

GROUP WORK PROJECT # 3
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MScFE 560: FINANCIAL MARKETS

FULL LEGAL NAME	LOCATION (COUNTRY)	EMAIL ADDRESS	MARK X FOR ANY NON-CONTRIBUTING MEMBER
Irgibay Jemissov	Kazakhstan	Irg1@mail.ru	
Boyan Davidov	Bulgaria	davidovboyan@gmail.com	
Ebenezer Yeboah	Ghana	Ebenzeryeboah46@gmail.com	

Statement of integrity:	
Team member 1	Ebenezer Yeboah
Team member 2	Irgibay Jemissov
Team member 3	Boyan Davidov

Part A

A. Overview: Open-Ended, Low-Cost Mutual Fund

An open-ended, low-cost mutual fund that tracks a broad market index is a compelling investment option that offers investors exposure to a diverse range of assets, reflecting the performance of the underlying market index. This type of investment vehicle provides several features and benefits that align with the interests of a wide range of investors seeking market participation with minimized risk.

1. Performance:

By spreading investments across multiple assets, the impact of underperforming elements is mitigated, offering steady returns over time.

2. Fees:

These funds tend to possess lower expense ratios compared to actively managed counterparts. Such a fee structure bolsters overall returns, allowing investors to retain a greater portion of their gains.

3. Transparency:

Investors gain access to frequent updates about fund holdings, performance, and expenses. Fund managers commonly provide comprehensive reports detailing asset allocation within the portfolio. Such transparency facilitates informed decision-making and active monitoring.

4. Liquidity:

High liquidity characterizes open-ended mutual funds, enabling investors to trade shares on any business day at the present net asset value.

5. Professional Management:

Fund managers play a pivotal role in ensuring that the fund's composition remains aligned with the chosen index, optimizing exposure to market trends.

6. Investor Protections:

Regulatory bodies such as the SEC and FINRA oversee these funds, and fund managers bear the responsibility to act in the best interests of investors. Additionally, the SIPC offers coverage up to \$500,000 per account with a limit of \$250,000 for cash, enhancing investor confidence in the safety of their investments.

B. Overview of an Exchange-traded Fund (ETF) that tracks the same broad market index.

An ETF is a fund that is composed of stocks and bonds from not just one, but multiple companies. The list of companies can be selected in various ways; they can belong to the same industry or be chosen based on a certain criteria or overall correlation.

Examples of this include the Invesco Water Resources ETF (PHO), a fund where 90% of its assets are allocated to companies providing products and services related to water preservation and purification for households, businesses, and industries.

Another example of an ETF is the SPDR S&P 500 ETF Trust (SPY), a fund that acquires financial instruments from companies listed in the S&P 500 index.

Performance

Due to the fact that ETFs are linked not to a single company, but to a multitude of them, they display a performance that pertains to all the companies whose instruments are assets of the fund. Meanwhile, ETFs with well-diversified portfolios, the risk of incurring significant losses is reduced.

Fees

ETF are good for those investors who wants to invest into several instruments, but does not have enough resources. By buying ETF they invest into the whole portfolio. Usually ETF has lower commissions in comparison with mutual funds.

Transparency

ETFs are transparent to investors. ETF funds regularly disclose information about their portfolios, often on a daily basis. In addition to the performance of the instruments, information about their returns and proportions in the overall portfolio is also made available, providing investors with comprehensive information about the acquired asset. This daily information also enables investors to quickly enter and exit this market.

Professional Management

ETF funds employ a professional approach to portfolio allocation, yet continuous active decision-making is not required. The fund itself acts as a relatively passive investor, as after determining the core assets for investment, their proportions, and the indicative benchmarks required by the fund, the management only makes adjustments to achieve these benchmarks.

Investor Protections

ETF investors are protected by SEC regulations. There is also limited protection from SIPC, which protects up to \$500k, where \$200k limited in cash. This protection relates to the custody function of the broker, not for change in prices.

C. Overview of an Indexed Annuity

Annuities are one of oldest financial instruments existing which can be traced back to times of the Roman Empire. Even today, the demand for these instruments is high as annuities provide downside protection while keeping potential for growth through exposure to market index. Indexed Annuities can be rather complex instruments but generally the following terms are included in contracts:

Initial Premium – lump sum paid by the contract owner (typically the annuitant, i.e. the person that receives the benefits) on origination.

Participation rate – the percentage of the index's gain to be received

Cap rate – sets the maximum gain that can be achieved. If the index outperforms your return will be capped

Floor – minimum return (downside protection thanks to the zero-coupon bonds)

Index: Benchmark to which the annuity is exposed (e.g. Eurostoxx 50)

Performance:

The return is tied to the Index and based on a formula that considers participation, cap and floor rates. While there is guaranteed minimum return, the potential for growth is also limited compared to direct investment in the index due to cap and participation rate.

Fees:

Indexed annuities fees depend on the type of contract (variable or fixed) and can come in several layers. Apart from initial lump sum payment, fees can be accumulated through certain period of time before annuity can start paying off. Generally, fees depend on the competition among insurers in different countries.

Transparency:

Annuities can be quite complex instruments and transparency varies among providers. Some may offer concise information about the terms and fees, whereas others might present the information in quite opaque way.

Liquidity:

Indexed annuities are generally designed as long-term investments. They often come with surrender periods (of several years) during which withdrawals are subject to penalties. Thus, annuities are rather illiquid instruments.

Professional Management:

Indexed annuities are managed by insurance companies or government/employer pension funds. The decision of the management can significantly alter the performance of the contract.

Investor Protections:

Indexed annuities are insurance products and they may not offer the same level of investor protections as securities regulated by organizations like the SEC and FINRA. However, the sale of annuities is regulated and subject to consumer protection laws. In addition, regulation like Solvency II set certain requirements on insurers that mitigate risks.

Part B

Ebenezer Yeboah

7. Collateral-Related Risks: Credit Risk:

- a. Open-ended mutual funds typically do not carry direct collateral-related risks or credit risk. Investors' money is pooled and invested in a diversified portfolio of securities, reducing the impact of credit risk associated with individual assets.
- b. In open-ended mutual funds, there aren't specific institutions that insure payment of dividends or credit guarantees. Instead, the performance of the fund relies on the performance of the underlying securities.
- c. Questions about credit guarantees might not apply to open-ended mutual funds, as these funds typically don't provide specific credit guarantees or insurance for dividends.

8. Statistical-Related Risks: Correlation:

- a. Open-ended mutual funds with a well-diversified portfolio can help mitigate risks associated with medium to high correlation among equities. Diversification across various assets reduces the impact of poor performance from individual securities.
- b. In down markets, investors might inquire about the historical performance of the open-ended mutual fund and how it has navigated challenging market conditions.
- c. This question doesn't apply to open-ended mutual funds, as participation rates and equity market performance are specific to indexed annuities and are not relevant to mutual funds.

9. Magnifying Risk: Leverage & Nonlinearity:

These questions do not apply to open-ended mutual funds.

Irgibay Jemisso

7. Collateral-related risks: financing and credit

There are two main types of ETF: physical and synthetic. In physical investor purchase part of portfolio which is directly owned by ETF. In synthetic ETF, the fund promises to pay income on the same level as portfolio should do, but fund does not directly own this portfolio. In order to do so, fund has a swap agreement with other financial institutions (usually banks) to provide promised level of income, on the same level as portfolio performs. At this stage collateral related risk arise, as there is the risk that ETF issuer or bank will not be able to provide sufficient amount of money to cover promised level of income to investors.

8. Statistical related risks: volatility and correlation

Statistical analysis is very important in analyzing ETF portfolio.

One of the criteria is correlation. Some ETF consist of the underlying assets from the same industry. In that case, you have concentration risk, as portfolio is not well diversified.

For Portfolios with high level diversification correlation should be checked on a regular basis, as correlation might change over time due to the market conditions. At the same time inverse ETFs are subject of correlation risk too, as usually they are often reevaluate their portfolio, and there rise additional costs (transaction costs, fees, etc.).

Another statistical risk is volatility. Especially for synthetic ETFs which should replicate the same level of performance as underlying asset, the actual return may be differ. Also high volatility of portfolio and as a result of ETF may influence on prices for such ETF and make them difficult to sell.

9. Magnifying risk factors: leverage and non-linearity

Indexed annuity it is agreement between investor and financial institution, where financial institution provides rate based on market index (e.g. S&P500). In situation of growing markets it provides all benefits for investors, as in comparison to fixed annuity they provides higher rate. Besides that, there is a limit, as annuity limits your profitability, as index annuities has some floor of the rate. This was made to cover you future possible losses, which in case of

decrease of the markets will cover losses. From that point of view, this instrument is very safe for investors who want to receive stable cashflows (e.g. pension).

Indexed annuities often have participation rate, which influence on your final rate. Participation rate shows how much from the base index should be distributed to the investors. E.g. base index is 10%, participation rate determined by annuity is 80%, thus means that investor will receive $10\% \times 80\% = 8\%$ of revenue.

Boyan Davidov

7. Index annuities carry credit risk to the extent that the insurer might become insolvent in the meantime. However, annuity providers are highly regulated entities as pension funds and insurers can affect the financial stability of a country in case of distress. The regulators set coverage limits and capital requirements to mitigate risks of insolvency (for instance Solvency II is for insurers what Basel is for banks). In addition, just like the FDIC guarantees deposits to certain amount, there is a state-based insurance guaranty association in United States. Furthermore, credit agencies assign corresponding ratings to insurers.

Relevant questions: is there specific regulation that covers the insurers activity in selected country. Is there insurance guaranty association? What is the credit rating of the insurer?

8. If market perform badly, the correlation between constituents will likely increase and negatively affect the upside potential of the indexed annuity. However, indexed annuity locks the annuitant into the current yield of zero-coupon bonds thus providing some downside protection. Furthermore, given that the exposure to the index is built through call options, in the worst outcome these options will expire worthless.

Relevant questions: Is there any hedging possibility in case of market distress for the mutual fund and the ETF? Is shorting allowed (via CFDs or futures, put options). Is in prospectus determined the minimum duration of the mutual fund (in case of rising interest rates, investors would prefer funds that can reduce duration and even turn it negative if allowed)? How high is the correlation between index constituents? Is participation rate lower for higher correlation?

9. Indexed annuity has payout similar to that of a bull call spread. It participates to some extent (set by the cap and participation rate) in upside moves whereas it provides guaranteed payoff based on the yield to maturity of zero-coupon bonds (in the case of bull call spread there

is cash inflow from sold call options). The participation rate acts as a lever, because the higher the rate, the better the performance of the indexed annuity. The participation rate also provides downside protection (since the rate is less than 100%).

Part C

Mutual Fund

Mutual funds are investment vehicles that pool funds from multiple investors to purchase a diversified portfolio of stocks, bonds, or other assets.

Mutual funds experience significant inflows and outflows of capital from investors. Sudden surges or withdrawals can impact fund performance. Managers may need to buy or sell assets quickly, potentially affecting returns due to unfavorable market conditions.

Unlike stocks and exchange-traded funds (ETFs), mutual funds lack intraday trading. Transactions are executed at the end of the day. This lack of intraday trading can limit an investor's ability to respond quickly to market fluctuations, as mutual fund trades are executed at the end-of-day net asset value.

Mutual funds' transparency regarding their holdings is often delayed. Unlike stocks, where real-time information is available, mutual fund investors receive periodic reports that disclose holdings with a time lag. This limited transparency can hinder investors from making immediate, informed decisions.

Exchange-Traded fund

ETF is a good financial instrument for passive investors, or who does not have enough resources to buy their own well diversified portfolio.

ETF almost replicate performance of the underlying asset, thus it has the same volatility. This strong relationship with underlying asset brings all the pros and cons of the underlying asset, such as volatility, liquidity etc.

ETFs' usually has lower fees than mutual funds, but they still have some fees.ETF's expense ratio is an annual fee, which charged for operational expenses of the ETF. Calculated as all operating expenses divided by average assets of the fund. In addition to that expense ratio there are transaction costs

Physical ETF who owns stock directly receives dividends, those dividends might be automatically reinvested or distributed between the ETF's participants. It depends on the rules and agreements of ETF.

Indexed Annuity

Indexed annuities are not for everyone.

First of all, as we mentioned these instruments are long-term assets that can span a lifetime. There are surrender periods where withdrawals are possible but subject to penalties to discourage policyholders from removing funds earlier.

Secondly, annuities are not appropriate for risk-seeking investors as their performance is typically capped. In fact, they have also typically lower guaranteed income than pensions. The major issue is that the participation rate is fixed for very long periods and thus, deprive flexibility.

Last but not least, annuities are complex instruments with several layers of fees. These are often not opaque and the total costs over time are not easily to be determined in advance compared to other instruments (like mutual funds or ETFs). A thorough analysis of annuity features is recommended to evaluate the benefits of downside protection with respect to the limit of potential higher returns.

Part D

A. Mutual Funds

The mutual fund crisis of 2003 exposed an intricate web of deception and fraudulent practices within the financial realm that had previously gone unnoticed. One of the key revelations centered on the manipulation of mutual fund pricing and trading mechanisms. It came to light that fund managers had been involved in activities like late trading and market timing, exploiting time zone differences to maximize profits at the expense of unsuspecting investors. These practices not only eroded investor confidence but also eroded the credibility of the mutual fund industry.

Several converging factors contributed to the emergence of the mutual fund crisis in 2003. A noteworthy factor was the rise of celebrity status among successful fund managers. With their achievements and failures highlighted in the media, the pressure to

achieve exceptional returns intensified. This elevated status, combined with the allure of substantial profits, prompted fund managers to actively pursue institutional investors who could amplify a fund's assets under management. This drive led to an environment characterized by minimal regulation, where a handful of influential hedge funds and major investors wielded considerable power, often engaging in illicit activities and unauthorized trades.

Conflicts of interest within the mutual fund sector compounded the crisis. The absence of impartiality between mutual fund chairs and their boards of directors created a fertile ground for ethical breaches. Many fund companies had overlapping boards overseeing different funds, resulting in situations where the company's interests took precedence over the interests of shareholders. Although regulatory attempts were made to address these conflicts, the crisis underscored that the presence of independent board members did not guarantee the eradication of fraudulent behavior.

To preclude the recurrence of future mutual fund crises and sustain investor trust, the implementation of rigorous regulatory measures is imperative. Foremost, stringent oversight and transparency measures are essential. Regulatory bodies should mandate fund managers and investment companies to provide transparent and precise information about investment philosophies, fund managers, historical performance, and investment holdings. This approach would empower investors to make informed decisions and discourage unethical conduct.

Secondly, the resolution of conflicts of interest must be all-encompassing. Regulations should stipulate that a significant majority of a mutual fund's board members remain independent from the fund management entity. Such a provision would establish a robust barrier against the subordination of company interests to investor interests and diminish the likelihood of fraudulent practices.

Thirdly, the incorporation of advanced technological solutions can bolster the mutual fund sector's integrity. Automated systems capable of eliminating manual manipulation

of orders and pricing can thwart deceitful practices such as late trading and market timing. These systems would ensure that all investors receive equitable and accurate pricing, irrespective of disparities in time zones.

Lastly, collaboration between regulatory authorities and industry experts is pivotal for the formulation and execution of effective regulations. Routine audits and examinations of mutual fund operations can help identify and rectify discrepancies before they escalate into full-fledged crises.

Sources:

<https://link.springer.com/article/10.1007/s11417-010-9090-7>

B. ETF Physical vs Synthetic

An ETF is a financial instrument that involves investing not in a single asset, but in an entire portfolio. ETFs have gained popularity because they allow investors to acquire a share of a portfolio at a price lower than if the investor were to buy the entire portfolio. Another advantage of this instrument is that passive investors don't need to constantly worry about the proportions within the portfolio, as the ETF itself monitors this and conducts periodic adjustments. Additionally, ETFs are actively traded on the market throughout the day, making them highly liquid and enabling easy tracking of the current price.

There are two main types of ETFs: physical and synthetic.

Physical ETFs imply that the fund physically owns the assets of the investment portfolio. This allows the fund to benefit from ownership advantages, such as profit from selling assets, receiving dividends, and more. Furthermore, in this case, investors can be more at ease regarding credit risk, as it is notably lower than that of synthetic ETFs, since the portfolio is backed by the actual assets.

Synthetic ETFs do not involve owning the underlying assets. Their essence lies in the fact that the fund acts as an intermediary. Upon receiving investor funds, the fund offers a reward rate that closely replicates the rate from physically owning the portfolio. To achieve this rate, the fund has to enter into a derivative contract (usually a swap) with a financial institution (most commonly a bank), which guarantees the necessary reward.

In such cases, since the fund doesn't own the portfolio, credit risk becomes high, as the portfolio is backed by nothing except the derivative agreement with the bank. Credit risk extends to both the fund itself and the financial organization that needs to replicate profitability.

Various regulations exist to mitigate credit risk. One of the most crucial is the requirement for the fund to hold collateral. This way, both investors and the financial institution can protect themselves from potential fund default. On the other hand, to safeguard the fund and investors, there are various restrictions on entering swaps with financial institutions. For instance, UCITS allows covering no more than 10% of the portfolio with a single counterparty. This measure covers the risk of the financial institution's default.

Because synthetic ETFs replicate the profitability of the underlying portfolio, the actual rate may differ, as the portfolio doesn't have a 100% correlation with the underlying asset. Synthetic ETFs can be quite advantageous for novice investors or those with limited budgets, as they allow entry into new markets/industries at prices lower than physical ETFs.

Different countries have their own popular ETFs. For example, in the US, physical ETFs dominate, while in Europe, synthetic ETFs are more prevalent. This is also tied to fund regulations, as ETFs are subject to oversight from the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC). Due to this regulation, ETFs have a considerable level of transparency. Funds officially disclose portfolio information, often on a daily basis. However, compared to physical ETFs, synthetic ones are less transparent since complete information about portfolio proportions isn't always present.

Sources: <https://www.bloomberg.com/professional/blog/stigma-surrounding-synthetic-etfs-should-be-put-to-rest-for-good/>

C. Indexed annuities

Brokers and brokerage firms are regulated by both SEC (via the Exchange Act) and FINRA. The latter has set rule 2111 which sets the scope of the suitability obligation. By this rule, brokers are obliged to have reasonable basis when making recommendations of

securities considering customer's investment profiles (for instance, age, financial needs, experience, risk tolerance etc.). The suitability obligation consists of the following components:

- Reasonable-basis obligation – checks whether certain recommendation is suitable for at least some customers
- Customer-specific obligation – as the name suggest, the recommendation must be suitable for particular customer
- Quantitative suitability – answers whether set of transactions when taken together are suitable for a customer (and are not excessive).

In Regulatory Notice 11-25, FINRA expands also the scope of suitability with regards to investment strategy. In brief, the obligation has the goal to align recommendations by brokers with customer's interests, ensuring that brokers will place the interest of the customers above its own or employer's interest. In part B the reading introduces equity-indexed annuities and explains the differences or similarities to variable and fixed annuities. It turns out that insurance companies have sold in the past equity-indexed annuities without registering them as securities. Thus, they have not been subject to the 'Securities Act'. In fact, annuities were exempted from coverage of the act as stated in part C (Regulating Equity-Indexed Annuities). This has changed with respect to variable annuities but not until the Court decided that these instruments involve investment risk-taking (before that there had been confusion whether variable annuities are deemed insurances or not).

Later, the adoption of Rule 151A by the SEC covered also specifically equity-indexed annuities. In addition, the Harkin Amendment under Dodd-Frank extended the regulation by elaborating which equity-indexed annuities can be exempt securities by SEC, namely:

- the value of the indexed annuity does not vary according to the performance of a separate account;
- the indexed annuity is issued in a state that has adopted the Model Suitability Regulation or by an insurer that adopts and implements practices on a nationwide basis for the sale of annuity contracts that meet or exceed the NAIC Model Suitability Regulation.

Finally, The National Association of Insurance Commissioners (NAIC) developed the Suitability in Annuity Transactions Model Regulation, which outlines standards for suitability and the information brokers must consider when recommending annuity products, similarly to the FINRA 2111 rule. States have also adopted varying levels of regulation related to suitability and annuity transactions. Some states have adopted the Model Regulation, while others have implemented their own variations. In conclusion, one needs to be bear in mind that indexed annuities are insurance products and as such regulation falls under state insurance regulations rather than federal securities regulations. This means they may not offer the same level of investor protections as securities regulated by organizations like the SEC and FINRA.

Sources:

https://scholarship.law.stjohns.edu/cgi/viewcontent.cgi?article=1273&context=faculty_publications