CHAPTER - I
INTRODUCTION

1.1 Background of the Study

Derivatives are financial contracts that are designed to create market price exposure to changes in an underlying commodity, asset or event. In general, they do not involve the exchange or transfer of principal or title. Rather their purpose is to capture, in the form of price changes, some underlying price change or event. The term derivative refers to how the prices of these contracts are derived from the price of some underlying security or commodity or from some index, interest rate, exchange rate or event. Examples of derivatives include futures, forwards; options and swaps, and these can be combined with each other or traditional securities and loans in order to create hybrid instruments or structured securities. Derivatives are traded on derivatives exchanges, such as the Chicago Mercantile Exchange which employs both open outcry in "pits" and electronic order matching systems, and in over-the-counter markets where trading is usually centered around a few dealers and conducted over the phone or electronic messages.

The word “Derivative” is a magic word. There can be derivative of everything e.g., commodities, equities (stock), residential mortgages, commercial real estate, loans, bonds), an index (e.g., interest rates, exchange rates, stock market indices, consumer price index (CPI) i.e. inflation derivatives), or other items. So there is scope for everyone and every sector like growers, traders, exporters, importers, financial institutions, industrialists, investors and end users.

Derivatives play a useful and important role in hedging and risk management, but they also pose several dangers to the stability of financial markets and thereby the overall economy.

As a testament to their usefulness, derivatives have played a role in commerce and finance for thousands of years. The first known instance of derivatives trading dates to 2000 B.C. when merchants, in what is now called Bahrain Island in the Arab Gulf, made consignment transactions for goods to be sold in India. Derivatives trading, dating back to the same era also occurred in Mesopotamia (Swan, 1993). The trading in Mesopotamia is evidenced by many clay tablets in the cuneiform writing, and these are available at the British Museum, the Louvre and were some of the many items stolen from museums in Baghdad during the U.S invasion in 2003. A more literary reference comes some 2,350 years ago from Aristotle who discussed a case of market manipulation through the use of derivatives on olive oil press capacity in Chapter 9 of his Politics.

Derivatives trading in an exchange environment and with trading rules can be traced back to Venice in the 12th Century. Forward and options contracts were traded on commodities, shipments and securities in Amsterdam after 1595. The Japanese traded futures-like contracts on warehouse receipts or rice in the 1700s. In the US, forward and futures contracts have been formally traded on the Chicago Board of Trade since 1849. As of 2003, the world's largest derivative exchange is the Eurex, which is an entirely electronic trading "exchange" that is based in Frankfurt, Germany.

Today the size of derivatives markets is enormous, and by some measures, it exceeds that for bank lending, securities and insurance. So big that it challenges descriptions taking to description of the size of space. Douglas Adams, author or The Hitchhiker's Guide to the Galaxy, tried to say it like this, "Space is big. Really big. You just won't believe how vastly hugely mind- bogglingly big it is. I mean, you may think it's a long way down the road to the chemist, but that's just peanuts to space." Thus one benchmark is to compare the market to the $11 trillion size of the US gross domestic product. Thus outstanding amounts are 19 times the size of the US economy, while trading is over volume on exchanges 79 times the US GDP.

Today, derivatives are used to hedge the risks normally associated with commerce and finance. Farmers can use derivatives the hedge the risk that the price of their crops fall before they are harvested and brought to the market. Banks can use derivatives to reduce the risk that the short-term interest rates they pay to their depositors will rise and reduce the profit they earn on fixed interest rate loans and securities. Mortgage giants Fannie Mae and Freddie Mac – the world largest end-users of derivatives – use interest rate swaps, options and swaptions to hedge against the prepayment risk associated with home mortgage financing. Electricity producers hedge against unseasonable changes in the weather. Pension funds use derivatives to hedge against large drops in the value of their portfolios, and insurance companies sell credit protection to banks and securities firms through the use of credit derivatives.

In addition to risk management, derivatives markets play a very useful economic role in price discovery. “Price discovery is the way in which a market establishes the price or prices for items traded in that market, and then disseminates those prices as information throughout the market and the economy as a whole. In this way market prices are important not just to those buying and selling but also those producing and consuming in other markets and in other locations and all those affected by commodity and security price levels, exchange rates and interest rates.” (Dodd, 2004)

The Chicago Board of Trade was established in 1848 A.D. to facilitate the farmers and merchants of agricultural products in the USA. Today it offers futures contracts not only on agricultural products such as corn, oats, soybean meal, wheat, etc. but also on Treasury bonds and Treasury notes.

The Chicago Produce Exchange was established in 1874 A.D. to facilitate the trading on eggs, poultry, butter, etc. Later it was reorganized as Chicago Butter and Egg Board in 1898 A.D. The Chicago Mercantile Exchange was formed as the successor of Chicago Butter and Egg Board in 1919 A.D. It started futures trading on live cattle, livestock, etc. It started futures contracts on foreign currencies too. Though open-

outcry system of trading is still in use, electronic trading has been a popular method in recent years in the futures exchanges.

In Nepal, commodity market is introduced by **Commodities & Metal Exchange Nepal Ltd (COMEN)**. COMEN have been providing trade services in agriculture goods. It will build warehouses to improve services.

Commodities & Metal Exchange Nepal Ltd. (COMEN) has been established in 2006 as the pioneer derivative exchange in Nepal. Team of COMEN claims to be fully professional and well trained about the market sectors. COMEN has been trading futures contracts in Nepal. COMEN's futures contracts allow investor to transfer risks, optimize portfolio performance and adjust underlying exposures with low transaction costs. Through COMEN platform, users worldwide are able to access the broadest array of the most liquid consumption assets derivative market is available anywhere. COMEN Clearing Committee is the largest derivatives clearing facility in Nepal. It serves as the guarantor of every transaction that happens in markets, providing unparalleled safety and soundness for the customers. In addition, the clearing committee matches and settles all trades and guarantees the creditworthiness of every transaction that takes place in market.

The major underlying assets traded in COMEN are the commodity products and metal products. The commodity products include the futures contracts based on agro-products. Similarly the metal products include the gold, silver, copper, zinc. COMEN is committed to make market more efficient and accessible to an even wider range of market users.

The second derivative exchange in Nepal is Mercantile Exchange Nepal Ltd (MEX). MEX is incorporated as a Public Limited Company organized under Laws of Nepal during August 2007 with an authorized share capital of 100 Million NPR (equivalent to 1.4 Million USD) and a paid up capital as on 31st March 2009 is 25 Million NPR (equivalent to 340,000 USD). The company is governed by Board of Directors, comprising 7 members with 1 independent director as full time directors. M/s N.K

Joshi and Co, a leading auditors firm functions as the statutory auditors of the firm and M/s BM Dhungana & Co acts as fulltime concurrent auditors. The B.O.D comprises of professionals in the field of finance and industry and who are also dominant promoters & shareholders of the company. The Managing Director works as a full time Director representing the Board in the day-to-day activities, while CEO of the Exchange is dedicated in running the business, reporting to the Board of Directors. Both the MD and CEO have about 10 years experience in the futures market. Professionals are our back bone, Transparency is our day-to-day practice. Technology is our stem. Commercialization of market is our goal. Reducing of risk is our motto.

Nepal Derivative Exchange (NDEX) is a state of art online commodity and derivative exchange operating in Nepal. In the world of increasing volatility, NDEX is the best platform to manage risk across the major commodities from precious metals to base metals, from agro commodities to energies. It is one of the best and most diverse derivative exchanges encompassing the widest range of benchmarked product available. It brings buyers and sellers together on the electronic trading floor of NDEX. It provides you with the tools you need to meet your objectives and achieve financial goals.

NDEX, professionally managed by a team of young Nepal based entrepreneurs, was incorporated on November 20, 2008 under the Company Act, 2063 of Nepal. It is committed towards revolutionizing the commodity derivative market in Nepal. Our aim is to empower the market participants, stakeholders, investors through innovative product offering, technology and risk assessment, forecasting and managing tools. We are here to transform Nepalese economy to more vibrant, transparent and accessible marketplace to farmers, producers, traders, financers and government.

To achieve our goal we are working closely with government of Nepal and its agencies, international exchanges, policy makers and regulators, technology providers, our market participants and stakeholders.

Wealth Exchange is professionally organized First Online Commodity Spot Trading Exchange in Nepal. Wealth Exchange offers precious metals and CFD trading on state of the Art, user friendly and most popular platforms in the world, **MetaTrader 4** to deliver efficient services to its clients with high quality price feeds which is quite stable and competitive in local market. Wealth Exchange also provides all types of information and simple delivery system to ensure that our clients receives the maximum benefits to trade with us.

Wealth Exchange is also associated with national level business associations like CNI to support national economic agenda. Wealth Exchange has highly professional and experience management team and Executives to serve our clients with best customer care and professional advice.

Yet another derivative exchange is in operation at present, Commodity Futures Exchange (CFX) is a futures-based commodity exchange established in June 2011 under Company Act 2003 of the Government of Nepal. CFX has been organized under relevant rules and regulations. We have committed ourselves to an open futures market and the construction of a harmonious market environment

CFX adheres to the guidelines of "legislation, supervision, self-regulation and standardization. We have organized ourselves as a front-line regulator. We endeavor to become a transparent and product-inclusive futures exchange that focuses on the metals, energy and agricultural products. CFX will establish a secure, orderly, efficient market mechanism and an open, fair and equitable environment. CFX is backed by a dedicated group of professionals who are active participants and have decades of experience in the commodity markets.

Everest Commodity Exchange Ltd Nepal (ECX) is an electronic commodity futures exchange in Nepal. The Exchange has its objectives to facilitate online trading, clearing and settlement operations for commodity futures across the country. ECX Nepal has a team of professionals with longer experience in derivative and commodity futures market field with having remarkable educational background.

ECX was established on 9th March 2011 and came to operation in June 2012. ECX Nepal has a plan to hold a major market share of the Nepali commodity futures market in near future. The Exchange has recently introduced four members as its market makers for the smooth operation of the business. Another type of members who trade on their own accounts and also facilitate the investors to open trading account under their umbrella is known as Trading cum clearing Members (TCMs).

ECX offers different commodities across various segments such as bullion, metals, energy to trade on its platform and also have plan to introduce few agro-based commodities to trade in near future. The Exchange introduces standardised commodity futures contracts on its platform. These contracts in futures exchanges provide an anonymous trading environment for ideal price discovery.

ECX is the first exchange in Nepal to initiate a live price from CME directly. Trading hours in ECX starts at 10 am morning and close at 10 pm night. Trading days are from Monday to Friday. Daily pay-in and Pay-out is another prominent feature of ECX .

1.2 Statement of the problem

Derivatives are often highly complex financial instruments that "derive" their value from some underlying asset. Instead of trading the asset itself, market participants agree to exchange some financial or other value at a future date based on the underlying asset. The payments between the counterparties may or may not correspond to the performance of the underlying asset.

Derivatives facilitate the buying and selling of risk and it is considered to have a positive impact on the economic system. Although someone loses money while someone else gains money with a derivative, under normal circumstances, trading in derivatives should not adversely affect the economic system. Former Federal Reserve

Board chairman Alan Greenspan also commented in 2003 that he believed that the use of derivatives has softened the impact of the economic downturn at the beginning of the 21st century. (Alan Greenspan Speech on May 8 to the 2003 Conference on Bank Structure and Competition)

Derivatives are basically used by investors to:

- provide leverage or gearing, such that a small movement in the underlying value can cause a large difference in the value of the derivative
- speculate and to make a profit if the value of the underlying asset moves the way they expect (e.g., moves in a given direction, stays in or out of a specified range, reaches a certain level)
- hedge or mitigate risk in the underlying, by entering into a derivative contract whose value moves in the opposite direction to their underlying position and cancels part or all of it out
- obtain exposure to underlying where it is not possible to trade in the underlying (e.g., weather derivatives)
- create option ability where the value of the derivative is linked to a specific condition or event (e.g., the underlying reaching a specific price level)

In Nepal, the derivatives currently being in practice are the futures contracts, and the most traded futures contract at the Nepalese exchanges is Gold futures. The study is focused on the gold futures for the data presentation and analysis.

Thus, the study attempts to deal with the followings:

- How do the derivative exchanges operate in Nepal?
- How have they been performing over the years?
- Being stock a major portfolio for Nepalese investors, how well have derivatives being accepted by them?
- How the futures contracts could be included in the portfolio for Nepalese investors?

1.3 Objectives of the Study

In this thesis, the use of derivative products in Nepal will be studied as investing alternatives open to Nepalese investors. The objectives are pointed out as follows:

- To study the derivatives market in Nepal.
- To analyse the derivatives as an investment alternative for Nepalese investors
- To study the prospect of using derivatives as component in a portfolio in Nepalese context

1.4 Limitations of the study

There could be a lot many issues to be considered in derivatives market of Nepal. However, the study is only focused on their performances in terms of the returns provided to investors. So, the study has its limitations.

- The study is limited to futures contracts among many types of derivatives.
- Only the gold futures are being studied because of its high transactions among other futures.
- Data series pose limitations on the chosen study period.

1.5 Organization of the Study

The study has been organized into five chapters, which are as follows:

Chapter I: Introduction

This chapter will include background of study, a brief history of derivatives, the problems, objectives and significance of the thesis as well the limitations.

Chapter II: Review of Literature

This chapter will be devoted to conceptual framework and brief review of related and important literature.

Chapter III: Research Methodology

It will describe the research methodology employed in the study and include research design, sources of data, as well as the methods and tools of analysis.

Chapter IV: Presentation and Analysis of Data

Data processing, data analysis and interpretation will be presented in this fourth chapter. The major findings of the study will also be presented in this chapter.

Chapter V: Summary, Conclusion and Recommendations

The last chapter will contain the findings of the study after which major conclusion are drawn and the recommendations were specified.

CHAPTER II
LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Derivatives

Derivatives are financial contracts that are designed to create market price exposure to changes in an underlying commodity, asset or event. In general they do not involve the exchange or transfer of principal or title. Rather their purpose is to capture, in the form of price changes, some underlying price change or event. Derivatives are the securities whose value is derived from the value of an underlying primary security. More precisely, derivative security is a security whose value depends upon the value of another asset. It generally involves an agreement between two parties to exchange a standard quantity of an asset or cash flow at a predetermined price and at a specified date in future value of another asset on which the value of derivative depends is called underlying asset. The value of the derivative, or synthetic security changes when the value of the underlying asset to be exchanged changes. It is because financial derivative derive its value from the value of respective underlying asset such as bonds, stocks, T-Bills, T-Notes, gold and other commodities, etc.

The term derivative refers to how the prices of these contracts are derived from the price of some underlying security or commodity or from some index, interest rate, exchange rate or event. Examples of derivatives include futures, forwards, options and swaps, and these can be combined with each other or traditional securities and loans in order to create hybrid instruments or structured securities. Derivatives are traded on derivatives exchanges, such as the Chicago Mercantile Exchange which employs both open outcry in "pits" and electronic order matching systems, and in over-the-counter markets where trading is usually centered around a few dealers and conducted over the phone or electronic messages.

2.1.2 History of Derivatives

Derivatives play a useful and important role in hedging and risk management, but they also pose several dangers to the stability of financial markets and thereby the overall economy. As a testament to their usefulness, derivatives have played a role in commerce and finance for thousands of years. The first known instance of derivatives trading dates to 2000 B.C. when merchants, in what is now called Bahrain Island in the Arab Gulf, made consignment transactions for goods to be sold in India. Derivatives trading, dating back to the same era, also occurred in Mesopotamia (Swan, 1993). The trading in Mesopotamia is evidenced by many clay tablets in the cuneiform writing, and these are available at the British Museum, the Louvre and were some of the many items stolen from museums in Baghdad during the U.S invasion in 2003. A more literary reference comes some 2,350 years ago from Aristotle who discussed a case of market manipulation through the use of derivatives on olive oil press capacity in Chapter 9 of his Politics.

Derivatives trading in an exchange environment and with trading rules can be traced back to Venice in the 12th Century. Forward and options contracts were traded on commodities, shipments and securities in Amsterdam after 1595. The Japanese traded futures-like contracts on warehouse receipts or rice in the 1700s. Dojima Rice Exchange was established in 1710 in Osaka, Japan. The United States followed in the early 1800s. Forward contracts were standard at the time. However, most forward contracts weren't honored by both the buyer and the seller. For instance, if the buyer of a corn forward contract made an agreement to buy corn, and at the time of delivery the price of corn differed dramatically from the original contract price, either the buyer or the seller would back out. Additionally, the forward contracts market was very illiquid and an exchange was needed that would bring together a market to find potential buyers and sellers of a commodity instead of making people bear the burden of finding a buyer or seller. In 1848, the Chicago Board of Trade (CBOT) was formed. Trading was originally in forward contracts, the first contract (on corn) was written on March 13, 1851. In 1865, standardized futures contracts were introduced. The

Chicago Produce Exchange was established in 1874, renamed the Chicago Butter and Egg Board in 1898 and then reorganized into the Chicago Mercantile Exchange (CME) in 1919. In 1972, the International Monetary Market (IMM), a division of the CME, was formed to offer futures contracts in foreign currencies: British pound, Canadian dollar, German mark, Japanese yen, Mexican peso, and Swiss franc. In 1881, a regional market was founded in continuously since then; today the Minneapolis Grain Exchange (MGEX) is the only exchange for hard red spring wheat futures and options. The 1970s saw the development of the financial futures contracts, which allowed trading in the future value of interest rates. These had an enormous impact on the development of the interest rate swap market. Today, the futures markets have far outgrown their agricultural origins. With the addition of the New York Mercantile Exchange (NYMEX) the trading and hedging of financial products using futures dwarfs the traditional commodity markets, and plays a major role in the global financial system.

The recent history of these exchanges finds the Chicago Mercantile Exchange trading more than 70% of its futures contracts on its "Globex" trading platform and this trend is rising daily. It counts for over 45.5 billion dollars of nominal trade (over 1 million contracts) every single day in "electronic trading" as opposed to open outcry trading of futures, options and derivatives.

The history of organized commodity derivatives in India goes back to the nineteenth century when the Cotton Trade Association started futures trading in 1875, barely about a decade after the commodity derivatives started in Chicago. Over time the derivatives market developed in several other commodities in India. Following cotton, derivatives trading started in oilseeds in Bombay (1900), raw jute and jute goods in Calcutta (1912), wheat in Hapur (1913) and in Bullion in Bombay (1920). However, many feared that derivatives fuelled unnecessary speculation in essential commodities, and were detrimental to the healthy functioning of the markets for the underlying commodities, and hence to the farmers. With a view to restricting speculative activity in cotton market, the Government of Bombay prohibited options business in cotton in

1939. Later in 1943, forward trading was prohibited in oilseeds and some other commodities including food-grains, spices, vegetable oils, sugar and cloth.

After Independence, the Parliament passed Forward Contracts (Regulation) Act, 1952 which regulated forward contracts in commodities all over India. The Act applies to goods, which are defined as any movable property other than security, currency and actionable claims. The Act prohibited options trading in goods along with cash settlements of forward trades, rendering a crushing blow to the commodity derivatives market. Under the Act, only those associations/exchanges, which are granted recognition by the Government, are allowed to organize forward trading in regulated commodities. The Act envisages three-tier regulation: (i) The Exchange which organizes forward trading in commodities can regulate trading on a day-to-day basis; (ii) the Forward Markets Commission provides regulatory oversight under the powers delegated to it by the central Government, and (iii) the Central Government - Department of Consumer Affairs, Ministry of Consumer Affairs, Food and Public Distribution - is the ultimate regulatory authority.

The already shaken commodity derivatives market got a crushing blow when in 1960s, following several years of severe draughts that forced many farmers to default on forward contracts (and even caused some suicides), forward trading was banned in many commodities considered primary or essential. As a result, commodities derivative markets dismantled and went underground where to some extent they continued as OTC contracts at negligible volumes. Much later, in 1970s and 1980s the Government relaxed forward trading rules for some commodities, but the market could never regain the lost volumes.

After the Indian economy embarked upon the process of liberalization and globalization in 1990, the Government set up a Committee in 1993 to examine the role of futures trading. The Committee (headed by Prof. K.N. Kabra) recommended allowing futures trading in 17 commodity groups. It also recommended strengthening of the Forward Markets Commission, and certain amendments to Forward Contracts (Regulation) Act 1952, particularly allowing options trading in goods and registration of brokers with Forward Markets Commission. The Government accepted most of

these recommendations and futures trading were permitted in all recommended commodities.

Commodity futures trading in India remained in a state of hibernation for nearly four decades, mainly due to doubts about the benefits of derivatives. Finally a realization that derivatives do perform a role in risk management led the government to change its stance. The policy changes favouring commodity derivatives were also facilitated by the enhanced role assigned to free market forces under the new liberalization policy of the Government. Indeed, it was a timely decision too, since internationally the commodity cycle is on the upswing and the next decade is being touted as the decade of commodities.

To make up for the loss of growth and development during the four decades of restrictive government policies, FMC and the Government encouraged setting up of the commodity exchanges using the most modern systems and practices in the world. Some of the main regulatory measures imposed by the FMC include daily mark to market system of margins, creation of trade guarantee fund, back-office computerization for the existing single commodity Exchanges, online trading for the new Exchanges, demutualization for the new Exchanges, and one-third representation of independent Directors on the Boards of existing Exchanges etc.

Responding positively to the favourable policy changes, several Nation-wide Multi-Commodity Exchanges (NMCE) have been set up since 2002, using modern practices such as electronic trading and clearing. The two most important commodity exchanges in India today are Multi-Commodity Exchange of India Limited (MCX), and National Multi-Commodity & Derivatives Exchange of India Limited (NCDEX).

The history of derivatives in our own country is dealt in separate section.

2.1.3 Types of Derivatives

The main types of derivatives are: forwards, futures, options and swaps. Derivatives can also be classified as either forward-based (e.g., futures, forward contracts, and swap contracts), option-based (e.g., call or put option), or combinations of the two. A forward-based contract obligates one party to buy and a counter party to sell an underlying asset, such as foreign currency or a commodity, with equal risk at a future date at an agreed-on price. Option-based contracts (e.g., call options, put options) provide the holder with a right but not an obligation to buy or sell an underlying financial instrument, foreign currency, or commodity at an agreed-on price during a specified time period or at a specified date. More commonly, the types are:

1. Forward Contracts: Forward contracts are negotiated between two parties, with no formal regulation, or exchange, to purchase (long position) and sell (short position) a specific quantity of a specific quantity of a commodity (i.e., corn or gold), foreign currency, or financial instrument (i.e, bonds and stock) at a specified price (delivery price0, with delivery or settlement at a specified future date (maturity date). The price of the underlying asset for immediate delivery is known as the spot price.

Forward contracts may be entered into through an agreement without a cash payment, provided the forward rate is equal to the current market rate. Forward contracts are often used to hedge the entire price changed of a commodity, a foreign currency, or a financial instrument, irrespective of a price increase or decrease.

2. Future Contracts: Futures are standardized contracts traded on a regulated exchange to make or take delivery of a specified quantity of a commodity, a foreign currency, or a financial instrument at a specified price, with delivery or settlement at a specified future date. Futures contracts involve treasury bonds, agricultural commodities, stock indices, interest-earning assets and foreign currency.

A futures contract is entered into through an organized exchange, using banks and brokers. These organized exchanges have clearing houses, which may be financial institutions or part of the futures exchange. They interpose themselves between the

buyer and the seller, guarantee obligations, and make futures liquid with low credit risk. Although no payment is made upon entering into a futures contract, since the underlying (i.e., interest rate, share price, or commodity price) is at-the-market, subsequent value changes require daily mark-to-marking by cash settlement (i.e., disbursed gains and daily collected losses). Similarly, margin requirements involve deposits from both parties to ensure any financial liabilities.

Futures contracts are used to hedge the entire price change of a commodity, a foreign currency, or a financial instrument since the contract value and underlying price change symmetrically.

3. Options: Options are contracts that give the owner the right, but not the obligation, to buy (in the case of a call option) or sell (in the case of a put option) of an asset. The price at which the sale takes place is known as the strike price, and is specified at the time the parties enter into the option. The option contract also specifies a maturity date. In options, the purchaser of an option has the right, but not the obligation, to buy or sell a specified quantity of a particular commodity, a foreign currency, or a financial instrument, at a specified price, during a specified period of time (American option) or on a specified date (European option). An option may be settled by taking delivery of the underlying or by cash settlement, with risk limited to the premium.

The two main types of option contracts are call options and put options, while some others include stock (or equity) options, foreign options, options on futures, etc. Call options provide the holder with the right to acquire an underlying security (e.g., stock) at an exercise or strike price, throughout the option term. The holder pays a premium for the right to benefit from the appreciation in the underlying. Put options, on the other hand, provide the holder with the right to sell the underlying security (e.g., stock) at a certain exercise or strike price, throughout the option term. The holder gains as the market price of the underlying (stock price) falls below the exercise price.

Generally, option contracts are used to hedge a one-directional movement in the underlying commodity, foreign currency, or financial instrument.

4. Swaps: A swap is a flexible, private, forward-based contract or agreement, generally between two counter parties to exchange streams of cash flows based on an agreed-on (or notional) principal amount over a specified period of time in the future.
Swaps are usually entered into at-the-money (i.e., with minimal initial cash payments because fair value is zero), through brokers or dealers who take an up-front cash payment or who add just the rate to bear default risk. The two most prevalent swaps are interest rate swaps and foreign currency swaps, while others include equity swaps, commodity swaps, and swaptions. Swaptions are options on swaps that provide the holder with the right to enter into a swap at a specified future date at specified terms (stand-alone option in a swap) or to extend or terminate the life of an existing swap (embedded option on a swap).
Swap contracts are used to hedge entire price changes (symmetrically) related to an identified hedged risk, such as interest rate or foreign currency risk, since both counter parties gain or lose equally.

Derivatives are also divided as exchange traded derivatives and over-the-counter derivatives, which are distinguished by the way they are traded in the market:
Exchange Traded Derivative (ETD) contracts are those derivatives instruments that are traded via specialized derivatives exchanges or other exchanges. A derivatives exchange is a market where individuals trade standardized contracts that have been defined by the exchange.[7] A derivatives exchange acts as an intermediary to all related transactions, and takes Initial margin from both sides of the trade to act as a guarantee. The world's largest [8] derivatives exchanges (by number of transactions) are the Korea Exchange (which lists KOSPI Index Futures & Options), Eurex (which lists a wide range of European products such as interest rate & index products), and CME Group (made up of the 2007 merger of the Chicago Mercantile Exchange and the Chicago Board of Trade and the 2008 acquisition of the New York Mercantile Exchange). According to BIS, the combined turnover in the world's derivatives exchanges totaled USD 344 trillion during Q4 2005. Some types of derivative instruments also may trade on traditional exchanges. For instance, hybrid instruments such as convertible bonds and/or convertible preferred may be listed on stock or bond

exchanges. Also, warrants (or "rights") may be listed on equity exchanges. Performance Rights, Cash xPRTs and various other instruments that essentially consist of a complex set of options bundled into a simple package are routinely listed on equity exchanges. Like other derivatives, these publicly traded derivatives provide investors access to risk/reward and volatility characteristics that, while related to an underlying commodity, nonetheless are distinctive.

Over-the-counter (OTC) derivatives are contracts that are traded (and privately negotiated) directly between two parties, without going through an exchange or other intermediary. Products such as swaps, forward rate agreements, and exotic options are almost always traded in this way. The OTC derivative market is the largest market for derivatives, and is largely unregulated with respect to disclosure of information between the parties, since the OTC market is made up of banks and other highly sophisticated parties, such as hedge funds. Reporting of OTC amounts are difficult because trades can occur in private, without activity being visible on any exchange. According to the Bank for International Settlements, the total outstanding notional amount is $684 trillion (as of June 2008).[6] Of this total notional amount, 67% are interest rate contracts, 8% are credit default swaps (CDS), 9% are foreign exchange contracts, 2% are commodity contracts, 1% are equity contracts, and 12% are other. Because OTC derivatives are not traded on an exchange, there is no central counter-party. Therefore, they are subject to counter-party risk, like an ordinary contract, since each counter-party relies on the other to perform.

2.1.4 Uses of Derivatives

Derivatives securities are investment alternatives. They can be used by investor to speculate and to make a profit if the value of the underlying asset moves the way the investors expect (e.g., moves in a give direction, stays in or out of a specified range, reaches a certain level). Alternatively, traders can use derivatives to hedge or mitigate risk in the underlying, by entering into a derivative contract whose value moves in the opposite direction to their underlying position and cancels part or all of it out.

Precisely, investors use derivatives for the following three basic purposes:

1. Hedging: Hedging, merely, is a technique designed to eliminate or reduce risk. When someone bears an economic risk and used financial derivatives to reduce that risk, the person is a hedger and the technique is hedging. Thus, hedger takes position to reduce risk exposure.

Derivatives allow risk about the price of the underlying asset to be transferred from one party to another. For example a wheat farmer and a miller could sign a futures contract to exchange a specified amount of cash for a specified amount of the wheat in future. Both parties have reduced a future risk, for the wheat farmer the uncertainty of the price and for the miller the availability of wheat. However, there is still the risk that no wheat will be available because of events unspecified by the contract like the weather, or that one party will renege on the contract. Although, a third party called clearing house, insures a futures contract, not all derivatives are insures against counterparty risk.

Hedging also occurs when an individual or institution buys an asset (like a commodity, a bond having coupon payments, a stock paying dividend and so on) and sells it using futures contracts. The individual or institution has access to the asset for a specified amount of time and then can sell it in the future at a specified price according to the futures contract. Of course this allows the individual or institution the benefit of holding the asset while reducing the risk that the future selling price will deviate unexpectedly from the market.

Derivatives serve a legitimate business purpose. For example a corporation borrows a large sum of money at a specific interest rate. The rate of interest on the loan resets every six months. The corporation is concerned that the rate of interest may be much higher in six months. The corporation could buy a forward rate of agreement. A Forward Rate Agreement (FRA) is a contract to pay a fixed rate of interest six months after purchases on a notional sum of money. If the interest rate after six months is above the contract rate the seller pays the difference to the FRA buyer, the corporation. If the rate is lower, the corporation would pay the difference to the seller.

The purchase of the FRA would serve to reduce the uncertainty concerning the rate increases and stabilize earnings.

Hedging position can be long and short. Long hedges involves buying (going long) a future contract, generally to lock in an interest rate that is believed to be high. A short hedging involves the opposite sort of transaction from a long hedge, that to sell a futures contract because of a belief that interest rate will fall.

2. Speculation: Derivatives can be used to acquire risk, rather than to insure or hedge against risk. Thus, same individuals or institutions will enter into a derivative contract to speculate on the value of the underlying asset betting that the party seeking insurance will be wrong about the future value of the underlying asset, pursuit of profits and assumes prick risk in this endeavor. Speculators (who use derivatives for speculation) will want to buy as asset in the future at low price according to derivative contract when the future market price is high or to sell an asset in the future at a high price according to a derivative contract when the future market price is low.

3. Arbitrage: The simultaneous purchase and sale of an asset in order to profit from a difference in the price. It is a trade that profits by exploiting price differences of identical or similar financial instruments, on different markets or in different forms. Arbitrage exists as a result of market inefficiencies; it provides a mechanism to ensure prices do not deviate substantially from fair value for long periods of time. An individual or institution may also use derivatives for arbitrage opportunity as when the current buying price of an asset falls below the price specified in a futures contract to sell the asset. Arbitrage involves locking in a risk-less profit by simultaneously engaging into transactions in two or more markets. An arbitrage transaction involves buying the assets at the lower price and selling it at a higher price. Arbitrageurs seek to get benefits from short-term market inefficiencies. Arbitrageurs gain when securities are not fairly priced or mispriced. Arbitrage opportunities do not last for long period because the arbitrage activities force the prices up or down to get into equilibrium.

2.1.5 Futures Contracts

Nepalese derivatives exchanges currently use the futures contracts in their trading. So, this derivative is studied more extensively in the thesis. A futures contract is a standardized agreement that calls for delivery of a commodity at some specified future date. More, precisely, a future contract is a contract to buy specific quantities of a commodity or financial instrument at a specified price with delivery set at a specified time in the future. The commodity in the case of financial futures exchange, have standardized underlying assets, quantities and expirations and performance is guaranteed by a clearing house. They also require a daily setting of gains and losses.

Future contracts are conducted on an organized futures exchange and have the credit risk reduced or eliminated by several means. Future exchanges specify the contract terms and conditions to be included in futures contract so as to make it standardized futures contract. Future market guarantees the performance on the contract to both parties. For example, it guarantees the buyer of future contract that the seller will deliver underlying asset at specified price and date. Likewise, it guarantees the seller that the buyer will take delivery of underlying asset at specified price and the date. Apart from these, futures market provides mechanism or the platform which facilitated any party to complete his or her obligation to perform at anytime. As a futures contract is settled daily, it helps to reduce default risk from both the parties. The daily settlement process is also called marked-to-market. Each day the futures contract is market-to-market in the sense that it is valued at the closing price.

As a commodity futures contract requires an investor to deposit a certain amount of margin as initial margin and maintaining a level of minimum margin i.e, maintenance margin (75% - 80% of initial margin) as a security deposit. This abolishes the default risk that the investor will not take deliver (or, precisely the investor will not be ready to bear contracts are made to transact in future, physical delivery of the underlying asset may not take place and are settled by cash. Only few futures are settled by delivering the underlying assets. It is because most of the futures are closed before maturity.

Futures contracts have following characteristics:

- More liquid than other derivatives as forwards, because the buyer or the seller of futures can offset trade on the futures exchange at any time as they requires.
- Less default risk as the exchange's clearing house guarantees all payments of profits as long as its members are solvent.
- Initial deposits are needed. Initial deposit is security deposits and is called initial margin. It is required at initiation of the contract.
- Trading as futures are traded in an organized exchange rather than in an over-the-counter, OTC.
- Transparent as transaction and futures price are published by the exchange and are observable on the screen.

Generally, futures are categorized into following two types: non-financial futures, and financial futures. Non-financial futures are those futures contracts in which underlying assets are namely commodities, energy, metals and so on. Financial futures are those futures contracts in which underlying assets are financial securities such as currency, bonds, stocks, and so on.

A futures exchange is an organized platform or facility of trading for futures contracts. It is governed by a corporate charter with rules and regulation even though an exchange is non-profit organization; it is constituted to benefit its members. It may utilize a trading floor or electric system for facilitating the trading of futures contracts.

2.1.6 Gold Futures

A gold future is simply a deal to trade gold at terms (i.e. amounts and prices) decided now, but with a settlement day in the future. That means the buyer does not have to pay up just yet (at least not in full) and the seller does not need to deliver the buyer any gold just yet either. The settlement day is the day when the actual exchange takes place - i.e. when the buyer pays, and the seller delivers the gold. It is usually up to 3 months ahead.

Most futures traders use the delay to enable them to speculate - both ways. Their intention is to sell anything they have bought, or to buy back anything they have sold, before reaching the settlement day. Then they will only have to settle their gains and losses. In this way they can trade in much larger amounts, and take bigger risks for bigger rewards, than they would be able to if they had to settle their trades as soon as dealt.

Delaying the settlement creates the need for margin, which is one of the most important aspects of buying (or selling) a gold future. Margin is required because delaying settlement makes the seller nervous that if the gold price falls the buyer will walk away from the deal which has been struck, while at the same time the buyer is nervous that if the gold price rises the seller will similarly walk away.

Margin is the down-payment usually lodged with an independent central clearer which protects the other party from your temptation to walk away. So if one has to deal gold futures he/she will be asked to pay margin, and depending on current market conditions it might be anything from 2% to 20% of the total value of what is dealt.

If the Gold future is bought and the gold price starts falling the buyer will be obliged to pay more margin. A buyer cannot get out of paying margin calls in a falling market until he/she sell, which is why buying futures sometimes costs people very much more than they originally invested.

Now it is discussed how futures provide leverage, sometimes known as gearing. For example, suppose one has Rs. 5,000 to invest. If he buys gold bullion and settles, he can only buy Rs. 5,000 worth. But he can probably buy Rs. 100,000 of gold futures. That is because the margin on a Rs. 100,000 future will probably be about 5% - i.e. Rs. 5,000.

If the underlying gold price goes up 10% the buyer would make Rs. 500 from gold bullion, but Rs. 10,000 from gold futures. However, if the price of gold falls 10% the

buyer will lose just $500 with bullion, and his investment will be intact to earn money if gold resumes its steady upwards trend.

But the same 10% fall will cost him Rs. 10,000 with futures, which is Rs. 5,000 more than he invested in the first place. The buyer will probably have been persuaded to deposit the extra Rs. 5,000 as a margin top-up, and the pain of a Rs. 10,000 loss will force him to close your position, so the money is lost.

If the buyer refused to top-up margin the buy position will be closed out by the broker, and the original investment of Rs. 5,000 will be lost on a minor intra-day adjustment - a downwards blip in the long-term upward trend in gold prices.

Thus futures trading are dangerous for people who get carried away with their own certainties. The large majority of people who trade futures lose their money. That is a fact. They lose even when they are right in the medium term, because futures are fatal on an unpredicted and temporary price blip.

Big professional traders invent the contractual terms of their futures trading on an ad-hoc basis and trade directly with each other. This is called 'Over The Counter' trading (or OTC for short). On the other hand, a standardized contract is dealt in organized futures exchanges. In such standardized contract the exchange itself decides the settlement date, the contract amount, the delivery conditions etc. An investor can make up the size of his/her overall investment buy buying several of these standard contracts.

Dealing standard contracts on a futures exchange has two big advantages:-

* Firstly there will be deeper liquidity than with an OTC future - enabling to sell the future when an investor likes, and to anybody else. That is not usually possible with an OTC future.

* Secondly there will be a central clearer who will guarantee the trade against default. The central clearer is responsible (among other things) for looking after margin calculations and collecting and holding the margin for both the buyer and the seller.

It is to be noted that gold futures are dated instruments which cease trading before their declared settlement date. At the time trading stops most private traders will have sold their longs or bought back their shorts. There will be a few left who deliberately run the contract to settlement - and actually want to make or take delivery of the whole amount of gold they bought.

2.1.7 Futures Market and its role in economy

The factors that determine a country's worth, ultimately depends upon its economy. To have a robust economy, efficiency in activities of public as well as private sectors within the nation is imperative. Once these sectors are efficient, then naturally the government is capitalized. When the government is capitalized, it plays a vital role in portraying the outlook of a nation. Efficiency and liquidity go hand in hand, more the liquid, more efficient activities can function. Similarly more the liquid, more will the working capital of an individual or an institution multiply. Thus, this multiplication will relatively exhibit the growth of a nation's purchasing power, and the living standard with a flow of healthy economic activities.

Futures markets are the best financial tools for Hedgers, Arbitrators and of course the Speculators, who are the market participants in a futures exchange. A futures contract is a standardized agreement that calls for delivery of a commodity at some specified future date. More precisely, a future contract is a contract to buy/sell specific quantities of a commodity or a financial instrument at a specified price with delivery set at a specified time in the future.

In a Futures market the speculator always creates an earning opportunity for itself, with the ongoing fluctuating commodity prices. The hedger will always mitigate his loss through retaining either buy or sell entry, in respect with the uncertainty of the commodity him/her wishes to hedge. The arbitrator, usually the clearing member of an exchange, determines the rate of exchange of currencies, commodities etc, between different countries so as to hedge his/her position for the speculators gain.

For example, an airline's profitability is closely tied to the price of crude oil, because their jets use so much fuel. If the price of oil shoots up, operating costs rise and profit margin shrink. (Even if the airline can raise ticket prices, consumers will fly less.) On the other hand, if oil prices fall then the airline benefits. Yet the price of oil isn't something related to someone's expertise in running an airline. The owners of the airline might prefer to avoid this additional "risk" by purchasing large quantities of oil futures contract in an exchange (hedging), since the price of oil is shooting up. If the spot price of oil suddenly rises, the airline is hurt because of the higher operating costs, but this hit is (at least partially) offset by the growing value of its futures contract it purchased with the exchange.

Thus, the futures contract can act as a type of insurance hedge, where traders can reduce their exposure to fluctuations in critical spot prices by buying or selling the appropriate instrument. To fully appreciate the benefits of liquid futures market, it is easier to first imagine an economy without them. For example, suppose that the owner of an oil field is trying to decide how many barrels to produce this year. Being a good capitalist, he wants to maximize the present discounted value of his operation throughout its lifetime. If he sells more barrels this year, he naturally earns more revenues now, but at the cost of fewer barrels that he can sell in the future. In order to rationally approach this problem, therefore, the oil tycoon needs to compare the spot price of oil today with the expected price he can fetch in the future.

Futures market are yet another refinement in the growing complexity of a modern financial economy. By distilling the purely speculative aspect out of temporal

transactions and placing this risk on those who want to bear it, futures contracts foster a greater specialization in the division of labor. Even though the vast majority will never own such contracts, all consumers benefit from the more efficient allocation of resources and production decisions over time.

In Nepal, there is an urgent need to develop secondary markets so as to overcome the lack of adequate investment vehicles. The only secondary market that we know of is NEPSE (Nepal Stock Exchange). Derivative exchange has been recently launched and currently, six exchanges are operating in Nepal. As we all know, 70% of the population in Nepal are mostly agriculturists; but yet not even 30% of the productions are dispersed throughout the country. All the products are either sent to India at a lower price, or they have decayed. This is due to an unorganized commodities market where farmers are deprived of a justified price.

Therefore, there is an overwhelming need to develop commodity futures exchange as a stabilizing influence in Nepal. As a result, warehouses are created and farmers can obtain warehouse receipt, which can be used as collateral for short-term borrowing to obtain working capital. Farmers are acquainted with the advantage of higher returns, better quality with greater variety and macro-economic benefits, through a more healthy trade balance in agricultural commodities. When warehouses are created, shorter and more efficient supply chains can be maintained; providing a way to reduce the need of government agencies in procurement of agricultural commodities from say India or China.

2.1.8 Basic Trading Strategies

Dozens of different strategies and variations of strategies are employed by futures traders in pursuit of speculative profits. Here is a brief description and illustration of several basic strategies.

Buying (Going Long) to Profit from an Expected Price Increase:

Someone expecting the price of a particular commodity or item to increase over a given period of time can seek to profit by buying futures contracts. If correct in forecasting the direction and timing of the price change, the futures contract can later be sold for the higher price, thereby yielding a profit.* If the price declines rather than increases, the trade will result in a loss. Because of leverage, the gain or loss may be greater than the initial margin deposit.

Selling (Going Short) to Profit from an Expected Price Decrease:

The only way going short to profit from an expected price decrease differs from going long to profit from an expected price increase is the sequence of the trades. Instead of first buying a futures contract, you first sell a futures contract. If, as expected, the price declines, a profit can be realized by later purchasing an offsetting futures contract at the lower price. The gain per unit will be the amount by which the purchase price is below the earlier selling price.

Spreads:

While most speculative futures transactions involve a simple purchase of futures contracts to profit from an expected price increase - or an equally simple sale to profit from an expected price decrease - numerous other possible strategies exist. Spreads are one example.

A spread, at least in its simplest form, involves buying one futures contract and selling another futures contract. The purpose is to profit from an expected change in the relationship between the purchase price of one and the selling price of the other.

Stop Orders:

A stop order is an order placed with your broker to buy or sell a particular futures contract if and when the price reaches a specified level. Stop orders are often used by futures traders in an effort to limit the amount they might lose if the futures price moves against their position.

2.1.9 Analysis to understand the futures markets

There are two major analytical tools.

1. Fundamental Analysis: Fundamental analysis of a business involves analyzing its financial statements and health, its management and competitive advantages, and its competitors and markets. When applied to futures and forex, it focuses on the overall state of the economy, interest rates, production, earnings, and management. Fundamental analysis is performed on historical and present data, but with the goal of making financial forecasts. Fundamental analysis maintains that markets may misprice a security in the short run but that the "correct" price will eventually be reached. Profits can be made by trading the mispriced security and then waiting for the market to recognize its "mistake" and reprice the security. It is the method of anticipating future price movement using supply and demand information. Thus, fundamental analysts stay close to the economic news that may impact the demand and supply factors of a security.
2. Technical Analysis: Technical analysis is a security analysis discipline for forecasting the future direction of prices through the study of past market data, primarily price and volume. Technical analysts seek to identify price patterns and trends in financial markets and attempt to exploit those patterns. While technicians use various methods and tools, the study of price charts is primary. Technicians especially search for archetypal patterns, such as the well-known head and shoulders or double top reversal patterns, study indicators such as moving averages, and look for forms such as lines of support, resistance, channels, and more obscure formations such as flags, pennants, balance days and cup and handle patterns. Technical analysts also extensively use indicators, which are typically mathematical transformations of price or volume. These indicators are used to help determine whether an asset is trending, and if it is, its price direction. Technicians also look for relationships between prices, volume and, in the case of futures, open interest. Examples include the relative strength index, and MACD. Other avenues of study include correlations

between changes in options (implied volatility) and put/call ratios with price. Other technicians include sentiment indicators, such as Put/Call ratios and Implied Volatility in their analysis. Technical analysis employs models and trading rules based on price and volume transformations, such as the relative strength index, moving averages, regressions, inter-market and intra-market price correlations, cycles or, classically, through recognition of chart patterns.

Technical analysis stands in contrast to the fundamental analysis approach to security and stock analysis. Technical analysis "ignores" the actual nature of the company, market, currency or commodity and is based solely on "the charts," that is to say price and volume information, whereas fundamental analysis does look at the actual facts of the company, market, currency or commodity. For example, any large brokerage, trading group, or financial institution will typically have both a technical analysis and fundamental analysis team.

2.1.10 Derivative Exchange and its market participants

Hedgers, speculators and arbitrators are the types of traders in derivatives market.

Hedgers:

Hedgers are those who protect themselves from the risk associated with the price of an asset by using derivatives. A person keeps a close watch upon the prices discovered in trading and when the comfortable price is reflected according to his wants, he sells futures contracts. In this way he/she gets an assured fixed price of his products. In general, hedgers use futures for protection against adverse future price movements in the underlying cash commodity. Hedgers are often businesses, or individuals, who at one point or another deal in the underlying cash commodity. For example, a hedger pays more to the farmer or dealer of a produce if its prices go up. For protection against higher prices of the produce, he hedges the risk exposure by buying enough future contracts of the produce to cover the amount of produce he expects to buy.

Since cash and futures prices do tend to move in tandem, the futures position will profit if the price of the produce raise enough to offset cash loss on the produce.

Speculators:

Speculators are somewhat like a middle-man. They are never interested in actual owing the commodity. They will just buy from one end and sell it to the other in anticipation of future price movements. They actually bet on the future movements in the price of an asset.

They are the second major group of futures players. These participants include independent floor traders and investors. They handle trades for their personal clients or brokerage firms.

Buying a futures contract in anticipation of price increase is known as "going long" and selling a futures contract in anticipation of price decrease is called as "going short". Speculative participation in futures trading has increased with the availability of alternative method of participation.

Arbitrators:

An arbitrageur is an individual or an organization that engages in the act of arbitrage, taking advantage of market imbalances. For example, an arbitrageur would locate a commodity (i.e. grain) or a security (i.e. stock) in a lower-priced market and then immediately resell in another market at a higher price, in the hope of profiting from the price differential. An arbitrageur might participate in risk-free arbitrage (true arbitrage) or an arbitrageur might be involved in risk arbitrage (statistical arbitrage). An arbitrageur would be engaged in risk-free arbitrage when buying stock at a low price and than selling high. The types of risk or statistical arbitrage that an arbitrageur might be involved in include merger, liquidation and/or pairs trading. Often, an arbitrageur is a seasoned investor who has a deep understanding of the markets and can exploit hard-to-find opportunities. From an economic standpoint, an arbitrageur can help reduce market price disparities and increase a market's liquidity.

2.2 Empirical Studies on derivatives

Numerous researchers have evaluated the effects of including derivatives and commodity futures in a well-diversified portfolio of stocks, bonds, and other assets.

Bodie and Rosansky conducted a study entitled "Risk and Return in Commodity Futures" in 1980 with the objective: How do returns on commodity futures compare with returns on common stocks? The study is a comprehensive analysis of the performance of 23 commodity futures during the 1950-1976 period. The authors found that, over the period studied, the mean return on their benchmark portfolio of commodity futures was about the same as the mean return on common stocks. On the other hand, the futures tended to do well in years when the stocks were doing badly, and vice versa. By switching from an all-stock portfolio to one invested 60 per cent in stocks and 40 per cent in futures, an investor could have reduced his return variability by one-third without sacrificing any of his return. Furthermore, the commodity futures proved to be very good inflation hedges. Four of their best years coincided with four of the seven years of the highest acceleration in inflation. While the dispersion of the real returns on the commodity futures portfolio was smaller than the dispersion of its nominal returns, the reverse was true for both stocks and bonds. The mean rates of return and variabilities of the 23 individual commodities in the authors' sample were distributed over a wide range. But only one commodity-eggs - had a negative rate of return for the 27-year period. Hardly any of the individual commodities (other than the obvious cases such as hogs and pork bellies) showed significant correlation with each other. These results, however, are based on an aggregate measure of commodity futures performance, and no examination of the optimal portfolio allocations of individual commodities is conducted.

In the article "The Stock Market and the Commodity Futures Market: Diversification and Arbitrage Potential" published in 1985, Lee and Cordier studied to answer the following questions. Can the commodity futures market provide diversification for the underlying stock market? Are there arbitrage possibilities between stock and

commodity markets resulting from lead-lag relations? Their study evaluated the distributional and casual relations between the stock and commodity futures market indexes.

Historical relationships between the stock market and the commodity futures market, as proxied by the S&P 500 and the Commodity Futures Index, suggested that the S&P may have slightly outperformed the CFI over the 1978-81 period. In earlier years, however, the CFI clearly outperformed the S&P. Relative performances of the stock and commodities futures markets appear to be sensitive to investment horizon. Regression analysis indicated virtually no relationship between the rates of return of the two series. Risk and return, however, increase with horizon, whereas skewness and kurtosis were generally negatively related to horizon. The results suggested that commodity futures contracts may be used in conjunction with an equity portfolio to help reduce risks and enhance portfolio returns. Opportunities for profitable arbitrage between the two indexes are not likely, however.

Becker and Finnerty (1997) examined the risk and return properties of equity/bond portfolios before and after inclusion of a diversified portfolio of long commodity futures contracts. Inclusion of the commodities, which were proxied by the CRB and GSCI indices from 1970 to 1990, enhanced the risk and return characteristics of the overall portfolio. However, the improvement of the risk/return characteristic was superior for the decade of the seventies than for the decade of the eighties. This result was driven by the high-inflation 1970s in which commodity futures served as an inflation hedge. In addition, commodity futures prices were shown to have modest inflation predictive ability.

Kaplan & Lummer(1998) focused on a collateralized position in the Goldman Sachs Commodity Index (GSCI) futures contract. The GSCI itself is diversified among commodities, and represents a cross section of the principal raw and semi-finished goods used by producers and consumers. The analysis was based on a simulation of historical returns to a fully collateralized long position in the GSCI futures contract as

represented by the GSCI Total Return Index. The GSCI futures contract trades at the Chicago Mercantile Exchange with a contract for every month of the calendar year. The simulation assumed that when a futures contract matures the position is liquidated, and the funds are fully reinvested in a long position in the next lead month contract.

The results found that GSCI collateralized futures can be held by risk-averse investors who seek diversification and protection against poor returns in other asset classes. These instruments are especially valuable to investors who attach a high probability to rising inflation and interest rates and who want to hedge their stock and bond positions against such changes.

The study "Efficient use of commodity futures in diversified portfolios" by Jensen & Johnson (2000) provided evidence on the role of commodity futures in portfolios comprised of stocks, bonds, T-bills, and real estate. Over the period investigated (1973-1997), Markowitz optimization over a range of risk levels gives substantial weight to commodity futures, thereby enhancing the portfolios returns. A simple ex-ante measure of monetary stringency was used to dichotomize the sample into expansive-versus-restrictive monetary-policy periods. In periods characterized by restrictive monetary policy, commodity futures are shown to have substantial weight in the efficient portfolios, with significant return enhancement at all levels of risk. In periods characterized by expansive monetary policy, commodity futures are shown to have little or no weight in the efficient portfolios, with no return enhancement at all levels of risk.

"Facts and Fantasies about Managed Futures", by Gary Gorton, and K. Geert Rouwenhorst (2004) attempted to address some commonly raised questions on commodity futures: Can an investment in commodity futures earn a positive return when spot commodity prices are falling? How do spot and futures returns compare? What are the returns to investing in commodity futures, and how do these returns compare to investing in stocks and bonds? Are commodity futures riskier than stocks?

Do commodity futures provide a hedge against inflation? Can commodity futures provide diversification to other asset classes?

To investigate the long-term return to commodity futures an equally-weighted performance index of commodity futures was constructed covering the period between July 1959 and March 2004. The study concluded that commodity futures returns have been especially effective in providing diversification of both stock and bond portfolios. The correlation with stocks and bonds was found negative over most horizons, and the negative correlation is stronger over longer holding periods. Two explanations were provided for the negative correlation of commodities with traditional asset classes. First, commodities perform better in periods of unexpected inflation, when stock and bond returns generally disappoint. Second, commodity futures diversify the cyclical variation in stock and bond returns.

"Portfolio Diversification with Commodity Futures: Properties of Levered Futures" by Egelkraut et.el., (2005) extended previous work on the impact of commodity futures on portfolio performance by explicitly incorporating levered futures into the portfolio optimization problem. In the fully collateralized approach, the percentage of the portfolio allocated to futures simply earns the three-month T-Bill rate on the full contract value. Under the levered approach, the portion of the portfolio assigned to commodity futures contract represents only the margin, not the full contract value. For the long-only strategy examined in this study, this means that the investor fully levers his/her commodity exposure. The levered approach hence differs from the fully collateralized approach because it allows investors to take positions that garner market exposure in excess of the total portfolio value and incorporates collateral management into the analysis.

Using data on nine individual commodity futures and one aggregate index from 1994-2003, it was found that collateralized and levered futures strategies perform similarly in an ex-post context. Significant differences between the approaches emerge however when constraints on investment behavior exist. Further, levered futures do not result in

a prohibitive number of margin calls. The investment performances of the collateralized and the levered strategies vary little across different rebalancing intervals, and frequent portfolio rebalancing does not necessarily result in superior performance.

"Conditional Return Correlations between Commodity Futures and Traditional Assets" by Chong and Joelle (2006) studied the way returns on commodity futures differ over time from those of traditional asset classes (as proxied by stock and bond indices around the world). The article studied the conditional correlations between 25 commodity futures and 13 stock and fixed-income indices. The study found that the conditional return correlations between S&P500 index and commodity futures fell over time, which suggested that commodity futures and equity markets have become more segmented and, thus, commodity futures have become over time a better tool for strategic asset allocation. It is also observed that for more than half of the cross section, the conditional correlations between commodity futures and equity returns fell in periods of market turbulence.

The paper also studied the temporal variation in the conditional return correlations between commodities and interest-rate securities and relates it to the conditional volatility of fixed-income instruments. In line with the results for international stock markets, the report states that commodity futures serve as a good hedge against the risk that the short-term interest rate may rise. However, unlike global equities or short-term US Treasury-bills, adding commodity futures to a US or global Treasury-bond portfolio may not reduce risk further in periods of high volatility in bond markets.

Abken (1980) in "The economics of gold price movements" examined changes in the price of gold on the assumption that market participants act rationally, is sufficient to explain price movements in speculative markets. In the case of gold, the relative insignificance of flow supply and demand compared to stocks, the relative insensitivity of flow supply and demand with respect to spot price movements, and the

relative liquidity of gold all tend to make current changes in the gold price especially sensitive to changes in its anticipated future spot price.

The episodic run ups and run downs in the price of gold associated with periods of economic and social turmoil have fascinated and frequently bewildered observers of the gold market. At such times, analysts often conclude that mob psychology overwhelms the market as market participants lose sight of so-called market fundamentals. However, the theory and empirical evaluation of gold price movements presented here demonstrate that ad hoc appeals to mob psychology are unnecessary to explain the behavior of the gold price. In other words, economic theory appears sufficient to account for gold price movements in recent years.

In the article "What Moves the Gold Market?" Cai, Cheung, & Wong (2001) provided a detailed characterization of the intraday return volatility in gold futures contracts traded on the COMEX division of the New York Mercantile Exchange. The approach allowed the study of intraday patterns, inter-day ARCH effects, and announcement effects in a coherent framework. It was presented that the intraday patterns exert a profound impact on the dynamics of return volatility. Among the 23 U.S. macroeconomic announcements, employment reports, gross domestic product, consumer price index, and personal income were identified as having the greatest impact. Finally, by appropriately filtering out the intraday patterns, it was found that the high-frequency returns reveal long-memory volatility dependencies in the gold market, which have important implications on the pricing of long-term gold options and the determination of optimal hedge ratios.

A study of derivatives in Indian context is conducted by Narender L. Ahuja, Institute for Integrated Learning in Management, New Delhi, 2006. His article "Commodity Derivatives Market in India: Development, Regulation and Future Prospects" indicated that organized commodity derivatives in India started as early as 1875, barely about a decade after they started in Chicago. However, many feared that derivatives fuelled unnecessary speculation and were detrimental to the healthy

functioning of the markets for the underlying commodities. As a result, after independence, commodity options trading and cash settlement of commodity futures were banned in 1952. A further blow came in 1960s when, following several years of severe draughts that forced many farmers to default on forward contracts (and even caused some suicides); forward trading was banned in many commodities considered primary or essential. Consequently, the commodities derivative markets dismantled and remained dormant for about four decades until the new millennium when the Government, in a complete change in policy, started actively encouraging the commodity derivatives market.

Since 2002, the commodities futures market in India has experienced an unprecedented boom in terms of the number of modern exchanges, number of commodities allowed for derivatives trading as well as the value of futures trading in commodities, which might cross the $ 1 Trillion mark in 2006. The market has made enormous progress in terms of technology, transparency and the trading activity. Interestingly, this has happened only after the Government protection was removed from a number of commodities, and market forces were allowed to play their role. This should act as a major lesson for the policy makers in developing countries, that pricing and price risk management should be left to the market forces rather than trying to achieve these through administered price mechanisms. The management of price risk is going to assume even greater importance in future with the promotion of free trade and removal of trade barriers in the world.

Gold Pricing in India: An Econometric Analysis by Ganesh Mani and Srivyal Vuyyuri (2005) is an attempt at explaining the importance of gold economy through a study of gold price determination. In the study, the importance of gold to Indians and also the factors behind the demand for gold were studied. The multiple regression method was used to estimate gold prices using lagged gold price, expected inflation, interest rate, import demand for gold, exchange rate, stock market performance and qualitative variables such as removal of import restrictions on gold. The results were as expected and the model was able to explain the movement of gold prices. The movement of the

gold prices was affected to a large extent by lagged prices of gold as it was perceived to be an investment. Further close, substitutes like silver also had impact on the price of gold. The results also indicated that stocks do not seem to be perceived as an alternative to gold. The reason for holding gold is to a large extent a guided by individual sentiment. Besides, the equity culture in India is not as developed as in some other parts of the world. Gold has not lost its prime importance as a hedge against loss of wealth in times of crises.

2.3 Derivatives in Nepal

In context of Nepal, derivatives market is a completely new sector in Nepalese investment scenario. The history doesn't go long back and the transaction started with the establishment of Commodities and Metal Exchange Nepal Ltd. (COMEN) on 2006. At present, Six Commodity exchanges are in operation in Nepalese market. A brief description of these exchanges is presented.

2.3.1 Derivatives Exchanges in Nepal

Commodity and Metal Exchange Nepal Ltd. (COMEN) was the first derivative exchange to be registered in 14 December 2006, for the trading of commodity and derivatives in Nepal. COMEN has three levels of market participation members: Market Maker, Clearing agencies and Trading brokers. Market maker provides the price quotes for the exchange, on which the trading brokers take buy and/or sell orders for their clients/investors through clearing agencies. Clearing agencies are those who make settlements for their member trading brokers. Currently, the futures traded in COMEN are gold, silver, crude oil, natural gas, copper and zinc.

Mercantile Exchange Nepal Limited (MEX Nepal) is the second exchange to be registered in Nepal for providing trade services of commodities in the market. It was established in 14th August 2007 and the transaction was started from 5th January 2009. Under this exchange, gold, silver, crude oil, soybean, soybean oil, cotton,

coffee, heating oil, natural gas, and wheat are traded. MEX Nepal has two levels of market participation members: clearing members (CM) and non-clearing members (NCM). Clearing members are believed to create to liquidity in the market as market makers. CM implements the buy and sell orders by being buyer for seller and seller for the buyer. CM is the special member of the exchange as they provide liquidity in the market and create the value for the commodity. Under MEX Nepal, there are three clearing members: Himalayan Commodity Broker, Axis Broking Pvt. Ltd and Premier Clearing Services Pvt. Ltd. Non-clearing members work as the trading brokers for the investors and take buy and sell orders for them. They also provide valuable suggestions to the investors regarding investment strategy and risk management. Altogether, there are 50 NCM registered under MEX Nepal.

Nepal Derivative Exchange Ltd. (NDEX) is the third exchange related to derivatives market in Nepal. NDEX is incorporated on November 20, 2008 and the transaction was started from 4th January 2010. NDEX started their transaction on gold, silver, copper, crude oil, natural gas and heating oil. Under this exchange, Base Metals: Copper, Nickel, Zinc, Lead, Precious Metals: Gold, Silver, Energy: Crude oil, Natural Gas Agro Product: Corn, Soyabean, Wheat are traded.

Wealth Exchange(WEX) is professionally organized First Online Commodity Spot Trading Exchange in Nepal.

Commodity Futures Exchange (CFX) is a futures-based commodity exchange established in June 2011 under Company Act 2003 of the Government of Nepal. CFX has been organized under relevant rules and regulations. We have committed ourselves to an open futures market and the construction of a harmonious market environment. Under this exchange, Base Metals: Copper, Nickel, Zinc, Lead, Precious Metals: Gold, Silver, Energy: Crude oil, Natural Gas are traded.

Everest Commodity Exchange Ltd Nepal (ECX) is an electronic commodity futures exchange in Nepal. The Exchange has its objectives to facilitate online trading, clearing and settlement operations for commodity futures across the country. ECX Nepal has a team of professionals with longer experience in derivative and commodity futures market field with having remarkable educational background.

ECX was established on 9th March 2011 and came to operation in June 2012. ECX Nepal has a plan to hold a major market share of the Nepali commodity futures market in near future. The Exchange has recently introduced four members as its market makers for the smooth operation of the business. Another type of members who trade on their own accounts and also facilitate the investors to open trading account under their umbrella is known as Trading cum clearing Members (TCMs).

Everest Commodity Exchange (ECX) introduced fully automated screen based platform to trade on different commodities. It uses a modern, fully computerized trading system designed to offer market participants with safe and easy way to trade.
The ECX electronic trading system is a contemporary, new generation trading platform that permits cost effective operations. Exchange Members located across the globe can easily access to our TWS. Exchange Members place orders through the Trader Work Station (TWS) which is linked to the Exchange and which matches orders on the Central System and remits a confirmation back to the Members. Under this exchange, Base Metals: Copper, Nickel, Zinc, Lead, Precious Metals: Gold, Silver, Energy: Crude oil, Natural Gas are traded.

TYPES OF ORDER IN ECX

Time related conditions

- **DAY**

  A Day order, as the name suggests, is an order that is valid for the day on which it is entered. If the order is not matched during the day, the order gets cancelled automatically at the end of the trading day.

- **Good Till Cancelled (GTC)**

  A Good Till Cancelled (GTC) order remains in the system until the Trading Member cancels it.

Price Related Conditions

- **Limit Order**

  Limit Order is an order that allows the price to be stated while entering the order in the system.

- **Market Order**

  Market Order is an order to buy or sell commodity at the best price obtainable at the time of entering the order.

- **Stop Loss Order**

  Stop Loss Orders are positioned to control loss or damage that may be encountered due to adverse price movement of the commodity futures. This allows the trading member to place an order, whichgets activated only when the market price of the relevant commodity reaches or crosses a threshold price.

2.3.2 Functioning of Derivative Exchanges in Nepal

All of the derivative exchanges in Nepal operate electronically, with the bidding made through the software's provided by the exchanges. The prices of the commodities are based on international markets and they fluctuate according to the movement in the international markets. The trading brokers of the exchanges bids on the prices through their software's, and the settlements are made via the clearing houses of the exchange. The basic mode of functioning is same for all six exchanges, while the base prices and the future contracts launched differs. The trading is on margin, and investors can enter the market either through buy or sell order (long position or short position).

There is usually a division of responsibility between provision of trading facility and settlement of those trades. Clearing houses charge tow types of margins: Initial Margin and Mark-to-Market margin. Initial margin is the sum of money or collateral to be deposited by a trading broker to the clearing house to cover possible future loss in the positions held by the broker. The mark-to-market margin is the margin collected to offset losses (if any) that have already been incurred on the positions held by a firm. This is computed as the difference between the cost of the position held and the current market value of that position. If the resulting amount is a loss, the amount is collected from the firm else, the amount may be returned to the firm (the case with most clearing houses) or kept in reserve depending on local practice. In either case, the positions are 'market-to-market' by setting their new cost to the market value used in computing this difference. The positions held by the clients of the exchange are market-to-market daily and the difference computation for the next day would use the new cost figure in its calculation.

At the time of the study, the derivatives sector of Nepal has yet to have its regulatory body. However, it is in the talks that same Securities Board is to control the activities of derivatives exchanges as well.

2.3.3 Derivatives in Nepalese investment portfolio

Derivatives are the latest alternative in Nepalese investment portfolio. Until now, Nepalese investors are trading mainly on stocks and bonds through Nepal's only stock exchange, Nepal Stock Exchange (NEPSE). The growth of NEPSE in republic Nepal has attracted many into the stock market and the consequent fall has repelled them too. In this scenario, derivatives on commodity products have entered Nepalese security market. Although, derivatives on stocks and bonds are in the pipeline to be launched by NEPSE, currently, Nepali market has derivatives on commodity products only. In this context, six derivatives exchanges have started their trading on future

contracts on commodity products. This study is an attempt to present and analyze the current derivatives market in Nepal.

The reviews made for this thesis were of countries other than ours; the developed countries and the fast-developing nation like India. The studies reviewed have generally suggested the derivatives as a hedging tool for the investors. This present study is in Nepalese context and has attempted to study the inclusion of derivatives in investment portfolio. It is an attempt to research the investment portfolio consisting of stocks and derivatives together.

CHAPTER III
RESEARCH METHODOLOGY

In this chapter, efforts have been made to present and explain the specific research design for the sake of attaining the research objective stated in this research. It describes the methods, technique, and process applied in the entire aspect of the study. The purpose of this chapter is to present the methods followed in the process of analyzing the Gold futures market and NEPSE.

3.1 Research Design

In order to examine and evaluate the derivatives transactions in Nepalese security market, the study has followed a systematic process of collection, compilation, presentation and interpretation of relevant details and data. The study takes descriptive and empirical research approach to achieve its objectives.

3.2 Population and Sample

The concept of derivatives is still in its initial phase in Nepal. Currently, there are six derivative exchanges in operation, namely: Commodities & Metal Exchange Nepal Ltd., Mercantile Exchange Nepal Limited, Nepal Derivative Exchange Ltd., Wealth Exchange Ltd. Commodity Future Exchange Ltd. and Everest Commodity Exchange Ltd. Among the various types of derivatives, futures contracts are currently being traded in Nepal, gold futures being the most traded. For the purpose of the study, gold futures are taken and compared along with NEPSE returns.

3.3 Sources of Data

The study is primarily based on the secondary data, used to measure the performance of the futures contracts as well as to compare them with the NEPSE. The data has been collected from the derivatives exchanges, COMEN, MEX Nepal and NDEX. The other related market reports were collected from NEPSE, Nepal's only stock exchange.

3.4 Data Analysis Tools

Data analysis involves the process of organizing and classifying data to change it from an unprocessed form to an understandable presentation so that meaningful conclusions can be drawn. All the data after editing, coding and classification has been presented in tabular form. The summary version of tabulated data has been presented in the body, while the detail version is attached in the appendix. As per the requirement, results in the tabular form have been presented diagrammatically as well. Along with it, results have been interpreted as simply and concisely as possible. In other to meaningful conclusions, various analytical tools have been used, presented below:

For the purpose of data analysis, various statistical tools have been used, which are as follows:

(i) Mean: Mean of a set of observations is the sum of all the observations divided by the number of observations. It is given by

$$\overline{X} = \frac{X1 + X2 + X3 + ... + Xn}{n}$$

Where,

$\overline{X}$ = mean

n = number of observations

X1, X2, X3……, Xn = n values of the variable

(ii) Standard deviation: The standard deviation is the absolute measure of dispersion is defined as the positive square root of the mean of the square of the deviations from the arithmetic mean. It is given by

$$\sigma = \sqrt{\frac{\Sigma(X - \overline{X})^2}{n}}$$

where,

σ = standard deviation

n = number of observations

X = variate values

$\overline{X}$ = mean

(iii) Variance: The square of the standard deviation is known as the variance. It is denoted by sigma square. It is given by

$$\sigma^2 = \frac{\Sigma(X - \overline{X})^2}{n}$$

where,

σ^2 = variance

n = number of observations

X = variate values

$\overline{X}$ = mean

(iv) Correlation Coefficients: The coefficient of correlation is the measure that is used to describe how does one variable is explained by another. It helps to find out whether there is any correlation between the funds' return and the market return. It is represented by row and is given by

$$\rho_{i,m} = \frac{\text{cov}(r_i, r_m)}{\sigma_i \times \sigma_m}$$

where,

$\rho_{i,m}$ = correlation between the funds' return and the market return

$\text{cov}(r_i, r_m)$ = covariance between the funds' return and the market return

σ_i = standard deviation of the fund

σ_m = standard deviation of the fund

The value '+1' implies that there is a perfect positive correlation between the variable i.e. if the increase in the value of one variable results on an average in a corresponding increase in the value of the other variable or if a decrease in the values of one variable result on an average in a corresponding decrease in the value of other variable.

If the value is '-1', there is perfect negative correlation between the variables. If the variable deviate in the opposite direction i.e., if the increase (decrease) in the value of one variable results, on the average, in a correspond decrease (increase) in the value of other variable.

When the value is zero, the variables are uncorrelated. In other words, there is no linear relationship between the variables.

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

This chapter presents the data collected from various sources in an organized form and analyzes them according to the tools presented in chapter three. Since the major objective of the thesis is to analyze the prospect of including gold futures in Nepalese investment portfolio, the data is analyzed in that fashion. Gold futures data is collected from Nepal's first derivative exchange, COMEN. Four Gold futures contracts of year 2011/2012(Jan) are selected to analyze the gold returns on daily basis and compare them with NEPSE returns. Later, the data is analyzed on weekly and monthly basis too for year 2009 to 2011.

4.1 Gold Futures Contract Specifications

Before beginning the presentation and analysis of gold futures returns, a background on contract specification is presented. Contract Specifications are something a trader should have memorized before beginning trading futures. These specifications provide the insight on which the future contracts are standardized by the exchange. Significant errors can be made by not knowing these numbers.

1. Contract Size: Gold futures do not trade in shares like stocks. They trade in contracts. Each futures contract has a standard size that has been set by the futures exchange it trades on. For example, the standard contract size for gold futures in Nepalese derivative exchanges is of 1 kg and the price of the contract is provided in 10 gms. That means when an investor is buying 1 contract of gold, he is really controlling 1 kg of gold. If the price of gold moves 1 higher, that will affect his position by Rs. 100 (=Rs.1 x 1000/10).

2. Contract Expiration: Futures contracts are only valid for a specific length of time, and when the current contract expires, traders must settle their contracts. Gold futures expire in designated months set earlier when the contracts are launched. Gold futures are either settled on the expiration day or are delivered to the buyer. However, the contracts are rarely delivered in Nepalese market. Hence, the contracts are settled in cash. Delivery months are also commonly called contract months.

For example, a November gold contract standard means that someone will be delivering 1 kg of gold in November and someone will be taking delivery of the gold. The contract will expire after the designated date in the delivery month.

3. Ticker Symbols: Future contracts are identified in their unique tickers. The contracts are provided their tickers from the exchanges. Basically, each futures contract has a ticker symbol that is followed by symbols for the contract month and the year. For example in COMEN, gold futures have a ticker symbol - GC, representing gold contract. So, the complete ticker symbol for November 2011 Gold futures is identified as GC/NOV/11. Future contracts are provided their tickers differently in current Six Nepalese exchanges. Since the study is based on the prices provided by COMEN, hence the contracts tickers are of COMEN.

4. Tick Size on a Futures Contract: Tick size means the smallest increment a given futures market can move – also called a tick. For example, a tick in gold contract is Rs. 1. The contract size of gold is 1 kg or 1000 gms. To calculate the value of a tick, you would multiply 1,000/10 x 1 = Rs. 100. So, every time the price of Gold moves up or down by Rs. 1, it means there is a Rs. 100 move.

4.2 Gold Future Returns

The data is collected from Nepal's first derivative exchange, COMEN, from year 2011and 2012. The prices collected are of five gold contracts, viz., Gold March contract (GC/MAR/11), Gold May contract (GC/MAY/11), Gold July contract (GC/JULY/11), Gold September contract (GC/SEP/11), Gold November contract (GC/NOV/11), Gold January contract (GC/JAN/12). The contract specifications of theses contracts are presented in the appendix. The calculated returns of Gold futures contracts were then compared with Nepalese stock returns. In this context, NEPSE Index of respective periods was chosen to compare with the future returns. The data of NEPSE index and the calculation of mean return and risk along with the correlation are presented in appendix.

1. Gold March Contract (GC/MAR/11):

This future contract was launched on 20th January 2011, with the expiration date on March end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated 0.03 % and the standard deviation is calculated 0.7141. Comparing the gold future returns with NEPSE index of the similar period, the average daily return of NEPSE was -0.25% with the standard deviation of 0.7965. The correlation of these two returns is -0.23725.

2. Gold May Contract (GC/MAY/11):

This future contract was launched on 20th March 2011, with the expiration date on May end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated 0.11 % and the standard deviation is calculated 0.6791. The average return of NEPSE index

during the similar period was calculated -0.27 % and the standard deviation was 0.8692. The correlation of these two returns is -0.01832.

3. Gold May Contract (GC/JUL/11):

This future contract was launched on 20th May 2011, with the expiration date on May end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated 0.07 % and the standard deviation is calculated 0.6395. The average return of NEPSE index during the similar period was calculated 0.12 % and the standard deviation was 2.2946. The correlation of these two returns is -0.2334.

4. Gold May Contract (GC/SEP/11):

This future contract was launched on 20th July 2011, with the expiration date on May end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated 0.22 % and the standard deviation is calculated 1.9155. The average return of NEPSE index during the similar period was calculated -0.29 % and the standard deviation was 1.0130. The correlation of these two returns is -0.07288.

5. Gold November Contract (GC/NOV/11):

This future contract was launched on 20th September 2011, with the expiration date on November end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated 0.06% and the standard deviation is calculated 1.4206. The average return of NEPSE sensitive index was 0.03 % and standard deviation 1.0091. The correlation of these two returns was calculated -0.24132.

6. Gold January Contract (GC/JAN/12):

This future contract was launched on 21st November 2011, with the expiration date on January, 2012 end. The prices quoted in COMEN software through its launch to expiration are presented in the appendix. The calculation of return, average return and standard deviation is also presented there. The mean return of the period is calculated -0.05 % and the standard deviation is calculated 0.8652. The average return of NEPSE sensitive index was -0.08 % and the standard deviation was 0.5689. The correlation of these two returns is -0.06876.

Comparing all the future contracts returns with NEPSE returns of the similar period, following tables are presented.

Table 1: Gold Futures traded at COMEN

Particulars	Contracts					
	GC/MAR/11	GC/MAY/11	GC/JUL/11	GC/SEP/11	GC/NOV/11	GC/JAN/12
Mean Return	0.03	0.11	0.07	0.22	0.06	-0.05
Standard Deviation	0.7141204	0.679161	0.639519	1.915476	1.420641	0.865247
Correlation with NEPSE	-0.2372503	-0.01832	0.233444	-0.07288	-0.24132	-0.06876

Table 2: NEPSE returns in comparison to Gold Futures

Particulars	NEPSE return in relation to gold futures contract period					
	MAR Period	MAY Period	JUL Period	SEP Period	NOV Period	JAN Period
Mean Return	-0.25	-0.27	0.12	-0.29	0.03	-0.08
Standard Deviation	0.796515	0.869239	2.294654	1.013018	1.009132	0.568898
Correlation with GOLD	-0.2372503	-0.01832	0.233444	-0.07288	-0.24132	-0.06876

Analyzing these two tables, on daily basis there was not much variation on mean return and the standard deviation of the two investment alternatives on the study period. The correlation coefficient calculated from all the periods was either zero or negative. It indicates these two investment alternatives are not correlated to each other on daily basis on average.

4.3 Comparison of weekly returns

The weekly return for NEPSE is calculated according to the NEPSE index for the year 2008, 2009, 2010 and 2011. Similarly, Gold futures returns were calculated according to the futures closing prices for the respective week ends in year 2008 to 2011. NEPSE week begins at Sunday and ends at Thursday, while COMEN market starts on Monday and ends at Friday, except the holidays. The data collected and the calculations are presented in the appendix:

1. Year 2008

The weekly return for NEPSE is calculated according to the NEPSE index for the year 2008. Similarly, Gold futures returns are calculated according to the futures closing prices for the respective week ends. These are presented in the appendix.

The mean or weekly return of NEPSE for year 2008 is calculated as -0.58 % and of Gold Futures return as 0.28 %. The risk calculated as standard deviation for NEPSE is 4.0215 and for Gold Future is 3.8727. The weekly returns from these two investment alternatives, NEPSE and Gold future are not an impressive figure. NEPSE posted a negative return, while the average weekly return for gold is also 0.28 %. Standard deviations calculated in both cases suggest higher risk for minimum return.

The correlation coefficient calculated is -0.1896, a negative figure. Thus, it indicates the difference in the movement of both values, suggesting that gold futures and NEPSE moved in opposite direction in year 2008 in weekly basis.

2. Year 2009

The weekly return for NEPSE is calculated according to the NEPSE index for the year 2009. Similarly, Gold futures returns are calculated according to the futures closing prices for the respective week ends. These are presented in the appendix.

The mean or weekly return of NEPSE for year 2009 is calculated as -0.36 % and of Gold Futures return as 0.48 %. The risk calculated as standard deviation for NEPSE is 3.1194 and for Gold Future is 2.4693. NEPSE posted a negative return, while the average weekly return for gold is also 0.48 %. Standard deviations calculated in both cases present less riskier than year 2008.

Correlation of the returns of these two investment alternatives is 0.0076. It is presented in the appendix. Thus, the two investment alternatives are found to be non-correlated, indicating a different movement path for these two alternatives. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.

3. Year 2010

The weekly return for NEPSE is calculated according to the NEPSE index for the year 2010. Similarly, Gold futures returns are calculated according to the futures closing prices for the respective week ends. These are presented in the appendix.

The mean or weekly return of NEPSE for year 2010 is calculated as -0.52 % and of Gold Futures return as 0.41 %. The risk calculated as standard deviation for NEPSE is 2.52474 and for Gold Future is 1.46914. NEPSE posted a negative return, while the average weekly return for gold is also 0.41 %. Standard deviations calculated in both cases present less riskier than year 2009.

Correlation of the returns of these two investment alternatives is 0.1807018. It is presented in the appendix. Thus, the two investment alternatives are found to be non-correlated, indicating a different movement path for these two alternatives. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.

4. Year 2011

The weekly return for NEPSE is calculated according to the NEPSE index for the year 2011. Similarly, Gold futures returns are calculated according to the futures closing prices for the respective week ends. These are presented in the appendix.

The mean or weekly return of NEPSE for year 2011 is calculated as -0.39 % and of Gold Futures return as 0.62 %. The risk calculated as standard deviation for NEPSE is 3.844557 and for Gold Future is 2.430783. The weekly returns from these two investment alternatives, NEPSE and Gold future are not an impressive figure. NEPSE posted a negative return, while the average weekly return for gold is also 0.62 %. Standard deviations calculated in both cases suggest higher risk for minimum return.

The correlation coefficient calculated is -0.03773, a negative figure. Thus, it indicates the difference in the movement of both values, suggesting that gold futures and NEPSE moved in opposite direction in year 2011 in weekly basis.

4.4 Comparison of monthly returns

1. Year 2008

The monthly returns for NEPSE were calculated according to the NEPSE index for the year 2008. Similarly, Gold futures returns were calculated according to the futures closing prices for the respective month ends. These are presented in the table below:

Table 3: Monthly returns of NEPSE and Gold Futures, 2008

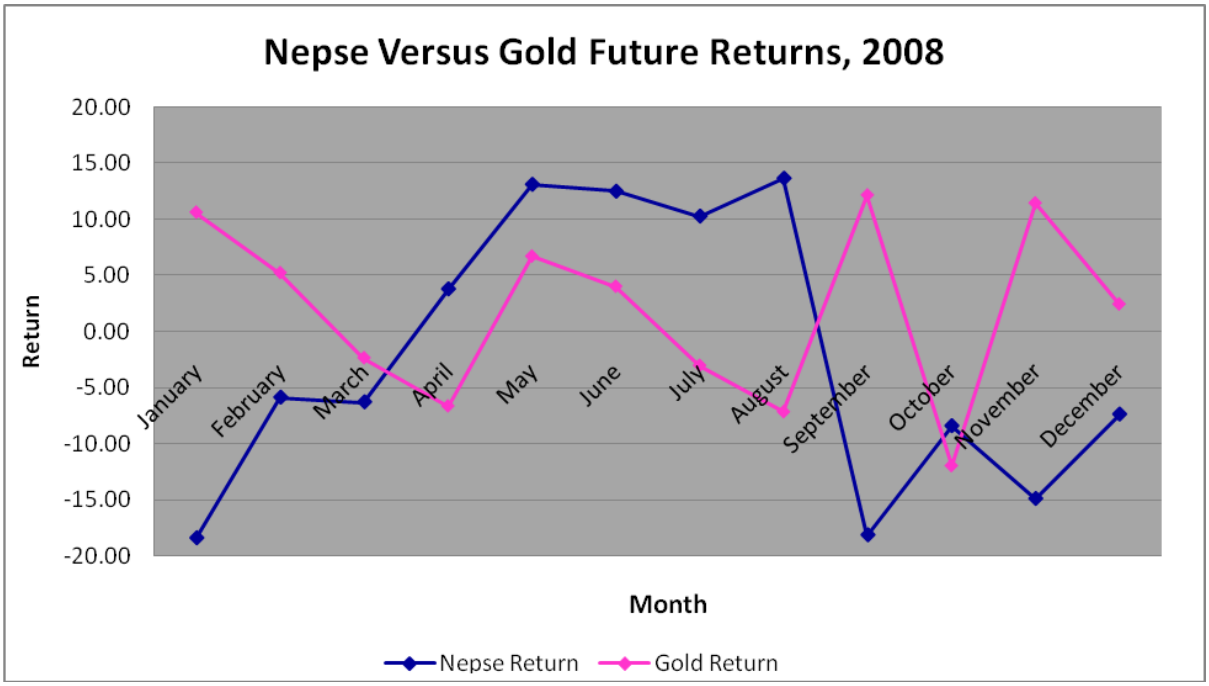
S.N.	Month	NEPSE Index	NEPSE Return (%)	Gold Price	Gold Returns (%)
	December, 07	984.53		17942	
1	January	803.69	-18.37	19846	10.61
2	February	756.76	-5.84	20884	5.23
3	March	709.4	-6.26	20396	-2.34
4	April	736.46	3.81	19046	-6.62
5	May	833.18	13.13	20323	6.70
6	June	937.46	12.52	21140	4.02
7	July	1034.02	10.30	20504	-3.01
8	August	1175.38	13.67	19041	-7.14
9	September	962.55	-18.11	21352	12.14
10	October	881.86	-8.38	18805	-11.93
11	November	750.71	-14.87	20955	11.43
12	December	695.5	-7.35	21466	2.44
Mean			**-2.15**		**1.80**
Std. Deviation			**12.30466686**		**7.965777321**
Correlation			**-0.452530229**		

NEPSE return and Gold Futures return for the month of January is calculated based on closing index and prices of previous month, presented in the first row. The mean or monthly return of NEPSE for year 2008 is calculated as -2.15% and of Gold Futures return as 1.80%. The risk calculated as standard deviation for NEPSE is 12.30466686 and for Gold Future is 7.965777321. These high figures of standard deviation for both

alternatives present the risk factor associated with these two investment alternatives. However, the average monthly return from these two investment alternatives, NEPSE and Gold future is not an impressive figure. Since the NEPSE is in bear market at year 2009, the return of the year is negative, while gold futures' return is also low of just 1.80%. However, the price of Gold futures has risen from 17952 on December of year 2007 to 21466 on December end of year 2008, calculating a 19.64 % increase in price.

The returns of these two investment alternatives are presented in the figure below.

Figure 1: NEPSE returns in comparison to Gold Futures returns, 2008



Correlation of the returns of these two investment alternatives is calculated in negative -0.452530. It is presented in the appendix. Thus, the two investment alternatives are found to be negatively correlated, indicating a different movement path for these two alternatives. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.

2. Year 2009

Similarly, the monthly returns for NEPSE were calculated according to the NEPSE index for the year 2009. Gold futures returns were calculated according to the futures closing prices for the respective month ends. These are presented in the table below:

Table 4: Monthly returns of NEPSE and Gold Futures, 2009

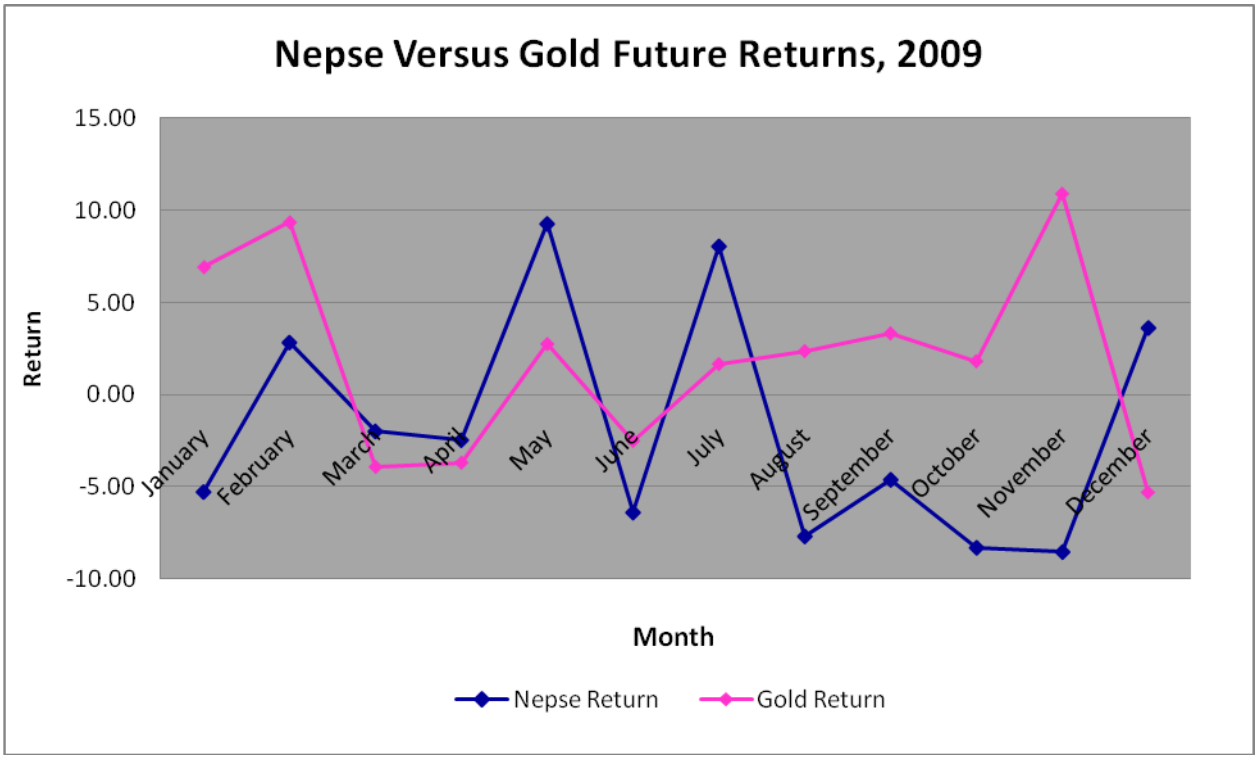
S.N.	Month	NEPSE Index	NEPSE Return (%)	Gold Price	Gold Returns (%)
	December, 08	695.5		21466	
1	January	658.83	-5.27	22951	6.92
2	February	677.52	2.84	25097	9.35
3	March	664.13	-1.98	24116	-3.91
4	April	647.78	-2.46	23229	-3.68
5	May	707.89	9.28	23867	2.75
6	June	662.63	-6.39	23270	-2.50
7	July	716.01	8.06	23659	1.67
8	August	661.03	-7.68	24219	2.37
9	September	630.55	-4.61	25025	3.33
10	October	578.19	-8.30	25480	1.82
11	November	528.89	-8.53	28257	10.90
12	December	548.11	3.63	26763	-5.29
Mean			**-1.78**		**1.98**
Std. Deviation			**6.2853**		**5.2268**
Correlation			**-0.1567694**		

NEPSE return and Gold Futures return for the month of January is calculated based on closing index and prices of previous month**,** of December, 2008. The mean or monthly return of NEPSE for year 2009 is calculated as -1.78 % and of Gold Futures return as

1.98 %. The risk calculated as standard deviation for NEPSE is 6.2853 and for Gold Future is 5.2268. In the year 2009, the monthly return from these two investment alternatives, NEPSE and Gold future is not an impressive figure. Since the NEPSE is in bear market at year 2009, the return of the year is negative, while gold futures' return is also low of just 1.98 %. However, the price of Gold futures rose from 21466 on December end, 2008 to 26763 on December end, 2009, calculating a 24.68 % increase in price.

The returns of these two investment alternatives are presented in the figure below.

Figure 2: NEPSE returns in comparison to Gold Futures returns, 2009



Correlation of the returns of these two investment alternatives was calculated, -0.1567. It is presented in the appendix. Thus, the two investment alternatives are found to be negatively correlated, indicating a different movement path for these two alternatives. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.

3. Year 2010

Similarly, the monthly returns for NEPSE were calculated according to the NEPSE index for the year 2010. Gold futures returns were calculated according to the futures closing prices for the respective month ends. These are presented in the table below:

Table no. 5 Monthly returns of NEPSE and Gold Futures, 2010

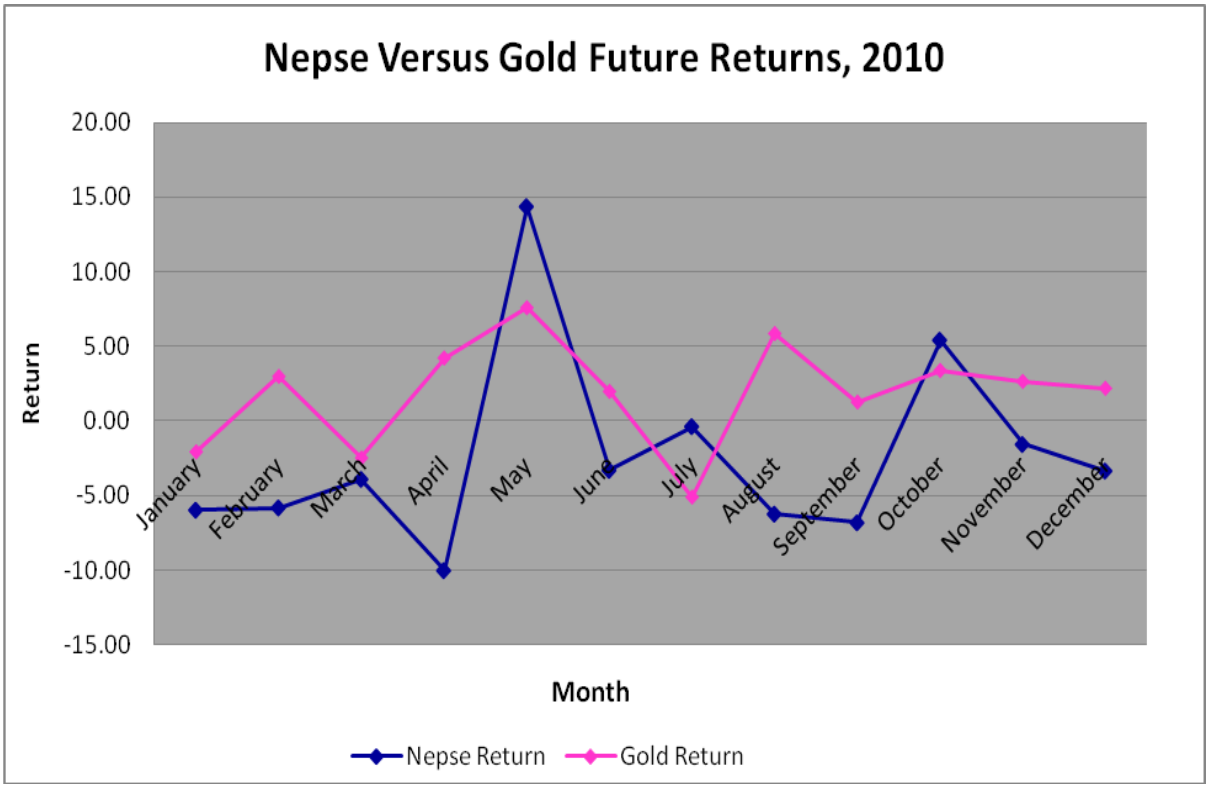
Month	**Nepse Index**	**Nepse Return (%)**	**Gold Price**	**Return (%)**
December,09	548.11		26763	
January	515.24	-6.00	26205	-2.08
February	485.14	-5.84	26988	2.99
March	466.09	-3.93	26314	-2.50
April	419.28	-10.04	27426	4.23
May	479.4	14.34	29512	7.61
June	463.45	-3.33	30095	1.98
July	461.63	-0.39	28550	-5.13
August	432.74	-6.26	30227	5.87
September	403.15	-6.84	30609	1.26
October	424.9	5.40	31646	3.39
November	418.15	-1.59	32485	2.65
December	404.06	-3.37	33196	2.19
Mean		**-2.32**		**1.87**
Std. Deviation		**6.519045**		**3.604228**
Correlation		**0.310668122**		

NEPSE return and Gold Futures return for the month of January is calculated based on closing index and prices of previous month**,** of December, 2009. The mean or monthly return of NEPSE for year 2010 is calculated as -2.32 % and of Gold Futures return as 1.87 %. The risk calculated as standard deviation for NEPSE is 6.519045 and for Gold Future is 3.604228. In the year 2010, the monthly return from these two investment alternatives, NEPSE and Gold future is not an impressive figure. Since the NEPSE is in bear market at year 2010, the return of the year is negative, while gold futures' return is also low of just 1.87 %. However, the price of Gold futures rose from 26763

on December end, 2009 to 33196 on December end, 2010, calculating a 24.04 % increase in price.

The returns of these two investment alternatives are presented in the figure below.

Figure 3: NEPSE returns in comparison to Gold Futures returns, 2010



Correlation of the returns of these two investment alternatives was calculated, 0.31066. It is presented in the appendix. Thus, the two investment alternatives are found to be positively correlated, indicating a same movement path for these two alternatives.

4. Year 2011

Similarly, the monthly returns for NEPSE were calculated according to the NEPSE index for the year 2011. Gold futures returns were calculated according to the futures closing prices for the respective month ends. These are presented in the table below:

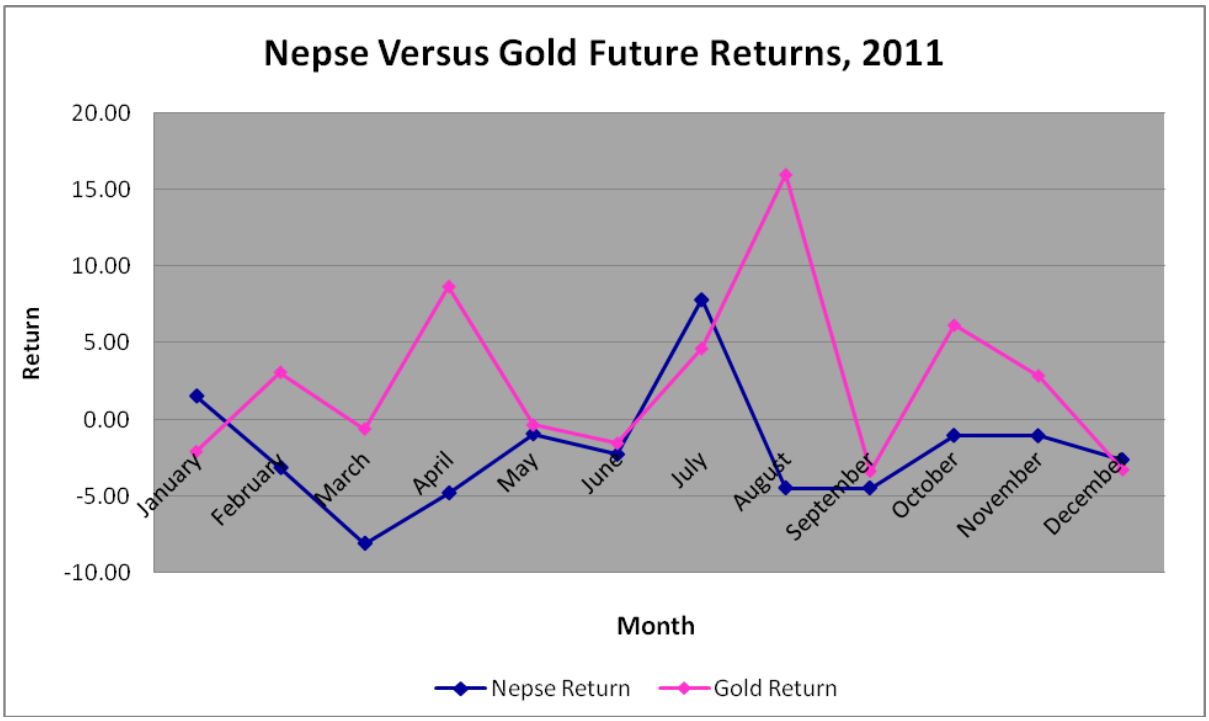
Table no. 6 Monthly returns of NEPSE and Gold Futures, 2011

S.N.	Month	Nepse Index	Nepse Return (%)	Gold Price	Gold Return (%)
	December,10	404.06		33196	
1	January	410.34	1.55	32498	-2.10
2	February	397.46	-3.14	33500	3.08
3	March	365.25	-8.10	33292	-0.62
4	April	347.72	-4.80	36186	8.69
5	May	344.5	-0.93	36055	-0.36
6	June	336.68	-2.27	35491	-1.56
7	July	363.14	7.86	37134	4.63
8	August	346.92	-4.47	43079	16.01
9	September	331.4	-4.47	41621	-3.38
10	October	327.99	-1.03	44184	6.16
11	November	324.54	-1.05	45443	2.85
12	December	316.02	-2.63	43947	-3.29
Mean			**-1.96**		**2.51**
Std. Deviation			**3.952737**		**5.744914**
Correlation			**-0.030260827**		

NEPSE return and Gold Futures return for the month of January is calculated based on closing index and prices of previous month**,** of December, 2010. The mean or monthly return of NEPSE for year 2011 is calculated as -1.96 % and of Gold Futures return as 2.51 %. The risk calculated as standard deviation for NEPSE is 3.952737 and for Gold Future is 5.744914. In the year 2011, the monthly return from these two investment alternatives, NEPSE and Gold future is not an impressive figure. Since the NEPSE is in bear market at year 2011, the return of the year is negative, while gold futures' return is also low of just 2.51 %. However, the price of Gold futures rose from 33196

on December end, 2010 to 43947 on December end, 2011, calculating a 32.38 % increase in price.

Figure 4: NEPSE returns in comparison to Gold Futures returns, 2011



Correlation of the returns of these two investment alternatives was calculated, -0.030260. It is presented in the appendix. Thus, the two investment alternatives are found to be negatively correlated, indicating a different movement path for these two alternatives. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.

4.5 Major Findings of the Study

On the basis of the above presentations and analysis made, the study presents the major findings as below:

- The mean return on Gold March Contract (GC/MAR/11) throughout its period is calculated 0.03 % and the standard deviation is calculated 0.7141204. Gold increased 0.03 % daily throughout the period of this contract.
- On Gold May Contract (GC/MAY/11) traded at COMEN, the mean return of the period is calculated 0.11 % and the standard deviation is calculated 0.679161. The gold futures mean return indicates a bull market of gold in the contract period.
- On Gold July Contract (GC/JUL/11) had the mean return of 0.07 % and the standard deviation is calculated 0.639519. Gold was bull for the contract period. With low standard deviation, there were not much daily fluctuations in gold futures prices in contract period, while the gold was increasing on 0.07% daily on average.

- Another contract studied, Gold September Contract (GC/SEP/11) had the mean return of 0.22 % and the standard deviation is calculated 1.915476. Gold was bull for the contract period. With high standard deviation, there were much daily fluctuations in gold futures prices in contract period, while the gold was increasing on 0.22% daily on average.

- On Gold November Contract (GC/NOV/11). In this contract period the mean return for gold futures was calculated 0.06 % and the standard deviation was calculated 1.420641. In this contract period std. Deviation was high Gold was still in its bull for the contract period; however the rate was only 0.06% daily on average.
- Last contract studied was Gold January Contract (GC/JAN/12) traded at COMEN, the mean return of the period is calculated -0.05 % and the standard

deviation is calculated 0.865247. The gold futures mean return indicates a bear market of gold in the contract period.

- Comparison of the gold futures contracts returns with NEPSE returns of the respective periods got some good findings. While the average daily returns of the two investment alternatives, gold and NEPSE, was found to be somewhat similar, correlation of the returns of these two were either close to zero or negative.
- Hence, the two investment alternatives studied were found to be having a different movement path in the study period. Hence, an investor trying to diversify his/her NEPSE portfolio could definitely benefit including gold futures in his investment portfolio. The inclusion of gold in investment portfolio could hedge his risk factor of the investment.
- Further comparison of these two on weekly basis in year 2008, 2009, 2010 & 2011 indicated the same result. In year 2008 and 2011, the correlation was calculated -0.1896 and -0.03773 respectively, indicating a negative correlation and in year 2009 and 2010, it was 0.0076 and 0.18070 close to zero. Thus, it indicated that NEPSE returns are not correlated to Gold futures returns.
- A monthly comparison was also conducted in year 2008,2009, 2010 & 2011. The correlation coefficients calculated in 2008, 2009 and 2011 these years were negative and in 2010 correlation coefficients was negative. In 2008, the value was -0.4524, in year 2009, it was -0.1567, in 2010 it was 0.31067 and in 2011 it was -0.30260. These values further strengthened that the gold futures returns and NEPSE returns were negatively correlated.
- From above findings, it is evident that moving on from daily to weekly and monthly returns, the correlation coefficient was calculated to be zero to negative. In short term, the returns of the two investment alternatives may not be correlated or be negatively correlated. Moreover, in the long run, gold futures returns posted a negative correlation in relation to NEPSE.
- These findings suggest to the inclusion of gold in investment portfolio hedges the risk because of the negative correlation between the two. Commodity

futures returns have been especially effective in providing diversification of both stock and bond portfolios. The correlation with stocks and bonds is negative over most horizons, and the negative correlation is stronger over longer holding periods. Thus, from the point of view of investors, commodities are an attractive asset class to diversify traditional portfolios of stocks and bonds.

CHAPTER V
SUMMARY, CONCLUSIONS & RECOMMENDATIONS

5.1 SUMMARY

Derivatives are financial instruments whose value is derived from the price of a more basic asset called the underlying asset. The word "derivatives" has become a catch-all generic term that has been used to include all types of financial instruments. The most common types of derivatives that ordinary investors in the markets are likely to come across are futures, options and swaps. Derivatives markets are divided into two types: exchange traded derivatives and over-the-counter derivatives. The legal nature of these products is very different as well as the way they are traded, though many market participants are active in both. Exchange traded derivatives are regulated market where OTC derivatives are non regulated market. Commodity exchanges began in the middle nineteenth century as organized market forums for buying and selling. Commodity futures market is exchange controlled market in which contracts are standardized for trading the commodity in the specific date in the future. Because of its unique nature, commodity market lends to the benefits of a wide spectrum of people like investors, importers, exporters, producers, corporate, etc. Derivatives allow risk about the price of the underlying asset to be transferred from one party to another. The uses of derivatives are hedging, speculating, arbitraging. The futures market in Nepal is in its formative stage. It has just started to take steps forward for its growth and development. Commodity derivatives exchange helps to foster the economic development.

In Nepal, investors are less aware of this market. Investors in this market need to be much aware because the market is influenced by the foreign market. Because, the value for the different commodity is derived from the international exchanges and the effect is not local, investors need to learn a lot in this sector. Also, derivative market is

highly volatile market. Due to its high volatility, investors could lose a great amount of their investment is less time. The Nepalese derivative exchanges work on margin trading. It provides much leverage to the investors, but on the other hand, it has its own risks. In less movement in price of a commodity, investors' total investment could be lost. So, risk minimization is the vital factor to prosper the wealth of investor. For risk minimization, there are different factors to understand: price forecasting, time and money management. Price forecasting is important factor which helps the investor to know which way the market is expected to trend. This helps traders to determine whether the market is bullish or bearish. Time is another factor in future market and determines when to make entry and when to exit the contract. Money management analyses the risk to reward ratio on the basis of money invested and to take risk at each time on trade. Money management is the process of analyzing trades for risk and potential profits. It determines how much of risk is acceptable to maximize profits. Most of the traders ignore money management in trading because their emotions are drawn by market sentiments rather than the market study.

The study is an attempt to present the Nepalese derivatives exchanges, their functioning and analyzing the prospect of using derivatives in investment portfolios for Nepalese investors. Currently, Nepalese investors are more inclined to stocks and bonds. Nepalese security market recently saw the growth of commodities derivatives sector. At present, there are six derivatives exchanges in operation. The regulatory framework is yet to come for these exchanges. The functioning of the exchanges is based on their own rules and regulations. Of all the derivatives, futures are being traded in these exchanges, Gold futures being traded the highest, with crude oil coming second and silver third.

The gold futures trading at COMEN were selected for the study. The futures returns were analyzed and compared with NEPSE returns on daily, weekly and monthly basis. The correlation between these two investments alternatives available in Nepal are found to be more or less negatively correlated. This indicates a good investment

alternative for Nepalese investors in Gold futures. Investing in gold futures could definitely hedge out the risk involved in NEPSE.

Yet, other different investment alternatives are yet to be explored. Derivatives on commodities are being traded at present, but derivatives on financial instruments, are still in need. Also, the market has yet to have the depth in its trading. More awareness is to be created in this sector.

5.2 CONCLUSION

Nepalese derivatives market could be identified on two parts. First the market has introduced the derivatives in Nepal through futures contracts, moving from spot market to identifying the market for futures too. Second, the market has identified the commodities market to be standardized and traded as an investment alternative.

Before being introduced to commodities derivatives in Nepal, Nepalese investors traded primarily on stocks and bonds as investment alternatives. Currently, Nepalese portfolio has broadened to include commodities derivatives. The study attempted to analyze the gold futures market of Nepal and concluded that the gold futures market to be negatively correlated with Nepalese stock market. It indicates that gold futures market is good alternatives to include in Nepalese investment portfolio, since it will hedge out the risk of stocks. Apart from gold futures, derivatives market has to include Nepalese commodity products and promote it for local investors. This market does not yet have the depth since the gold and crude oil market are based on international trends. Thus, the commodities market has to delve itself into Nepalese commodities and local market. Government support is a must in this matter.

Commodity derivatives markets are the need of Nepal. This market creates both backward and forward linkages to develop the economy. Recent reports of inflation shows the rate is in double digits. Particularly, commodity futures market will to help

to discover the real prices of the commodity, ensure the quality products, promote warehousing and enhance the financing for agricultural and industrial products. Investors will benefit from the market from speculative returns and traders might take advantages of risk hedging.

All in all the derivatives market in Nepal does not have a longer history and thus seems to be still underdeveloped. Government has prepared some concepts on the derivatives market for risk minimizing for farmers but still the investors are motivated towards earning abnormal profits from speculation. Even though the focus is for agricultural risk management the overall utilisation of the market is for speculation. People are utilizing the derivative market for speculating rather than risk hedging.

The main problem of the Nepalese market is the challenge of the market itself. Isolated regional commodity markets are the other factors to generate the difference. The other main problems are fair and transparent price discovery and commercialization of the Nepalese agro sectors. The Nepalese futures commodity market is in its formative state and has just started to take the steps forward for its growth and development. The supplier here creates scarcity by hiding goods in the stores to make higher profit. There is essential need of the domestic goods being traded and development of proper warehouses to safeguard the farmers and also to enhance the economic betterment. In our exchanges, the contracts are settled mostly in cash basis and it there is development of proper warehouse and essential daily need commodities like paddy, rice, wheat, potato, sugar and so on products are traded in the exchanges then, there will be fair price discovery which will eventually help to curtail the increasing cartel and helps to reduce the increasing rate of inflation. Similarly there will be justice for the farmers. And hence our economy will boost and further there will be favourable economic situation.

5.3 RECOMMENDATIONS

The study has following recommendations.

- Nepalese futures market is in need of its regulatory body. Operating without having legal rules and regulations has failed to make much impact upon the general investors.
- This market should be based on Nepal and Nepalese products. Although international price movements and news cannot be denied in this era, the market has to have depth of Nepalese commodity products. The commodity market should cater the local needs of Nepal too, thus providing better investment solutions for Nepalese investors.
- Regarding gold in Nepalese investment portfolio, the study has indicated that gold could hedge out the risk factor in Nepalese stock market. Thus, diversifying the investment portfolio into new markets could benefit Nepalese investors.
- The risk factor in futures market is generally considered high. Thus, Nepalese investors have to make careful analysis, both fundamental and technical, to make benefits out of this market.
- Derivatives on financial products are also the need of Nepalese market. Derivatives on stocks could also be introduced for better portfolio diversification for Nepalese investors.

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APPENDIX 1: Contract Specification of Gold Futures at COMEN

Gold March Contract (GC/MAR/11)

Contract Specifications of GOLD	
Symbol	GOLD
Description	GOLD/MAR/2011
Contract Available for Trading	
March Contract	FND: 20th March, SND: 25th March, Expire: 31st March 2011.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	5% of the contract value
Special Margin	In case of additional volatility, a special margin as deemed fit, will be imposed immediately on both buy and sale side in respect of all outstanding position, which will remain in force for next 2 days, after which the special margin will be relaxed.
Delivery	
Delivery Unit	1kg with tolerance limit of +/-1%
Delivery margin	75%
Quality Specifications	995 purity
Delivery Logic	Seller Option

Gold May Contract (GC/MAY/11)

Contract Specifications of GOLD	
Symbol	GOLD
Description	GOLD/MAY/2011
Contract Available for Trading	
May Contract	FND: 19th May, SND: 24th May, Expire: 29th May 2011.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	Rs. 50,000/- & Rs. 30,000/-
Special Margin	In case of additional volatility, a special margin as deemed fit, will be imposed immediately on both buy and sale side in respect of all outstanding position, which will remain in force for next 2 days, after which the special margin will be relaxed.
Delivery	
Delivery Unit	1kg with tolerance limit of +/-1%
Delivery margin	75%
Quality Specifications	995 purity
Delivery Logic	Seller Option

Gold May Contract (GC/JUL/11)

Symbol	GOLD
Description	GOLD/JUL/2011
Contract Available for Trading	
May Contract	FND: 20th Nov, SND: 25th Nov, Expire: 29th Nov 2011.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	Rs. 50,000/- & Rs. 30,000/-
Special Margin	In case of additional volatility, a special margin as deemed fit, will be imposed immediately on both buy and sale side in respect of all outstanding position, which will remain in force for next 2 days, after which the special margin will be relaxed.
Delivery	
Delivery Unit	1kg with tolerance limit of +/-1%
Delivery margin	75%
Quality Specifications	995 purity
Delivery Logic	Seller Option

Gold May Contract (GC/SEP/11)

Symbol	GOLD
Description	GOLD/SEP/2011
Contract Available for Trading	
May Contract	FND: 20th Nov, SND: 25th Nov, Expire: 30th Nov 2011.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	Rs. 50,000/- & Rs. 30,000/-
Special Margin	In case of additional volatility, a special margin as deemed fit, will be imposed immediately on both buy and sale side in respect of all outstanding position, which will remain in force for next 2 days, after which the special margin will be relaxed.
Delivery	
Delivery Unit	1kg with tolerance limit of +/-1%
Delivery margin	75%
Quality Specifications	995 purity
Delivery Logic	Seller Option

Gold November Contract (GC/NOV/11)

Contract Specifications of GOLD	
Symbol	GOLD
Description	GOLD/NOV/2011
Contract Available for Trading	
May Contract	FND: 20th Nov, SND: 25th Nov, Expire: 30th Nov 2011.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	Rs. 50,000/- & Rs. 30,000/-
Special Margin	In case of additional volatility, a special margin as deemed fit, will be imposed immediately on both buy and sale side in respect of all outstanding position, which will remain in force for next 2 days, after which the special margin will be relaxed.
Delivery	
Delivery Unit	1kg with tolerance limit of +/-1%
Delivery margin	75%
Quality Specifications	995 purity
Delivery Logic	Seller Option

Gold January Contract (GC/JAN/12)

Contract Specifications of GOLD	
Symbol	GOLD
Description	GC/JAN/12
Contract Available for Trading	
January Contract	FND: 20th January, SND: 25th January, Expire: 30th January 2012.
Trading Period	Mondays to Fridays
Trading Session	Mondays to Friday: 10.00 a.m. to 10.00 p.m.
Trading Unit	1 kg
Quotation / Base Value	10 grams.
Spread	Variable
Price Quote	Ex-Kathmandu (exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT as the case may be, special additional duty, expenses, octroi and premium). At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Tick Size (minimum price movement)	Re. 1 per 10 grams
Initial Margin	Rs. 50,000 per unit Rs. 100,000 per unit must be maintained as equity for overnight trading positions at market close.
Commission	Rs. 1000+VAT per unit.
Delivery	
Delivery Unit	1 kg with tolerance limit of +/-1%
Quality Specifications	995 purity

APPENDIX 2: Delivery and Settlement Procedure of Gold Futures at COMEN

Delivery and Settlement Procedure of GOLD

Delivery logic	Sellers Option
Buyer's and delivery Intention	1st Notice Day – LOI with 25% of total value to be deposited by 2:30 pm. 2nd Notice Day- 50% of total value to be deposited by 2:30 pm. Expiry Date -25% of total value to be deposited by 1:30 pm.
Mode of communication	Fax / Courier
Delivery allocation - **Date** - **Rate**	 On expiry date of the Contract At due date rate (DDR)
Taxes, Duties, Cess, Levies and premium.	Exclusive of all taxes and levies relating to import duty, customs, sales tax/ VAT, special additional duty, expenses, octroi and premium. At the time of delivery, the buyer has to pay these taxes and levies in additional to delivery order rate.
Close out of open positions	All outstanding positions on the expiry of contract shall be closed out on the last price of the last trading day.
Odd lot treatment	Delivery will be affected only on delivery lot basis. In case there is any mismatch in the position of seller and buyer then delivery will not be matched and accordingly the position will be closed out at DDR.
Warehouse, insurance and transportation charges	-Borne by the seller upto commodity pay-out date -Borne by the buyer after commodity pay-out date
Buyer's option for lifting of delivery	Buyer will not have any option about choosing the place of delivery and will have to accept the delivery as per allocation made by the Exchange
Delivery centre	Deliveries can be effected from Exchange designated Warehouse.

APPENDIX 3: Calculation regarding GC/MAR/11 and NEPSE

S.N.	Date	GC/MAR/11	Return	Date	NEPSE Index	Return
1	20-Jan-11	32691		20-Jan-11	406.9	
2	21-Jan-11	32518	-0.53	23-Jan-11	406.34	-0.14
3	24-Jan-11	32464	-0.17	24-Jan-11	410.34	0.98
4	25-Jan-11	32297	-0.51	31-Jan-11	410.57	0.06
5	27-Jan-11	31894	-1.25	1-Feb-11	410.48	-0.02
6	28-Jan-11	32498	1.89	2-Feb-11	407.97	-0.61
7	31-Jan-11	32302	-0.60	3-Feb-11	406.82	-0.28
8	1-Feb-11	32240	-0.19	6-Feb-11	413.75	1.70
9	2-Feb-11	32064	-0.55	7-Feb-11	408.47	-1.28
10	3-Feb-11	32579	1.61	8-Feb-11	406.94	-0.37
11	4-Feb-11	32442	-0.42	9-Feb-11	405.44	-0.37
12	7-Feb-11	32289	-0.47	10-Feb-11	405.03	-0.10
13	8-Feb-11	32549	0.81	13-Feb-11	404.15	-0.22
14	9-Feb-11	32671	0.37	14-Feb-11	403.72	-0.11
15	10-Feb-11	32714	0.13	15-Feb-11	404.47	0.19
16	11-Feb-11	32595	-0.36	16-Feb-11	405.44	0.24
17	14-Feb-11	32623	0.09	17-Feb-11	408.19	0.68
18	15-Feb-11	32831	0.64	20-Feb-11	405.2	-0.73
19	16-Feb-11	32840	0.03	21-Feb-11	404.32	-0.22
20	17-Feb-11	32856	0.05	22-Feb-11	401.2	-0.77
21	18-Feb-11	32892	0.11	23-Feb-11	398.5	-0.67
22	21-Feb-11	33199	0.93	24-Feb-11	397.46	-0.26
23	22-Feb-11	33290	0.27	27-Feb-11	394.19	-0.82
24	23-Feb-11	33606	0.95	28-Feb-11	391.66	-0.64
25	24-Feb-11	33785	0.53	1-Mar-11	391.21	-0.11
26	25-Feb-11	33500	-0.84	3-Mar-11	395.43	1.08
27	28-Feb-11	33508	0.02	7-Mar-11	394.06	-0.35
28	1-Mar-11	33734	0.67	9-Mar-11	392.71	-0.34
29	2-Mar-11	33875	0.42	10-Mar-11	389.8	-0.74
30	3-Mar-11	33404	-1.39	13-Mar-11	388.25	-0.40
31	4-Mar-11	33718	0.94	14-Mar-11	384.17	-1.05
32	7-Mar-11	33838	0.36	15-Mar-11	376.75	-1.93
33	8-Mar-11	33667	-0.51	16-Mar-11	378.82	0.55
34	9-Mar-11	33707	0.12	17-Mar-11	377.5	-0.35
35	10-Mar-11	33369	-1.00	20-Mar-11	377.6	0.03
36	11-Mar-11	33563	0.58	21-Mar-11	379.46	0.49
37	14-Mar-11	33628	0.19	22-Mar-11	379.32	-0.04
38	15-Mar-11	32999	-1.87	23-Mar-11	377.63	-0.45
39	16-Mar-11	33074	0.23	24-Mar-11	376.67	-0.25
40	17-Mar-11	33186	0.34	27-Mar-11	372	-1.24
41	18-Mar-11	33346	0.48	28-Mar-11	364.69	-1.97
42	21-Mar-11	33556	0.63	29-Mar-11	358.04	-1.82
43	22-Mar-11	33484	-0.21	30-Mar-11	359.11	0.30
44	23-Mar-11	33652	0.50	31-Mar-11	365.25	1.71
45	24-Mar-11	33385	-0.79			
46	25-Mar-11	33292	-0.28			
47	28-Mar-11	33196	-0.29			
48	29-Mar-11	33057	-0.42			
49	30-Mar-11	33175	0.36			
50	31-Mar-11	33140	-0.11			
MEAN			**0.03**			**-0.25**
Std. Dev			**0.7141204**			**0.796515**
Corelation			**-0.2372503**			

APPENDIX 4: Calculation regarding GC/MAY/11 and NEPSE

S.N.	Date	GC/MAY/2011	Return	Date	Nepse Index	Return
1	21-Mar-11	33997		21-Mar-11	379.46	
2	22-Mar-11	33923	-0.22	22-Mar-11	379.32	-0.04
3	23-Mar-11	34085	0.48	23-Mar-11	377.63	-0.45
4	24-Mar-11	33840	-0.72	24-Mar-11	376.67	-0.25
5	25-Mar-11	33747	-0.27	27-Mar-11	372.00	-1.24
6	28-Mar-11	33662	-0.25	28-Mar-11	364.69	-1.97
7	29-Mar-11	33529	-0.40	29-Mar-11	358.04	-1.82
8	30-Mar-11	33603	0.22	30-Mar-11	359.11	0.30
9	31-Mar-11	33724	0.36	31-Mar-11	365.25	1.71
10	1-Apr-11	33526	-0.59	4-Apr-11	364.98	-0.07
11	4-Apr-11	33540	0.04	5-Apr-11	364.40	-0.16
12	5-Apr-11	33891	1.05	6-Apr-11	364.38	-0.01
13	6-Apr-11	33897	0.02	7-Apr-11	365.50	0.31
14	7-Apr-11	33915	0.05	10-Apr-11	366.67	0.32
15	8-Apr-11	34182	0.79	11-Apr-11	365.34	-0.36
16	11-Apr-11	34229	0.14	13-Apr-11	373.20	2.15
17	12-Apr-11	34046	-0.53	17-Apr-11	367.54	-1.52
18	13-Apr-11	34074	0.08	18-Apr-11	365.50	-0.56
19	14-Apr-11	34418	1.01	19-Apr-11	364.29	-0.33
20	15-Apr-11	34546	0.37	20-Apr-11	361.11	-0.87
21	18-Apr-11	34969	1.22	21-Apr-11	358.45	-0.74
22	19-Apr-11	34951	-0.05	25-Apr-11	356.87	-0.44
23	20-Apr-11	34869	-0.23	26-Apr-11	356.21	-0.19
24	21-Apr-11	35031	0.46	27-Apr-11	350.15	-1.70
25	22-Apr-11	35100	0.20	28-Apr-11	347.72	-0.69
26	25-Apr-11	35211	0.32	2-May-11	344.58	-0.90
27	26-Apr-11	35047	-0.47	3-May-11	339.55	-1.46
28	27-Apr-11	35441	1.12	4-May-11	338.86	-0.20
29	28-Apr-11	35686	0.69	5-May-11	339.53	0.20
30	29-Apr-11	36186	1.40	8-May-11	340.66	0.33
31	2-May-11	36236	0.14	9-May-11	340.83	0.05
32	3-May-11	35830	-1.12	10-May-11	344.08	0.95
33	4-May-11	35443	-1.08	11-May-11	344.66	0.17
34	5-May-11	34813	-1.78	12-May-11	346.44	0.52
35	6-May-11	34986	0.50	15-May-11	349.22	0.80
36	9-May-11	35233	0.71	16-May-11	350.62	0.40
37	10-May-11	35470	0.67	18-May-11	346.91	-1.06
38	11-May-11	35106	-1.03	19-May-11	344.83	-0.60
39	12-May-11	35324	0.62	22-May-11	343.56	-0.37
40	13-May-11	35102	-0.63	23-May-11	342.08	-0.43
41	16-May-11	35187	0.24	24-May-11	341.56	-0.15
42	17-May-11	34951	-0.67	25-May-11	341.66	0.03
43	18-May-11	35199	0.71	26-May-11	344.50	0.83
44	19-May-11	35047	-0.43	30-May-11	342.76	-0.51
45	20-May-11	35500	1.29	31-May-11	336.73	-1.76
46	23-May-11	35715	0.61			
47	24-May-11	35845	0.36			
48	25-May-11	36035	0.53			
49	26-May-11	35837	-0.55			
50	27-May-11	36055	0.61			
51	30-May-11	36019	-0.10			
52	31-May-11	35915	-0.29			
Mean			**0.11**			**-0.27**
Std. Deviation			**0.679161**			**0.869239**
Corelation			**-0.01832**			

APPENDIX 5: Calculation regarding GC/JUL/11 and NEPSE

S.N.	Date	GC/JUL/11	Return	Date	Nepse Index	Return
1	20-May-11	35840		22-May-11	343.56	
2	23-May-11	36071	0.64	23-May-11	342.08	-0.43
3	24-May-11	36187	0.32	24-May-11	341.56	-0.15
4	25-May-11	36380	0.53	25-May-11	341.66	0.03
5	26-May-11	36202	-0.49	26-May-11	344.50	0.83
6	27-May-11	36453	0.69	30-May-11	342.76	-0.51
7	30-May-11	36425	-0.08	31-May-11	336.73	-1.76
8	31-May-11	36303	-0.33	1-Jun-11	335.69	-0.31
9	1-Jun-11	36436	0.37	2-Jun-11	333.76	-0.58
10	2-Jun-11	36147	-0.79	5-Jun-11	327.81	-1.78
11	3-Jun-11	36292	0.40	6-Jun-11	323.18	-1.41
12	6-Jun-11	36352	0.17	7-Jun-11	317.49	-1.76
13	7-Jun-11	36229	-0.34	8-Jun-11	311.26	-1.96
14	8-Jun-11	36071	-0.44	9-Jun-11	308.88	-0.76
15	9-Jun-11	36176	0.29	12-Jun-11	304.13	-1.54
16	10-Jun-11	36064	-0.31	13-Jun-11	301.73	-0.79
17	13-Jun-11	35808	-0.71	14-Jun-11	297.62	-1.36
18	14-Jun-11	35790	-0.05	15-Jun-11	292.31	-1.78
19	15-Jun-11	35907	0.33	16-Jun-11	303.53	3.84
20	16-Jun-11	36026	0.33	19-Jun-11	318.99	5.09
21	17-Jun-11	36178	0.42	20-Jun-11	330.76	3.69
22	20-Jun-11	36271	0.26	21-Jun-11	344.22	4.07
23	21-Jun-11	36288	0.05	23-Jun-11	364.40	5.86
24	22-Jun-11	36412	0.34	26-Jun-11	346.77	-4.84
25	23-Jun-11	35891	-1.43	27-Jun-11	329.49	-4.98
26	24-Jun-11	35491	-1.11	29-Jun-11	332.92	1.04
27	27-Jun-11	35360	-0.37	30-Jun-11	336.68	1.13
28	28-Jun-11	35400	0.11	3-Jul-11	333.23	-1.02
29	29-Jun-11	35452	0.15	4-Jul-11	333.93	0.21
30	30-Jun-11	35079	-1.05	5-Jul-11	340.82	2.06
31	1-Jul-11	34637	-1.26	6-Jul-11	344.46	1.07
32	4-Jul-11	34820	0.53	7-Jul-11	340.95	-1.02
33	5-Jul-11	35182	1.04	10-Jul-11	346.00	1.48
34	6-Jul-11	35548	1.04	11-Jul-11	346.03	0.01
35	7-Jul-11	35484	-0.18	12-Jul-11	352.21	1.79
36	8-Jul-11	35745	0.74	13-Jul-11	356.45	1.20
37	11-Jul-11	35989	0.68	14-Jul-11	362.85	1.79
38	12-Jul-11	36348	1.00	17-Jul-11	378.40	4.29
39	13-Jul-11	36706	0.98	18-Jul-11	370.15	-2.18
40	14-Jul-11	36836	0.35	19-Jul-11	374.13	1.08
41	15-Jul-11	36823	-0.04	20-Jul-11	380.23	1.63
42	18-Jul-11	37198	1.02	21-Jul-11	376.57	-0.96
43	19-Jul-11	36899	-0.80	24-Jul-11	365.42	-2.96
44	20-Jul-11	37009	0.30	25-Jul-11	360.14	-1.44
45	21-Jul-11	36663	-0.93	26-Jul-11	357.32	-0.78
46	22-Jul-11	37001	0.92	27-Jul-11	363.81	1.82
47	25-Jul-11	37203	0.55	28-Jul-11	363.14	-0.18
48	26-Jul-11	37054	-0.40	31-Jul-11	358.81	-1.19
49	27-Jul-11	36993	-0.16			
50	28-Jul-11	36907	-0.23			
51	29-Jul-11	37134	0.62			
Mean			**0.07**			**0.12**
Std. Deviation			**0.639519**			**2.294654**
Correlation			**0.233444**			

APPENDIX 6: Calculation regarding GC/SEP/11 and NEPSE

S.N.	Date	GC/SEP/11	Return	Date	Nepse Index	Return

1	20-Jul-11	37477		20-Jul-11	380.23	
2	21-Jul-11	37163	-0.84	21-Jul-11	376.57	-0.96
3	22-Jul-11	37486	0.87	24-Jul-11	365.42	-2.96
4	25-Jul-11	37696	0.56	25-Jul-11	360.14	-1.44
5	26-Jul-11	37560	-0.36	26-Jul-11	357.32	-0.78
6	27-Jul-11	37504	-0.15	27-Jul-11	363.81	1.82
7	28-Jul-11	37417	-0.23	28-Jul-11	363.14	-0.18
8	29-Jul-11	37704	0.77	31-Jul-11	358.81	-1.19
9	1-Aug-11	37646	-0.15	1-Aug-11	357.67	-0.32
10	2-Aug-11	38125	1.27	2-Aug-11	357.61	-0.02
11	3-Aug-11	38524	1.05	3-Aug-11	355.91	-0.48
12	4-Aug-11	38540	0.04	4-Aug-11	357.64	0.49
13	5-Aug-11	38686	0.38	7-Aug-11	353.75	-1.09
14	8-Aug-11	40425	4.50	8-Aug-11	352.18	-0.44
15	9-Aug-11	41208	1.94	9-Aug-11	345.81	-1.81
16	10-Aug-11	41966	1.84	10-Aug-11	351.99	1.79
17	11-Aug-11	41115	-2.03	11-Aug-11	352.65	0.19
18	12-Aug-11	41062	-0.13	15-Aug-11	353.33	0.19
19	16-Aug-11	41999	2.28	16-Aug-11	353.59	0.07
20	17-Aug-11	42270	0.65	17-Aug-11	351.01	-0.73
21	18-Aug-11	43519	2.95	18-Aug-11	352.54	0.44
22	19-Aug-11	44121	1.38	22-Aug-11	349.84	-0.77
23	22-Aug-11	44993	1.98	23-Aug-11	349.66	-0.05
24	23-Aug-11	44197	-1.77	24-Aug-11	348.92	-0.21
25	24-Aug-11	42108	-4.73	25-Aug-11	346.92	-0.57
26	25-Aug-11	42241	0.32	28-Aug-11	337.15	-2.82
27	26-Aug-11	43079	1.98	29-Aug-11	337.99	0.25
28	29-Aug-11	42821	-0.60	30-Aug-11	339.91	0.57
29	30-Aug-11	43676	2.00	1-Sep-11	341.73	0.53
30	31-Aug-11	43535	-0.32	4-Sep-11	339.05	-0.78
31	1-Sep-11	43585	0.11	5-Sep-11	336.21	-0.84
32	2-Sep-11	44728	2.62	6-Sep-11	331.80	-1.31
33	5-Sep-11	45619	1.99	7-Sep-11	331.31	-0.15
34	6-Sep-11	44792	-1.81	8-Sep-11	329.63	-0.51
35	7-Sep-11	43532	-2.81	12-Sep-11	327.04	-0.79
36	8-Sep-11	44525	2.28	13-Sep-11	325.78	-0.38
37	9-Sep-11	45162	1.43	14-Sep-11	319.35	-1.97
38	12-Sep-11	44510	-1.44	15-Sep-11	321.18	0.57
39	13-Sep-11	45217	1.59	18-Sep-11	318.56	-0.82
40	14-Sep-11	45089	-0.28	19-Sep-11	317.36	-0.38
41	15-Sep-11	43993	-2.43	20-Sep-11	320.08	0.86
42	16-Sep-11	44533	1.23	21-Sep-11	323.00	0.91
43	19-Sep-11	44305	-0.51	22-Sep-11	327.57	1.42
44	20-Sep-11	44904	1.35	25-Sep-11	331.58	1.22
45	21-Sep-11	45068	0.37	26-Sep-11	331.10	-0.14
46	22-Sep-11	44706	-0.80	27-Sep-11	331.38	0.08
47	23-Sep-11	41934	-6.20	29-Sep-11	331.40	0.01
48	26-Sep-11	41138	-1.90			
49	27-Sep-11	41938	1.94			
50	28-Sep-11	41115	-1.96			
51	29-Sep-11	41223	0.26			
52	30-Sep-11	41621	0.97			
Mean			**0.22**			**-0.29**
Std. Dev			**1.915476**			**1.013018**
Correlation			**-0.07288**			

APPENDIX 7: Calculation regarding GC/NOV/11 and NEPSE

S.N.	Date	GC/NOV/11	Return	Date	Nepse Index	Return
1	20-Sep-11	45391		20-Sep-11	320.08	
2	21-Sep-11	45598	0.46	21-Sep-11	323.00	0.91
3	22-Sep-11	45250	-0.76	22-Sep-11	327.57	1.42
4	23-Sep-11	42451	-6.19	25-Sep-11	331.58	1.22
5	26-Sep-11	41644	-1.90	26-Sep-11	331.10	-0.14
6	27-Sep-11	42345	1.68	27-Sep-11	331.38	0.08
7	28-Sep-11	41567	-1.84	29-Sep-11	331.40	0.01
8	29-Sep-11	41657	0.22	2-Oct-11	331.37	-0.01
9	30-Sep-11	41990	0.80	9-Oct-11	331.26	-0.03
10	3-Oct-11	42813	1.96	10-Oct-11	333.49	0.67
11	4-Oct-11	41655	-2.70	12-Oct-11	334.49	0.30
12	5-Oct-11	42334	1.63	13-Oct-11	333.47	-0.30
13	6-Oct-11	42456	0.29	16-Oct-11	331.59	-0.56
14	7-Oct-11	41990	-1.10	17-Oct-11	330.99	-0.18
15	10-Oct-11	42701	1.69	18-Oct-11	329.95	-0.32
16	11-Oct-11	42702	0.00	19-Oct-11	329.66	-0.09
17	12-Oct-11	43023	0.75	20-Oct-11	328.19	-0.45
18	13-Oct-11	42839	-0.43	23-Oct-11	326.43	-0.54
19	14-Oct-11	43050	0.49	24-Oct-11	326.80	0.11
20	17-Oct-11	42959	-0.21	25-Oct-11	327.99	0.36
21	18-Oct-11	42589	-0.86	30-Oct-11	327.70	-0.09
22	19-Oct-11	42372	-0.51	31-Oct-11	330.22	0.77
23	20-Oct-11	42195	-0.42	2-Nov-11	346.82	5.03
24	21-Oct-11	42704	1.21	3-Nov-11	343.55	-0.94
25	24-Oct-11	42802	0.23	6-Nov-11	337.91	-1.64
26	25-Oct-11	43815	2.37	8-Nov-11	334.76	-0.93
27	26-Oct-11	44153	0.77	9-Nov-11	332.40	-0.70
28	27-Oct-11	44599	1.01	10-Nov-11	331.78	-0.19
29	28-Oct-11	44184	-0.93	13-Nov-11	330.53	-0.38
30	31-Oct-11	43790	-0.89	14-Nov-11	330.66	0.04
31	1-Nov-11	44081	0.66	15-Nov-11	326.95	-1.12
32	2-Nov-11	44185	0.24	16-Nov-11	325.61	-0.41
33	3-Nov-11	44824	1.45	17-Nov-11	329.39	1.16
34	4-Nov-11	44757	-0.15	20-Nov-11	328.24	-0.35
35	7-Nov-11	45518	1.70	21-Nov-11	328.52	0.09
36	8-Nov-11	46090	1.26	22-Nov-11	327.37	-0.35
37	9-Nov-11	46466	0.82	23-Nov-11	325.34	-0.62
38	10-Nov-11	45963	-1.08	24-Nov-11	324.54	-0.24
39	11-Nov-11	46279	0.69	27-Nov-11	324.63	0.03
40	14-Nov-11	46344	0.14	28-Nov-11	323.29	-0.41
41	15-Nov-11	46717	0.80	29-Nov-11	323.98	0.21
42	16-Nov-11	46437	-0.60	30-Nov-11	323.97	0.00
43	17-Nov-11	45561	-1.89			
44	18-Nov-11	45849	0.63			
45	21-Nov-11	45556	-0.64			
46	22-Nov-11	46122	1.24			
47	23-Nov-11	46091	-0.07			
48	24-Nov-11	45721	-0.80			
49	25-Nov-11	45443	-0.61			
50	28-Nov-11	46022	1.27			
51	29-Nov-11	45904	-0.26			
52	30-Nov-11	46541	1.39			
Mean			**0.06**			**0.03**
Std. Deviation			**1.420641**			**1.009132**
Correlation			**-0.24132**			

APPENDIX 8: Calculation regarding GC/JAN/12 and NEPSE

S.N.	Date	GC/JAN/12	Return	Date	Nepse Index	Return
1	21-Nov-11	46101		21-Nov-11	328.52	
2	22-Nov-11	46616	1.12	22-Nov-11	327.37	-0.35
3	23-Nov-11	46581	-0.08	23-Nov-11	325.34	-0.62
4	24-Nov-11	46234	-0.75	24-Nov-11	324.54	-0.24
5	25-Nov-11	45955	-0.60	27-Nov-11	324.63	0.03
6	28-Nov-11	46524	1.24	28-Nov-11	323.29	-0.41
7	29-Nov-11	46452	-0.15	29-Nov-11	323.98	0.21
8	30-Nov-11	46999	1.18	30-Nov-11	323.97	0.00
9	1-Dec-11	46684	-0.67	1-Dec-11	322.84	-0.35
10	2-Dec-11	46733	0.11	4-Dec-11	322.38	-0.14
11	5-Dec-11	46519	-0.46	5-Dec-11	321.50	-0.27
12	6-Dec-11	46368	-0.32	6-Dec-11	321.17	-0.10
13	7-Dec-11	46839	1.02	7-Dec-11	320.60	-0.18
14	8-Dec-11	46597	-0.52	8-Dec-11	320.25	-0.11
15	9-Dec-11	46689	0.20	11-Dec-11	317.69	-0.80
16	12-Dec-11	46198	-1.05	12-Dec-11	314.74	-0.93
17	13-Dec-11	46237	0.08	13-Dec-11	313.71	-0.33
18	14-Dec-11	45135	-2.38	14-Dec-11	317.40	1.18
19	15-Dec-11	44091	-2.31	15-Dec-11	316.27	-0.36
20	16-Dec-11	44028	-0.14	18-Dec-11	313.68	-0.82
21	19-Dec-11	44349	0.73	19-Dec-11	313.47	-0.07
22	20-Dec-11	44629	0.63	20-Dec-11	313.69	0.07
23	21-Dec-11	44536	-0.21	21-Dec-11	313.09	-0.19
24	22-Dec-11	44358	-0.40	22-Dec-11	312.94	-0.05
25	23-Dec-11	44488	0.29	26-Dec-11	312.50	-0.14
26	26-Dec-11	44488	0.00	27-Dec-11	313.95	0.46
27	27-Dec-11	44283	-0.46	28-Dec-11	314.18	0.07
28	28-Dec-11	43691	-1.34	29-Dec-11	316.02	0.58
29	29-Dec-11	42978	-1.63	1-Jan-12	318.74	0.86
30	30-Dec-11	43947	2.25	2-Jan-12	324.41	1.78
31	2-Jan-12	43852	-0.22	3-Jan-12	324.15	-0.08
32	3-Jan-12	44291	1.00	4-Jan-12	318.99	-1.59
33	4-Jan-12	44605	0.71	5-Jan-12	319.55	0.18
34	5-Jan-12	44555	-0.11	8-Jan-12	317.03	-0.79
35	6-Jan-12	44450	-0.24	9-Jan-12	317.55	0.17
36	9-Jan-12	44166	-0.64	10-Jan-12	319.62	0.65
37	10-Jan-12	44101	-0.15	11-Jan-12	321.41	0.56
38	11-Jan-12	44293	0.44	12-Jan-12	323.62	0.69
39	12-Jan-12	44305	0.03	16-Jan-12	322.19	-0.44
40	13-Jan-12	43924	-0.86	17-Jan-12	322.16	-0.01
41	16-Jan-12	44016	0.21	18-Jan-12	319.95	-0.68
42	17-Jan-12	44182	0.38	19-Jan-12	320.56	0.19
43	18-Jan-12	44001	-0.41	22-Jan-12	320.22	-0.11
44	19-Jan-12	43796	-0.47	23-Jan-12	317.85	-0.74
45	20-Jan-12	43958	0.37	25-Jan-12	317.60	-0.08
46	23-Jan-12	44057	0.23	26-Jan-12	316.68	-0.29
47	24-Jan-12	43854	-0.46	29-Jan-12	316.53	-0.05
48	25-Jan-12	44184	0.75	31-Jan-12	315.97	-0.18
49	27-Jan-12	44773	1.33			
50	30-Jan-12	44936	0.36			
51	31-Jan-12	44967	0.07			
Mean			**-0.05**			**-0.08**
Std. Deviation			**0.865247**			**0.568898**
Correlation			**-0.06876**			

APPENDIX 9: weekly returns of NEPSE and Gold Futures, 2008

week	Date	NEPSE	Return	Date	Gold Price	Gold Return
1	10-Jan-08	981.43		11-Jan-08	18946.00	
2	17-Jan-08	905.38	-7.75	18-Jan-08	18991.00	0.24
3	24-Jan-08	878.07	-3.02	25-Jan-08	19712.00	3.80
4	31-Jan-08	803.69	-8.47	1-Feb-08	19614.00	-0.50
5	7-Feb-08	750.86	-6.57	8-Feb-08	19839.00	1.15
6	14-Feb-08	795.89	6.00	15-Feb-08	19647.00	-0.97
7	21-Feb-08	758.47	-4.70	22-Feb-08	20382.00	3.74
8	28-Feb-08	756.76	-0.23	29-Feb-08	20884.00	2.46
9	5-Mar-08	758.7	0.26	7-Mar-08	21200.00	1.51
10	13-Mar-08	714.76	-5.79	14-Mar-08	21565.00	1.72
11	20-Mar-08	716.72	0.27	20-Mar-08	19915.00	-7.65
12	27-Mar-08	716.37	-0.05	28-Mar-08	19779.00	-0.68
13	3-Apr-08	730.14	1.92	4-Apr-08	19282.00	-2.51
14	10-Apr-08	746.69	2.27	11-Apr-08	19684.00	2.08
15	17-Apr-08	734.83	-1.59	18-Apr-08	19788.00	0.53
16	24-Apr-08	734.87	0.01	24-Apr-08	19419.00	-1.86
17	30-Apr-08	736.46	0.22	2-May-08	18791.00	-3.23
18	8-May-08	771.33	4.73	9-May-08	19525.00	3.91
19	15-May-08	812.67	5.36	16-May-08	20882.00	6.95
20	22-May-08	817.64	0.61	23-May-08	21351.00	2.25
21	27-May-08	833.18	1.90	30-May-08	20323.00	-4.81
22	5-Jun-08	885.2	6.24	6-Jun-08	20619.00	1.46
23	12-Jun-08	930.65	5.13	13-Jun-08	19999.00	-3.01
24	19-Jun-08	960.33	3.19	20-Jun-08	20200.00	1.01
25	26-Jun-08	951.62	-0.91	27-Jun-08	20604.00	2.00
26	3-Jul-08	928.39	-2.44	4-Jul-08	21067.00	2.25
27	10-Jul-08	949.52	2.28	11-Jul-08	21426.00	1.70
28	17-Jul-08	991.91	4.46	18-Jul-08	21341.00	-0.40
29	23-Jul-08	972.47	-1.96	25-Jul-08	20473.00	-4.07
30	31-Jul-08	1034.02	6.33	1-Aug-08	20207.00	-1.30
31	7-Aug-08	1101.36	6.51	8-Aug-08	18945.00	-6.25
32	14-Aug-08	1084.76	-1.51	14-Aug-08	18421.00	-2.77
33	21-Aug-08	1062.24	-2.08	22-Aug-08	18658.00	1.29
34	28-Aug-08	1119.65	5.40	29-Aug-08	19041.00	2.05
35	4-Sep-08	1067.2	-4.68	5-Sep-08	18774.00	-1.40
36	11-Sep-08	1028.5	-3.63	12-Sep-08	18184.00	-3.14
37	18-Sep-08	1004.28	-2.35	19-Sep-08	20271.00	11.48
38	25-Sep-08	941.12	-6.29	26-Sep-08	21189.00	4.53
39	1-Oct-08	970.23	3.09	3-Oct-08	20545.00	-3.04
40	5-Oct-08	973.65	0.35	9-Oct-08	20786.00	1.17
41	16-Oct-08	933.97	-4.08	17-Oct-08	19971.00	-3.92
42	23-Oct-08	919.33	-1.57	24-Oct-08	18733.00	-6.20
43	27-Oct-08	881.86	-4.08	31-Oct-08	18805.00	0.38
44	6-Nov-08	832.59	-5.59	6-Nov-08	18519.00	-1.52
45	13-Nov-08	806.9	-3.09	14-Nov-08	18732.00	1.15
46	20-Nov-08	770.37	-4.53	21-Nov-08	20135.00	7.49
47	27-Nov-08	732.18	-4.96	28-Nov-08	20955.00	4.07
48	4-Dec-08	754.91	3.10	5-Dec-08	19279.00	-8.00
49	11-Dec-08	743.25	-1.54	12-Dec-08	20590.00	6.80
50	18-Dec-08	720.52	-3.06	19-Dec-08	20374.00	-1.05
51	24-Dec-08	705.21	-2.12	26-Dec-08	21003.00	3.09
mean			**-0.58**			**0.28**
s.d.			**4.0214688**			**3.872696458**
correlation			**-0.189628**			

APPENDIX 10: weekly returns of NEPSE and Gold Futures, 2009

week	Date	NEPSE	return	date	Gold price	gold return
1	8-Jan-09	674.32		9-Jan-09	21272.00	
2	15-Jan-09	651.22	-3.43	16-Jan-09	20858.00	-1.95
3	22-Jan-09	609.46	-6.41	23-Jan-09	22204.00	6.45
4	28-Jan-09	658.83	8.10	30-Jan-09	22951.00	3.36
5	5-Feb-09	656.06	-0.42	6-Feb-09	22671.00	-1.22
6	12-Feb-09	671.49	2.35	13-Feb-09	23350.00	3.00
7	19-Feb-09	699.6	4.19	20-Feb-09	25298.00	8.34
8	26-Feb-09	677.52	-3.16	27-Feb-09	25097.00	-0.79
9	5-Mar-09	670.68	-1.01	6-Mar-09	24947.00	-0.60
10	12-Mar-09	667.2	-0.52	13-Mar-09	24545.00	-1.61
11	19-Mar-09	666.59	-0.09	20-Mar-09	24854.00	1.26
12	25-Mar-09	675.3	1.31	27-Mar-09	24201.00	-2.63
13	2-Apr-09	661.96	-1.98	3-Apr-09	23365.00	-3.45
14	9-Apr-09	660.36	-0.24	9-Apr-09	22739.00	-2.68
15	16-Apr-09	662.71	0.36	17-Apr-09	22380.00	-1.58
16	23-Apr-09	657.02	-0.86	24-Apr-09	23386.00	4.50
17	30-Apr-09	647.78	-1.41	1-May-09	22835.00	-2.36
18	7-May-09	654.05	0.97	8-May-09	23164.00	1.44
19	14-May-09	660.96	1.06	15-May-09	23785.00	2.68
20	21-May-09	676.64	2.37	22-May-09	23272.00	-2.16
21	28-May-09	718.62	6.20	29-May-09	23867.00	2.56
22	4-Jun-09	698.88	-2.75	5-Jun-09	23914.00	0.20
23	11-Jun-09	684.39	-2.07	12-Jun-09	23742.00	-0.72
24	18-Jun-09	683.71	-0.10	19-Jun-09	23620.00	-0.51
25	25-Jun-09	670.61	-1.92	26-Jun-09	23210.00	-1.74
26	2-Jul-09	667.43	-0.47	1-Jul-09	23450.00	1.03
27	9-Jul-09	702.88	5.31	10-Jul-09	23170.00	-1.19
28	16-Jul-09	735.87	4.69	17-Jul-09	23659.00	2.11
29	23-Jul-09	737.84	0.27	24-Jul-09	23956.00	1.26
30	30-Jul-09	716.01	-2.96	31-Jul-09	24165.00	0.87
31	4-Aug-09	700.01	-2.23	5-Aug-09	24248.00	0.34
32	12-Aug-09	717.2	2.46	13-Aug-09	23890.00	-1.48
33	20-Aug-09	709.82	-1.03	21-Aug-09	23914.00	0.10
34	27-Aug-09	681.54	-3.98	28-Aug-09	24176.00	1.10
35	2-Sep-09	660.4	-3.10	4-Sep-09	25206.00	4.26
36	10-Sep-09	614.79	-6.91	11-Sep-09	25325.00	0.47
37	17-Sep-09	627.97	2.14	18-Sep-09	25405.00	0.32
38	24-Sep-09	630.55	0.41	25-Sep-09	24887.00	-2.04
39	1-Oct-09	634.44	0.62	1-Oct-09	24941.00	0.22
40	8-Oct-09	604.37	-4.74	9-Oct-09	25338.00	1.59
41	15-Oct-09	609.55	0.86	16-Oct-09	25250.00	-0.35
42	22-Oct-09	601.16	-1.38	23-Oct-09	25609.00	1.42
43	29-Oct-09	578.19	-3.82	30-Oct-09	25480.00	-0.50
44	5-Nov-09	584.64	1.12	6-Nov-09	26600.00	4.40
45	12-Nov-09	565.86	-3.21	13-Nov-09	26704.00	0.39
46	19-Nov-09	563.01	-0.50	20-Nov-09	27545.00	3.15
47	26-Nov-09	534.32	-5.10	27-Nov-09	28314.00	2.79
48	3-Dec-09	517.45	-3.16	4-Dec-09	28365.00	0.18
49	10-Dec-09	545.66	5.45	11-Dec-09	27188.00	-4.15
50	17-Dec-09	539.21	-1.18	18-Dec-09	26893.00	-1.09
51	24-Dec-09	545.66	1.20	24-Dec-09	26813.00	-0.30
52	31-Dec-09	548.11	0.45	31-Dec-09	26763.00	-0.19
mean			**-0.36**			**0.48**
s.d.			**3.1194434**			**2.46934735**
correlation			**0.0076195**			

APPENDIX 11: weekly returns of NEPSE and Gold Futures, 2010

Week	Date	NEPSE Index	Return	Date	Gold Price	Gold Return
1	7-Jan-10	535.81		8-Jan-10	27069	
2	14-Jan-10	530.96	-0.91	15-Jan-10	27158	0.33
3	21-Jan-10	518.11	-2.42	22-Jan-10	26554	-2.22
4	28-Jan-10	515.24	-0.55	29-Jan-10	26205	-1.31
5	4-Feb-10	501.40	-2.69	5-Feb-10	25903	-1.16
6	11-Feb-10	497.24	-0.83	12-Feb-10	26470	2.19
7	18-Feb-10	485.14	-2.43	19-Feb-10	27112	2.43
8		485.14	0.00	26-Feb-10	26988	-0.45
9	4-Mar-10	514.04	5.96	5-Mar-10	27190	0.75
10	11-Mar-10	486.25	-5.41	12-Mar-10	26492	-2.57
11	18-Mar-10	475.80	-2.15	19-Mar-10	26580	0.33
12	25-Mar-10	466.09	-2.04	26-Mar-10	26314	-1.00
13	1-Apr-10	452.46	-2.92	1-Apr-10	26513	0.75
14	8-Apr-10	446.03	-1.42	9-Apr-10	26934	1.59
15	15-Apr-10	449.04	0.67	16-Apr-10	26538	-1.47
16	22-Apr-10	426.57	-5.00	23-Apr-10	26862	1.22
17	29-Apr-10	419.28	-1.71	30-Apr-10	27426	2.10
18		419.28	0.00	7-May-10	28716	4.71
19	13-May-10	457.81	9.19	14-May-10	29107	1.36
20	20-May-10	461.99	0.91	21-May-10	28811	-1.02
21	26-May-10	479.40	3.77	28-May-10	29512	2.43
22	3-Jun-10	482.34	0.61	4-Jun-10	29993	1.63
23	10-Jun-10	484.82	0.51	11-Jun-10	30051	0.19
24	17-Jun-10	474.63	-2.10	18-Jun-10	30190	0.46
25	24-Jun-10	463.45	-2.36	25-Jun-10	30095	-0.31
26	1-Jul-10	470.91	1.61	2-Jul-10	29642	-1.51
27	8-Jul-10	460.07	-2.30	9-Jul-10	29456	-0.63
28	15-Jul-10	477.73	3.84	16-Jul-10	29317	-0.47
29	22-Jul-10	469.34	-1.75	23-Jul-10	29234	-0.28
30	29-Jul-10	461.63	-1.64	30-Jul-10	28550	-2.34
31	5-Aug-10	458.41	-0.70	6-Aug-10	29147	2.09
32	12-Aug-10	454.68	-0.81	13-Aug-10	29709	1.93
33	19-Aug-10	442.05	-2.78	20-Aug-10	29978	0.91
34	26-Aug-10	432.74	-2.10	27-Aug-10	30227	0.83
35	2-Sep-10	420.46	-2.84	3-Sep-10	30374	0.49
36	9-Sep-10	414.43	-1.44	10-Sep-10	30211	-0.54
37	16-Sep-10	404.43	-2.41	17-Sep-10	30667	1.51
38	23-Sep-10	404.41	-0.01	24-Sep-10	30609	-0.19
39	30-Sep-10	403.15	-0.31	1-Oct-10	30770	0.52
40	7-Oct-10	411.82	2.15	8-Oct-10	31173	1.31
41	13-Oct-10	420.30	2.06	15-Oct-10	31766	1.90
42	21-Oct-10	421.12	0.20	22-Oct-10	31090	-2.13
43	28-Oct-10	424.90	0.90	29-Oct-10	31646	1.79
44	4-Nov-10	424.96	0.01	5-Nov-10	31862	0.68
45	11-Nov-10	424.79	-0.04	12-Nov-10	32149	0.90
46	18-Nov-10	425.42	0.15	19-Nov-10	32152	0.01
47	25-Nov-10	418.15	-1.71	26-Nov-10	32485	1.04
48	2-Dec-10	408.88	-2.22	3-Dec-10	33204	2.21
49	9-Dec-10	398.88	-2.45	10-Dec-10	32836	-1.11
50	16-Dec-10	392.04	-1.71	17-Dec-10	32807	-0.09
51	23-Dec-10	399.55	1.92	24-Dec-10	32797	-0.03
52	29-Dec-10	404.06	1.13	31-Dec-10	33196	1.22
Mean			**-0.52**			**0.41**
Std.dev			**2.5247434**			**1.46914**
Correlation			**0.1807018**			

Note:
21 to 25 feb No matchable buy and sell orders at NEPSE server
2 to 6 May No matchable buy and sell orders at NEPSE server

APPENDIX 12: weekly returns of NEPSE and Gold Futures, 2011

Week	Date	NEPSE Index	Return	Date	Gold Price	Gold Return
1	6-Jan-11	400.43		7-Jan-11	32603	

2	13-Jan-11	402.75	0.58	14-Jan-11	32400	-0.62
3	20-Jan-11	406.90	1.03	21-Jan-11	32518	0.36
4	24-Jan-11	410.34	0.85	28-Jan-11	32498	-0.06
5	3-Feb-11	406.82	-0.86	4-Feb-11	32442	-0.17
6	10-Feb-11	405.03	-0.44	11-Feb-11	32595	0.47
7	17-Feb-11	408.19	0.78	18-Feb-11	32892	0.91
8	24-Feb-11	397.46	-2.63	25-Feb-11	33500	1.85
9	3-Mar-11	395.43	-0.51	4-Mar-11	33718	0.65
10	10-Mar-11	389.80	-1.42	11-Mar-11	33563	-0.46
11	17-Mar-11	377.50	-3.16	18-Mar-11	33346	-0.65
12	24-Mar-11	376.67	-0.22	25-Mar-11	33292	-0.16
13	31-Mar-11	365.25	-3.03	1-Apr-11	33526	0.70
14	7-Apr-11	365.50	0.07	8-Apr-11	34182	1.96
15	13-Apr-11	373.20	2.11	15-Apr-11	34546	1.06
16	21-Apr-11	358.45	-3.95	22-Apr-11	35100	1.60
17	28-Apr-11	347.72	-2.99	29-Apr-11	36186	3.09
18	5-May-11	339.53	-2.36	6-May-11	34986	-3.32
19	12-May-11	346.44	2.04	13-May-11	35102	0.33
20	19-May-11	344.83	-0.47	20-May-11	35500	1.13
21	26-May-11	344.50	-0.10	27-May-11	36055	1.56
22	2-Jun-11	333.76	-3.12	3-Jun-11	36292	0.66
23	9-Jun-11	308.88	-7.45	10-Jun-11	36064	-0.63
24	16-Jun-11	303.53	-1.73	17-Jun-11	36178	0.32
25	23-Jun-11	364.40	20.05	24-Jun-11	35491	-1.90
26	30-Jun-11	336.68	-7.61	1-Jul-11	34637	-2.41
27	7-Jul-11	340.95	1.27	8-Jul-11	35745	3.20
28	14-Jul-11	362.85	6.42	15-Jul-11	36823	3.02
29	21-Jul-11	376.57	3.78	22-Jul-11	37001	0.48
30	28-Jul-11	363.14	-3.57	29-Jul-11	37134	0.36
31	4-Aug-11	357.64	-1.52	5-Aug-11	38686	4.18
32	11-Aug-11	352.65	-1.39	12-Aug-11	41062	6.14
33	18-Aug-11	352.54	-0.03	19-Aug-11	44121	7.45
34	25-Aug-11	346.92	-1.60	26-Aug-11	43079	-2.36
35	1-Sep-11	341.73	-1.50	2-Sep-11	44728	3.83
36	8-Sep-11	329.63	-3.54	9-Sep-11	45162	0.97
37	15-Sep-11	321.18	-2.56	16-Sep-11	44533	-1.39
38	22-Sep-11	327.57	1.99	23-Sep-11	41934	-5.84
39	29-Sep-11	331.40	1.17	30-Sep-11	41621	-0.75
40	2-Oct-11	331.37	-0.01	7-Oct-11	41990	0.89
41	13-Oct-11	333.47	0.64	14-Oct-11	43050	2.52
42	20-Oct-11	328.19	-1.59	21-Oct-11	42704	-0.80
43	25-Oct-11	327.99	-0.06	28-Oct-11	44184	3.47
44	3-Nov-11	343.55	4.74	4-Nov-11	44757	1.30
45	10-Nov-11	331.78	-3.43	11-Nov-11	46279	3.40
46	17-Nov-11	329.39	-0.72	18-Nov-11	45849	-0.93
47	24-Nov-11	324.54	-1.47	25-Nov-11	45443	-0.89
48	1-Dec-11	322.84	-0.52	2-Dec-11	46733	2.84
49	8-Dec-11	320.25	-0.80	9-Dec-11	46689	-0.10
50	15-Dec-11	316.27	-1.24	16-Dec-11	44028	-5.70
51	22-Dec-11	312.94	-1.05	23-Dec-11	44488	1.04
52	29-Dec-11	316.02	0.98	30-Dec-11	43947	-1.22
Mean			**-0.39**			**0.62**
Std. Deviation			**3.844557**			**2.430783165**
Correlation			**-0.03773**			