Section A

Question 1

This question was poorly answered. In the current banking environment where credit risk is so important and repo allows lenders to move credit risk from counterparty to sovereign risk it behoves candidates to have a better understanding of how Government Repo Markets function.

Question 2

Reasonably answered by most candidates but I had hoped for a higher score. The process of pricing a coupon strip is simple enough either by using a formula or by deduction:

1. Price the straight bond
2. Price the repayment principal (the zero)
3. Subtract the price of the zero from the price of the straight

Question 3

a) Most candidates could give some definition of a swaption although many candidates thought that a swaption is exercisable into a swap. Swaptions are cash settled against prevailing swap prices to avoid counterparty credit risk when they expire in the money.
b) Reasonable answers.
c) The question required candidates to understand that a bullish risk reversal is constructed by buying an out of the money payer's swaption and selling an out of the money receivers swaption. They then needed to be able to combine two bid offer quotes to construct the price which only one candidate managed.

Question 4

a) This part of the question was answered well with most candidates having an understanding of the concept of a bond and swap and how the cash flows work.
b) Some confusion in the answers to part b. The bond yield of 4.44% minus the (pay) fixed rate of the swap of 2.30% gave a net return of 6m £ LIBOR + 2.14%. Many candidates had rudimentary answers which could have been expanded upon. Other solutions given were:
    i. Sell a strip of STIR futures – a reasonably solution but leaves basis risk between 3 and 6m LIBOR and requires futures margin deposits.
    ii. Sell a Gilt Future – again a reasonable response but leaves basis risk between the benchmark 2018 maturity gilt and the futures contract. The Gilt Future would also have to be rolled every 3 months which would incur transaction costs.
    iii. Sell FRA's – partial answer although the FRA market has a final maturity of 2 years and the bond has a 7 year maturity so this solution leaves the hedger open to curve risk.
    iv. Buy a cap – a good hedging solution but may be expensive in terms of the upfront payment for the cap. Plus this solution means that the hedger has risk to cap strike.

Question 5

a) Most candidates were able to deduce that the MPC Policy Rate was predicted to remain unchanged until March 2012 and then the market was predicting a rise of 0.25% by June 2012. Two candidates mentioned that LIBOR is a function of interest

rates and concerns about credit quality and tightness of the money markets. Well done!

b) I was looking for an understanding of the relationship between the MPC Policy Rate and 3m £ LIBOR and how this is transmitted through to STIR Futures prices. Candidates have some work to do here.

Question 6

This question was answered well by most candidates. Most marks were lost by not taking coupon payments into consideration. One of the compelling reasons for investing in convertible bonds is their high coupon returns.

Question 7

This question was well answered with candidates providing a good range of effects of consistently high and low inflation

Question 8

Candidates should understand that there are a number of ways in which credit spreads are expressed and they should familiarise themselves with various market conventions.

a) Spread to gilts - fairly well understood and explained.
b) Bonds seldom trade at par and therefore the use of the par yield curve is to restate yields available from par bonds and then calculate the appropriate par yield curve from a series of maturities. Most delegates understood the yield curve concept but too many missed the par component of the question.
c) The concept of the spot curve was not well understood. In essence a spot rate is a true rate of return from a spot date to a date in the future. It is akin to a zero coupon bond return and has no reinvestment risk.
d) I had hoped for a better response to this question, specifically:
    i. YTM is used to compare the return on two or more bonds and is slightly deficient because it assumes that coupons can be reinvested at the YTM.
    ii. The Par Curve is a graphic illustration of the cost of money over time
    iii. The spot curve is mainly used in the process of marking portfolios to market

Question 9

This question was well answered.

Question 10

This question was reasonably well answered although a few candidates did not answer the question and talked about the properties of calls and puts, not calls and puts embedded in bonds.

Section B

Section B contained two compulsory questions:

This section was a bit like "The Curate's Egg", good in parts!

The first question (Q11) required candidates to construct a portfolio to meet education expenses and was well answered with an average score of 74%. The second question (Q12) required candidates to comment about the return that is earned on a corporate bond investment if the risk profile is changed by the use of an interest rate swap and a credit default swap. This question seemed to be beyond the comprehension of most candidates with an average score of 29%.

Question 11 Comments.

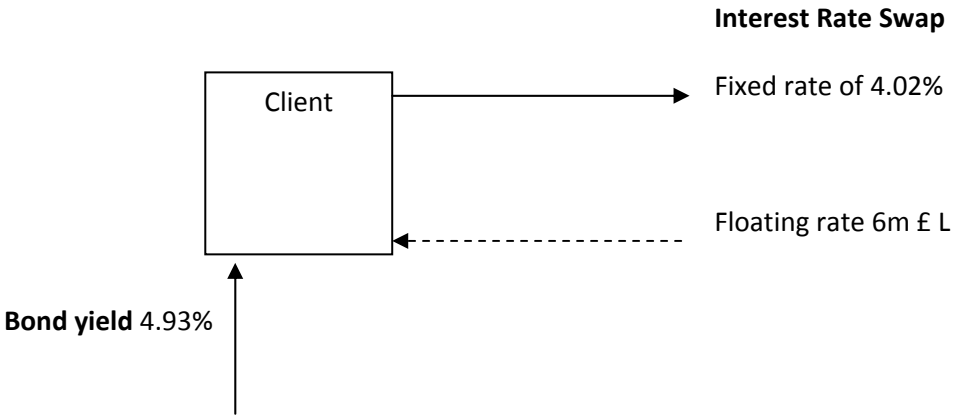
a) Most candidates understood that the current combined expenses of £20,000 per annum would grow by 3% per annum as a result of inflation and the future value could be ascertained by multiplying the current fees by 1+inflation rate ^10years.
b) Assuming that the future values have been ascertained correctly the future liability could be met by buying zero coupon government bonds. Therefore the amount that is needed to be invested today can be ascertained by discounting the future value by the appropriate gilt yield. This concept was reasonably well described.
c) I was looking for an asset allocation that provided a diversified portfolio with a good credit rating but still provided a yield in excess of 3%. A reasonable asset allocation could be a split between gilts (50%) with the balance invested in corporate issues. An alignment of bond maturities with outgoing funds requirements is sensible, i.e. liability duration weighting. There is no absolutely correct answer to this question and I was looking for an understanding of the relationship between assets and liabilities and risk and reward.
d) The annual yield to maturity of the portfolio is a weighted average return calculation and with a few exceptions was correctly calculated.
e) Default risk and spread risk were mentioned in most cases. The risk that was missed by most candidates is coupon reinvestment risk. To achieve the yield to maturity for the portfolio it is necessary to invest all of the coupons at their requisite yields to maturity. This is particularly problematical because virtually all of the bonds are trading above par and would give rise to capital losses which needs to be offset by interest earned on coupons at the yield to maturity.
f) Explaining asset allocation is important to ensure that clients understand their investments and do not come back to you at a later date and accuse you of bad advice. In this question I was looking for an explanation of how the bond maturities would provide cash to meet the education costs. I was also expecting a discussion of risk and reward and the importance of diversification of credit risk. Further marks could have been gained by discussing the implications of inflation actually being higher than the 3% assumed rate.

Question 12 Comments.

I was particularly disappointed with the responses to this question. This question requires an understanding of the relationship between corporate bond yields, interest rate swaps and credit default swaps. These two derivative contracts allow investors to reduce interest rate

risk on a bond from a long term fixed yield to a short term LIBOR return and shift the default and spread risk from the issuer to a counterparty. I would make the following observations:

a) Most candidates were able to calculate the spread to gilts which is corporate bond yield less gilt yield, 4.93% - 3.78% = 1.15%. A few candidates used the coupon instead of the yield of the corporate bond. The return of a bond takes into consideration the coupon rate and the discount or premium purchase price to its par value; therefore it is necessary to use the yield to maturity rather than the coupon rate.
b) The asset swap spread is the spread when compared to either 3 or 6m LIBOR. This spread is a combination of earning the bond yield (4.93%) but paying fixed on an interest rate swap (4.02%) to reduce the interest rate risk from long term to short term. This gives the investor a return of 6m £ LIBOR plus 0.91% (4.93% - 4.02%). Some candidates offered the interest rate swap to gilt yield as their spread answer.



c) Confusion sets in from this point onwards. The theoretical risk neutral price of a Credit Default Swap (CDS) is equal to the asset swap price. The rational is that if an investor can earn more from selling protection on a CDS than he can earn on an asset swap he will do so rather than hold the asset swap because broadly, the economic risk is the same. Therefore, the CDS price which is being quoted at 98bp is too wide when compared to the asset swap price.
d) The two significant factors to be taken into consideration before an arbitrage trade is executed are:
    i. Is there sufficient liquidity in both instruments to allow the trade to be entered and exited without paying the profit away in bid offer spreads?
    ii. Is it possible to borrow the asset swap in order to short it and at what price?
e) The arbitrage trade would be to short the asset swap and pay a spread of 6m £ LIBOR + 0.91% and place the proceeds through the reverse repo at 6m £ LIBOR – 0.04%. Then sell the CDS and earn a premium of 0.98%.
f) Positive, the CDS spread is greater than asset swap spread.
g) The net P&L is 0.03% which has been calculated as follows:
    i. Pay fixed on the corporate bond short position at 4.93%
    ii. Receive fixed on the interest rate swap at 4.02%
    iii. Pay 6m £ LIBOR on the interest rate swap
    iv. Receive 6m £ LIBOR – 0.04% on the reverse repo
    v. Sell CDS and earn 0.98%

h) No because the transaction costs would swallow any potential profit. A second reason is that it is not possible to hedge spread risk and default risk at the same time and this would be too small a return to earn to take on this type of dynamic hedge.

i) **Section C**

Question 13 Answered by 20 candidates for an average mark of 8.85

This was the most popular question which was attempted by 20 of the 26 candidates sitting the examination. I was expecting candidates to make reference to the following issues:

- The case for lower inflation
  - Slow GDP growth, the problems in Europe and the possible breakup of the Euro.
  - VAT increases and increased commodity prices falling out of the indexes
  - The slowdown in China
  - The banking sectors unwillingness to lend
- The case for higher inflation
  - QE II
  - Emerging market populations being lifted out of poverty and demanding better lifestyles

There were several interesting discourses and the general consensus was that both the market and the MPC might be right with the MPC being right in the short term and the market in the longer term. The difficult thing is likely to be the timing with which the MPC Committee moves on rates and reversing QE when the economy starts to strengthen.

Question 14 Answered by 13 candidates for an average mark of 8.69

The second most answered question which was reasonably answered. I was expecting candidates to:

- Show an understanding of how CLO's are structured including the sale of assets by the sponsor banks, the use of SPV's and how notes are issued to finance the purchase of the assets
- Describe the advantages to the banks as financing tools and as a means of reducing capital utilisation
- Be able to describe the events that caused the credit crunch including
  - Overcomplicated structures such as CDO^2
  - Lack of transparency and traceability of assets
  - The lapse approach of the ratings agencies and their conflict of interest in being paid by the issuers
  - Lack of understanding by investors in the structures that they were investing in
  - Lack of liquidity in the secondary markets
- Safeguards that were suggested were:
  - Greater regulatory oversight
  - Simpler structures
  - The possibility of a central counterparty standing between issuers and investors and instigating a margining system
  - A requirement by originators to provide better asset performance reports
  - A regulator for the rating agencies

Question 15 Answered by 12 candidates for an average mark of 8.33

This question required candidates to comment on a switch in asset allocation of a pension fund from 10% to 30% in the high yield debt sector. This question was reasonably answered. I was expecting candidates to comment upon the following factors:

- By switching 20% of the portfolio from investment grade to high yield the fund would have
    - higher default risk
    - have a portfolio that is less interest rate sensitive as high yield behaves more like equity and less like debt
    - an increase in the portfolio yield
- By switching to high yield the fund manager would have to take a more active approach and would be less able to employ a hold to maturity strategy
- It is possible that if some of the fund's investment grade portfolio is downgraded to non investment grade then the percentage of non investment grade would rise to more than 30% of the portfolio.
- The fund is likely to have an increasing duration on its liabilities and will have to increase yield to meet its obligations, increasing the exposure to high yield is one of the few ways of increasing the portfolio yield.
- High yield issues tend to be small, illiquid and prices have wide bid offer spreads
- Unless the fund manager has high yield experience it may be better to invest in a high yield fund
- An increase from 10% to 30% is a substantial increase in exposure to high yield, does the fund manager have the resources to handle this change?
- The story for high yield is not all bad news. The following may represent positive reasons for increasing exposure to high yield:
    - High yield may be upgraded to investment grade
    - At some point in the cycle high yield may be an attractive investment and could be seen as a "value investment"
    - The fund is diversified and the fund may be able to absorb a small amount of defaults because of the increased yield of the portfolio

Question 16 Answered by 2 candidates for an average mark of 6.00

Question 16 was only attempted by two candidates and as the low scores evidence they were a little out of their depth. If a candidate had a good understanding of derivatives and fund management then a very interesting answer could have been crafted. The following could have been commented upon:

- For the fund with substantial inflow of new money:
    - Swaps, forwards and futures could be used to diversify portfolio risk and for asset allocation whilst waiting for the appropriate opportunities to arise in the cash markets
    - Options could have been used to increase portfolio return using the covered call write strategy
    - Swaps and options could have been used for long short and spread or yield curve trades
    - Cross currency swaps could have been used to change the currency mix of the portfolio
- For the fund with net cash outflows derivatives could have been used to reduce risk on assets that are held.