

UNIVERSITY OF ESWATINI
DEPARTMENT OF BUSINESS ADMINISTRATION
EXAMINATION PAPER AUGUST 2020
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PROGRAMME OF STUDY : Master of Business Administration
YEAR OF STUDY : Year 1 (Part Time)
TITLE OF THE PAPER : Investment Analysis and Portfolio Management
COURSE CODE : ACF 624
TIME ALLOWED : Three (3) Hours

INSTRUCTIONS

1. There are **FIVE (5)** questions; **ANSWER ALL THE QUESTION IN SECTION A AND ANY TWO (2) QUESTIONS IN SECTION B.**
2. The paper consists of eight (8) numbered pages, including this page and Appendix 1 which contains useful formulae.
3. Begin the solution to each question on a new page.
4. The marks awarded for a question are indicated at the end of each question.
5. Show your necessary workings.

NOTE: You are reminded that in assessing your work, account will be taken of accuracy of the language and the general quality of expression, together with layout and presentation of your answer.

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR / SUPERVISOR.

SPECIAL REQUIREMENT: FINANCIAL CALCULATOR / SCIENTIFIC CALCULATOR

SECTION A - COMPULSORY**(50 Marks)****ANSWER ALL THE QUESTIONS IN THIS SECTION****QUESTION ONE****(40 Marks)**

Imagine you have E200 000 to invest in a portfolio of two risky securities plus a riskless asset. The following information in Table 1.1 contains three risky securities that are in different industries.

State of Economy	Probability of State	Return on Share A	Return on Share B	Return on Share C	Riskless Asset
Depression	20%	-10%	10.0%	-10%	2.0%
Recession	20%	5.0%	10.0%	-10%	3.5%
Normal	30%	10.0%	5.0%	10.0%	6.0%
Boom	30%	20.0%	-10.0%	25.0%	8.0%

Table 1.1**Required:**

- 1.1 As a risk-averse investor, indicate which of the three shares you would choose. Motivate your answer with relevant calculations. **(20 Marks)**
- 1.2 Suppose that your wealth is allocated to these two stocks plus the riskless asset in the proportions of 45%, 15% and 40% respectively.

Calculate:

- 1.2.1 the expected return of the portfolio. **(10 Marks)**
- 1.2.2 the standard deviation or total risk of the portfolio. **(10 Marks)**

QUESTION TWO**(10 Marks)**

- 2.1 Ben Carson's portfolio has the following data shown in Table 2.1 for a particular sample period.

	Portfolio	Market	T-Bill (Risk-Free)
Average	35%	28%	6%
Beta	1.20	1.00	0
Standard deviation	42%	30%	0

Table 2.1: Data for Ben Carson's portfolio for a particular Sample Period

- 2.1.1 Calculate Sharpe, Jensen (Alpha) and Treynor measures of Performance for Ben's portfolio and the market. **(8 Marks)**
- 2.1.2 Indicate and comment by which measures Ben's portfolio outperformed the market. **(2 Marks)**

SECTION B

(50 Marks)

ANSWER ANY TWO (2) QUESTIONS IN THIS SECTION

QUESTION THREE

(25 Marks)

DEBUNKING THE INEFFICIENT MARKET HYPOTHESIS

It is not uncommon to find financial pundits, analysts, financial advisors, or investment consultants that are willing to recommend indexing when it comes to a particular segment of the market; mainly, large-cap and even mid-cap companies within the United States. This is common curriculum in the CFA, AIF, CFP, and CIMA designations. Unfortunately, it is also common in this curriculum to mention that other parts of the market are inefficient and therefore active management may be justified.

First, in order to say that a market is inefficient, we must be able to describe what an inefficient market would look like. This is what Nobel Laureate Eugene Fama called the Joint Hypothesis in his famous *Efficient Capital Markets: A Review of Theory and Empirical Work* (1970). In order to test whether or not markets are efficient, we must be able to model what markets would look like if they were efficient. With the use of asset pricing models such as the CAPM (Sharpe, 1970) or the Fama-French 3 Factor Model (Fama/French, 1992), we can describe what markets look like when in equilibrium. In simple terms, in efficient markets, participants are compensated with return based on the risk taken. High returns are associated with high degrees of risk and vice versa.

An inefficient market would therefore be a market where investors are earning returns above what would be expected for the risk taken. This would be the elusive alpha that is sought out by active money managers.

This is not to say that all markets are perfectly efficient. While there may be some substantive truth behind there being inefficiencies in certain corners of the U.S. market and markets abroad, the cost associated with trying to exploit those inefficiencies are too great compared to the excess return that the portfolio managers are trying to capture.

In answer to the summations above about market inefficiencies, we would say that although it seems plausible for inefficiencies to exist in certain markets, it has been proven to be extremely hard for professional money managers to exploit those inefficiencies beyond a reasonable doubt and therefore anything other than applying an indexing approach to those markets is just wishful thinking.

Now let's address the issue of active management working in down markets. The pitch usually goes like, "Active managers perform better during down markets because they can do things like raise cash or just stick to high quality stocks versus an index which will ride all the way down to the bottom with the overall market."

Once again, in answer to the summations made about active management adding value in down markets, we would say that there is no consistent empirical proof that active managers can deliver alpha during down markets nor is there enough reliability in their performance that we can pick, with a high degree of certainty, which ones are going to outperform. Doing anything other than indexing during down markets is once again just wishful thinking.

We don't expect these general summations to go away anytime soon until the curriculum of professional designations is revised. From empirical standpoint, these summations do not have a leg to stand on. For something as important as the retirement of city workers, who are probably not as literate in investing as their consultants are, having an investment strategy based on wishful thinking is not prudent and not expected to be successful. Why don't we just go to Las Vegas and put the entire \$500M on "red" and hope for the best?

Source: Allen, T. and Hebner, M. (2015): Debunking the Inefficient Market Hypothesis, available on: https://www.ifa.com/articles/debunking_inefficient_market_hypothesis/ accessed on 10/03/2020

- 3.1 In the context of the above extract, critically provide an in-depth analysis of the fundamental ideas of the efficient market hypothesis (EMH), forms of market efficiency and tools investors may use to try to outperform the market. **(15 Marks)**
- 3.2 In light of the above article, compare and contrast passive and active investment strategies and highlight which strategy can be employed in bond portfolio management. **(10 Marks)**

QUESTION FOUR**(25 Marks)****THE FUTURE OF INVESTMENT IN EMERGING MARKETS**

Investing in emerging market has been widely discussed during recent years, with its benefits being high average returns and low correlations with developed markets. The higher returns in emerging markets stem from the higher growth rates due to low labour cost and therefore the attraction from developed countries, high flexibility and low level of unionisation and growth of domestic demand. Returns in emerging markets are also higher because a higher volatility and vulnerability of the economy. Furthermore the often low liquidity in emerging markets also drives up the returns. Finally, investors in emerging market are usually exposed to currency risk, adding another dimension to investment risk. The latter is made worse by the fact that in the emerging market there is often a positive correlation between share prices and the value of domestic currency, whereas the correlation is usually smaller or even negative in developed market. This is caused by stronger dependence on capital inflows.

While in early 1990s it was mainly the high returns from investment in emerging markets that gained attention, since the mid-1990s investors have focused more on emerging market's role in diversifying global portfolios. The discussion can be reduced to two different aspects: First, it seems that correlations between markets have increased. For example the correlation between the MSCI Emerging market index and the S&P 500 index has roughly increased from the 1990 to present from 0.6 to more than 0.8. However, there, there remains a diversification benefit since we know that any correlation below one creates positive effects on diversification.

The second aspect is the apparent or real increase of correlations during crises, which is often attributed to the increased worldwide financial integration. Increased correlation in times of crisis is harmful, since it means that correlation is high, and therefore the benefit of diversification is low when it is most needed. The increase in correlation during crises is particularly visible when contagion affects other emerging economies in the same region, although these crises usually affect developed markets to a lesser extent. A prominent example is the Asian financial crisis of 1997/1998 which affected all countries in South-East Asia.

Although the pure measurement of correlation may be misleading as technically increases when volatility is high, there seem to be a consensus that correlations are asymmetric and have recently

risen. It is not clear whether the recent increase in correlation is due to the current financial crisis and will therefore decline to the pre-crisis level or whether it will remain high.

While global diversification- as seen in current crisis- does not guarantee positive returns every year, one should keep in mind that the returns are not static but will move around. There may always be relatively long periods during which correlation rises to much higher than the historical average. If you are invested for the long term, you should, however, not be concerned about these short-term fluctuations.

Another aspect of investing in emerging markets is political risks. Part of the high returns in emerging market may be attributed to political risk in these countries. The focus on political risk has been renewed by the uprising of a couple of countries in the course of the Arab Spring. Investor demand a higher risk premium on investment particularly in authoritarian emerging economies, owing to the potential political and succession risks in countries previously seen to be stable.

Source: Bodie, Z., Kane, A., Marcus A.J. (2010) *Essentials of Investments* (8th edition)
Boston: McGraw-Hill Irwin

- 4.1 In the context of the given extract, discuss **ANY THREE (3)** types of risks that investors are exposed to in emerging markets. **(10 Marks)**
- 4.2 In order to predict stock price movements, security analysts use key economic statistics to describe the domestic economy. Critically discuss **ANY FIVE (5)** key economic statistics security analysts use in emerging markets. **(15 Marks)**

QUESTION FIVE

(25 Marks)

THE CASE FOR DERIVATIVES

They've been dubbed financial weapons of mass destruction, attacked for causing the financial turmoil sweeping the nation and identified as the kryptonite that brought down the global economy. Yet few Main Streeters really know what derivatives are - namely, an underlying asset, such as mortgage or a stock. There seems to be a near consensus that derivatives were a source of undue risk.

Robert Shiller, the Yale economist believes just the opposite is true. A champion of financial innovation and an expert in management of risk, Shiller contends that derivatives, far from being a problem, are actually the solution. Derivatives, Shiller says, are merely a risk-management tool the same way insurance is. "You pay a premium and if an event happens, you get a payment." That tool can be used well or as happened recently, used badly. Shiller warns that banishing the tools gets us nowhere.

For all the trillions in derivatives trading, there were very few traders. Almost all subprime mortgages that were bundled and turned into derivatives were sold by a handful of Wall Street institutions, working with a small number of large institutional buyers.

Meanwhile, the system was built on the myriad decisions of individual homeowners and lenders around the world. None of them, however, could hedge their bets the way large institutions can. Those buying a condo in Miami had no way to protect themselves if the market went down.

Derivatives, according to Shiller, could be used by homeowners - and, by extension, lenders- to insure themselves against falling prices. In Shiller's scenario, you would be able to go to your broker and buy a new type of financial instrument, perhaps a derivative that is inversely related to a regional home-price index. If the value of houses in your area declined, the financial instrument would increase in value, offsetting the loss. Lenders could do the same thing, which would help them hedge against foreclosures. The idea is to make the housing market more liquid and more stable. They point out that future contracts haven't made equity markets or commodity markets immune from massive moves up and down. They add that the ballooning world of home-based derivatives wouldn't lead to homeowners' insurance: it would lead to new playground for speculators.

Source: Karabell, Z. (2009). *The Case for Derivatives*," Newsweek, February 2, 2009.

- 5.1 In the context of the given extract, define derivatives and differentiate between futures contracts and forward contracts. (10 Marks)
- 5.2 Critically discuss the advantages and disadvantages for derivatives use as part of a well-designed portfolio strategy for risk management. (15 Marks)

APPENDIX 1

- $$\text{HPR} := \frac{(Pe - Pb) + D}{Pb}$$

- $$\text{HPR}_{\text{avg}} = \sum_{i=1}^J \left[\text{HPR}_i \times \frac{V_i}{TV} \right]$$

- $$\sigma^2 = \sum_s p(s) \times [r_s - E(r)]^2$$

- $$\sigma = \sqrt{\sigma^2}$$

- $$E(R_i) = R_f + \beta_i [E(R_M) - R_f]$$

- Sharpe measure
$$= \frac{r_p - r_f}{\sigma_p}$$

- Treynor measure
$$= \frac{r_p - r_f}{\beta_p}$$

- Jensen (Alpha)
$$\alpha_p = r_p - [r_f + \beta_p (r_m - r_f)]$$

- PV of a bond
$$= C \left(\frac{1 - \frac{1}{(1+r)^t}}{r} \right) + \frac{FV}{(1+r)^t}$$

- $$E(r) = \sum_{s=1}^S p(s) r(s)$$

- $$\text{Var}(r) = \sigma^2 = \sum_{s=1}^S P(s) [r(s) - E(r)]^2$$

- $$\text{SD}(r) = \sigma = \sqrt{\text{Var}(r)}$$

- $$\text{SD} = \sqrt{W_A^2 \text{SD}_A^2 + W_B^2 \text{SD}_B^2 + W_C^2 \text{SD}_C^2 + 2W_A W_C \text{SD}_A \text{SD}_C \rho_{AC} + 2W_A W_B \text{SD}_A \text{SD}_B \rho_{AB} + 2W_C W_B \text{SD}_C \text{SD}_B \rho_{CB}}$$

END OF PAPER