



INFLATION HEDGING CHARACTERISTICS OF
GOLD, REAL ESTATE AND STOCKS UNDER
FIAT MONETARY SYSTEM

BY

BATYR KOMURZOEV

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Kulliyyah of Economics and Management Sciences
International Islamic University
Malaysia

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ABSTRACT

Inflation is an inevitable part of the current economic and financial system. While the rates of inflation might be different among countries, depending on the management of the economy, one thing common about inflation in various countries is its persistency. The persistency of inflation can only be due to the continuous increase in the money supply at a rate higher than the production of goods and services, which is a common feature of the fiat monetary system that the world economies have adopted today. Faced with continuous inflation, individuals and businesses are forced to hedge against inflation by investing in various assets, rather than keeping their wealth in the form of cash. The current study adopts OLS analysis and cointegration techniques to test gold, real estate and stocks as a hedge against inflation, using quarterly data of six countries for the period from 1991 to 2008. The assets are selected as proxies of both real and financial assets while countries are selected with the objective of presenting countries with different rates of financial and economic development in order to analyze and compare the performance of each asset as a hedge against inflation. The results of the empirical analysis indicate that gold is a good hedge against inflation in most of the cases as compared to real estate and stocks. It performs well as an inflation hedge in both developed and developing economies, but in long run only. Real estate, on the other hand, presents a good inflation hedge in developing countries and mostly in the long run, while stocks as a hedge against inflation performed well in developed countries and mostly in the short run only.

ملخص البحث

يعد التضخم شيئاً لا يمكن الفرار منه في النظام المصرفي والاقتصادي، وقد يكون مستوى التضخم متفاوتاً بين البلدان المختلفة، وذلك بسبب الإدارة الاقتصادية لتلك البلدان، حيث نجد أن الإطار العام للتضخم في الدول المختلفة يعود إلى مستوى الثبات في التضخم الذي يمكن أن يعود سببه إلى الزيادة المتواصلة في الدعم المالي بدرجة أعلى من مستوى الخدمات والبضائع التي تعتبر أشكالاً للنظام النقدي الرسمي الذي يقوم على أساسه الاقتصاد العالمي المعاصر. ولمواجهة التضخم المتواصل فلا بد للأفراد والشركات أن تحتاط عبر الاستثمارات في الأصول المالية المختلفة، وعدم الاحتفاظ بهذه الثروات على شكلها النقدي. والدراسة الحالية تتبنى عملية سك العملة المشتركة وأسلوب تحليل المتكامل المشترك لاختبار تحوط الذهب والعقارات والأسهم ضد التضخم، عبر استخدام بيانات تفصيلية لست دول من سنة 1991م إلى سنة 2008م. وقد تم اختيار هذه الأصول بوصفها ممثلة للأصول الحقيقية والمالية، وتم اختيار البلدان المختلفة لتمثيل هذه البلدان المستويات المالية والاقتصادية المتنوعة، بهدف تحليل ومقارنة تلك الأصول المالية بوصفها من وسائل الحيلة تجاه التضخم. وقد أكدت الدراسة على أن الذهب من الأصول التي تقف مانعة أمام التضخم، مقارنة بالعقارات والأسهم في معظم الحالات، وتؤكد كذلك على أنها سراج ولكن على المدى البعيد فقط ضد التضخم في كل المجالات الاقتصادية المتقدمة والنامية. وتعد العقارات من جانب آخر سراجاً مناسباً في الدول النامية على المدى البعيد، بينما تعد الأسهم سراجاً جيداً أمام التضخم في الدول المتقدمة على المدى القريب.

APPROVAL PAGE

The dissertation of Batyr Komurzoev has been examined and is approved by the following:

Ahamed Kameel Mydin Meera
Supervisor

Mohd Shabri Abd. Majid
Co-supervisor

Mohd Mahyudi Mohd Yusop
Internal Examiner

Abdul Ghafar Bin Ismail
External Examiner

Nasr Eldin Ibrahim Ahmed Husein
Chairman

DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references and a bibliography is appended.

Batyr Komurzoev

Signature:

Date:

INTERNATIONAL ISLAMIC UNIVERSITY
MALAYSIA

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REAL ESTATE AND STOCKS UNDER FIAT MONETARY SYSTEM**

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To my beloved parents

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CHAPTER 1

INTRODUCTION

1.1 OVERVIEW OF THE ISSUES

Inflation is a common feature of the world's economies although it varies among different countries and different times. It can be defined as a persistent general increase in the price level of all goods and services in a given economy. Inflation is a situation where aggregate demand for all goods and services exceeds their aggregate supply. The excess of aggregate demand over aggregate supply could be due to increased demand of goods and services caused by increased spending or due to the shortage of goods and services caused by increased cost of production.¹ The persistence of inflation, on the other hand, can be explained only by a continuous increase in money supply, while factors like increased spending or higher cost of production can explain only the initial shock of inflation (Friedman, 1970). Thus, the continuous inflation stems from the continuous monetary expansion.

The current fiat monetary system allows money supply to expand continuously and, therefore, the ultimate cause of inflation is said to be the nature of money that we use today (Kameel, 2002). The paper money that we use today has no intrinsic value. Instead, the value of the money is determined by the confidence that people have in its value. The people's confidence, in turn, is determined by the actions of the central bank. To keep inflation low, the central bank must ensure that the growth in demand does not get ahead of the growth in what the economy can produce. This is in contrast to the bimetallic monetary system that existed for centuries prior to the adoption of the fiat monetary system. In bimetallic monetary system gold and silver were used as a

¹ The first case is called demand-pull inflation while the second case is cost-push inflation.

medium of exchange which meant limited money supply due to the scarcity of those precious metals and the high cost involved in extracting them from the earth. Inflation, in the form of continuous increase in the general price level as we are experiencing today, did not exist in times when gold and silver were used as a medium of exchange (Kurtzman, 1993).

In times of low rates of inflation, the effects of inflation are largely ignored. However, as the rate of inflation increases, people become more precautionary about the effects of inflation and try to diversify their assets by holding less cash and buying various other assets, both real and financial, whose prices are expected to go up together with the rise in general price level.² There are a number of such assets that are considered to be effective hedge against inflation which include stocks, real estate and precious metals. Among these assets gold has obtained a traditional role as a hedge against inflation and as a safe haven asset (Sherman, 1986). In times of political and economic uncertainty, investors increase their holdings of gold and gold related assets because of the metal's tendency to increase in price or to at least hold in value in terms of purchasing power when the prices of other assets are falling.

There are numerous studies that looked into various financial and real assets as a hedge against inflation. For example, Nelson (1976), Jeffrey & Mandelker (1976) and Stulz (1986), among others, have analyzed the relationship between common stock and inflation in USA and found that common stocks are not a good hedge against inflation, while Gultekin (1983) looked into USA stock market returns and inflation forecasts and found a positive relationship indicating to positive inflation hedging characteristics of stock markets. In a study of real estate, Rubens, Bond and Webb (1998) have examined the inflation-hedging effectiveness of USA residential

² Inflation is also a great concern for the long term investments because it erodes the real returns accruable in the future.

real estate, farmland and business real estate as individual assets and in a portfolio context and found that only farmland and residential real estate provide complete inflation hedge.

Other works looked at the inflation hedging property of various assets on the international basis. For example, Mandelker and Tondon (1985), and Peel & Pope (1985) carried out studies that analyzed the relationship between common stocks and inflation on an international basis. The results were different and varied in each country of analysis. Similarly, Lothian J. and McCarthy C. (2001) examined data for stock prices and price levels of 14 developed countries during the post-WWII era and compared their behavior in that sample with behavior over the past two centuries in UK and USA. The results showed that nominal equity prices do, in fact, keep pace with movements in the overall price level. However, that is only the case over long periods.

More recent studies on the subject of hedging against inflation is the work by Mohd Shabri (2006), who explored the relationship between real stock returns and inflationary trends in the Indonesian economy for the period between 1983 and 1997. The study found a negative relationship between real stock-returns and inflationary trends, implying that stock market in Indonesia does not provide a good hedge against inflation. The author highlighted that the results contradict the Fisher hypothesis that asserts the independence of real stock returns and inflation. At the same time, the author found that the negative relationship between real stock returns and inflation in the Indonesian stock market cannot be fully explained by Fama's proxy hypothesis, which states that the negative relationship between real stock returns and inflation is indirectly explained by a negative real economic activity-inflation and a positive real stock returns-real economic activity relationship. The author highlighted that the

positive real economic activity-inflation and the negative real stock returns-real economic activity relationship found in his study is consistent with the Mundell-Tobin hypothesis which states that an increase in expected inflation causes a shift from money to financial assets including stocks thereby reducing interest rates and stimulating real economic activity (Ram and Spencer, 1983).

Despite the fact that there are numerous studies on the subject of hedging against inflation using various assets individually, there is limited literature that carries multi assets and cross country analysis. The current study carries out such analysis and looks into three assets, namely gold, real estate and stocks, using data from 6 different countries and tries to determine which of these assets play a better role in hedging against inflation and do the results significantly vary among these countries.

1.2 STATEMENT OF THE PROBLEM

The demise of the Bretton Woods system brought much volatility to the world financial markets. Money backed by gold was replaced with currency without any underlying value which allowed the governments to create it freely. Excess supply of money, however, caused inflation that continued to rise in each country although at different levels. Therefore, as mentioned earlier, the ultimate cause of inflation and volatility of the financial markets is in the nature of money that we use today.

The negative consequences of inflation are well known. One of the major effects of inflation is its impact on the long-term investment. While future cash flows and prospects of business are difficult enough to predict on their own, uncertainty over the purchasing power of the currency makes future forecasting even more difficult. Also, there is always a danger that continuous inflation due to ever increasing money

supply can lead to financial crises that affect the real economy where goods are produced and services are provided. Among other consequences of inflation include the fact that creditors lose and debtors gain if the lender does not anticipate inflation correctly.³ Inflation also imposes additional cost to the companies such as costs of re-pricing, i.e., updating price list and menus. In a society, inflation shifts purchasing power to the rich without any economic or political constraints.⁴ In addition, inflation can undermine the concept of economic value, demoralize people, create resentment and pessimism, and cause unethical business behavior (Beckman, 1992).

Faced with the negative effects of inflation, individuals and businesses are forced to continuously hedge their positions in order to avoid the loss of purchasing power of their assets. While the main objective of holding any investment or a portfolio of investments is to provide an investor a positive real rate-of-return, an equally important objective can be to protect an investor against loss of purchasing power due to inflation. During periods of higher than expected inflation, certain financial and real assets not only do not protect the investor, but actually lead to the negative real rate-of-return. Thus, the objective of preserving real purchasing power, referred to as hedging against inflation, becomes more important as the inflation rises.⁵ The question is what assets are more effective as a hedge against inflation and does the performance of these assets differ among countries. The current study tries to answer these questions by analyzing gold, real estate and stocks in six different countries. The assets are selected with the objective of capturing both real and

³ People receiving fixed incomes face a decline in the purchasing power of their incomes and consequently their standards of living.

⁴ This is because rich people can afford to hold assets such as land and property whose value increases together with the increase in general price level, while poor live on rent with fixed salaries that always lag behind as the general price level rises.

⁵ High inflation rate is normally a sign that government has little control over inflation and during such times it is difficult to predict inflation, thus making assets with inflation hedging characteristics more attractive.

financial assets while the countries are selected with the objective of analyzing countries with different rate of financial and economic development.

1.3 PURPOSES OF THE STUDY

The main objectives of this study is to find out whether investing in gold, stocks and real estate can be an effective hedge against it. Hedging in the context of this paper refers to the investment in various assets, whose prices rise together with the rising general price level thereby protecting an investor against a loss of purchasing power due to inflation. Some of the main questions that the empirical analysis of the current study attempts to answer are as follows:

1. Does gold, real estate or stocks represent a good hedge against inflation?
2. Do the results significantly differ among different countries analyzed?
3. Is the inflation hedging ability of assets for the long term or short term?

The study carries out empirical analysis using quarterly data of gold, real estate and stocks in USA, UK, Australia, Hong Kong, Singapore and Malaysia, over a period of 18 years ending 2008. The assets are selected to represent both real and financial assets, while countries are selected to represent countries with different rate of financial and economic development. The main objective is to analyze and compare the performance of each asset as a hedge against inflation in different types of economies. The study uses OLS analysis in order to analyze the relationship between inflation and each of the three assets and cointegration techniques with VECM estimates to test for the existence of any long run equilibrium relationship between inflation and the price of gold, inflation and stock market indexes and inflation and real estate prices using data from six countries included in the analysis.

The focus point of this study is that gold and real estate provide an effective hedge against inflation as compared to stocks. This is in line with the understanding that investing in gold and other physical assets are the best way to hedge against inflation because rising prices reduce the returns of purely financial assets like stocks and bonds. Among the physical asset, gold has a priority because it is durable, relatively transportable, universally acceptable and easily authenticated. The intrinsic values of the gold contribute to its value as a real asset. Gold has a high value to weight ratio, as compared to other perceived hard assets, which makes it possible to transport a significant amount of value across markets with relative ease. Unlike other assets, gold is virtually indestructible; it does not tarnish and is not corroded by acid (Green, 1993).

1.4 CONTRIBUTIONS OF THE STUDY

Most of the studies on inflation are concluded with suggestions on what measures can be taken by the government to curb inflation by using monetary and fiscal policies. These solutions are from the government's perspective. The current study, on the other hand, aims to provide solutions to inflation from the public's perspective and tries to find out what assets can provide the best hedge against inflation.

Due to the seriousness of the subject of hedging against inflation, there are numerous studies that considered various assets individually or for a certain country. However, there is lack of studies that carry out cross country analysis with various assets (both financial and real) and the current study is aimed at providing such input in the literature. The study looks into gold, real estate and stocks using data from 6 different countries and tries to determine which of these assets play a better role in

hedging against inflation and do the results significantly vary among these countries.⁶ The assets are selected to represent both real and financial assets, while the countries are selected with the objective to analyze countries with different rate of economic and financial development. The study is expected to help individuals in determining which assets to choose for investing as a hedge against inflation and how their decision might be different depending on the type of the economy they are investing.

In analyzing the effectiveness of gold, real estate and stocks as an inflation hedge, the study uses “Implied Inflation” as an alternative measure of inflation, in addition to the normal measure of inflation, i.e., Consumer Price Index. The main reason for using Implied Inflation is because the normal CPI is considered to have many shortcomings in determining the actual inflation. Thus, the currently study determines the inflation hedging characteristics of gold, real estate and stocks using both normal and alternative measure of inflation.

1.5 SCOPE AND LIMITATION OF THE STUDY

The current study has, at least, two limitations that make the analysis not as comprehensive as desired. Firstly, when analysing the hedging characteristics of the real and financial assets, the study mainly focuses only on the relationship between the inflation and prices of gold, real estate and stocks. However, the factors that lead to that relationship are not looked at since such analysis is beyond the scope of the study.

Secondly, the price indices included in the study might not represent the true price levels. For example, as an indication of the general price level, the study uses Consumer Price Index (CPI) of each country of analysis. However, CPI might not

⁶ The assets of gold, real estate and stocks are chosen with the objective to represent various types of assets. Gold represents an asset of its own kind, independent from the economic performance or government actions. Real Estate Price Indexes are used as a proxy of real assets such as property, factories and other hard assets. Stock Price Indexes are used as proxy of financial assets.

represent the actual inflation rate because it has a number of weaknesses inherent in the way it is calculated like including the prices in the urban areas only or taking too long before newly introduced goods and services are included in the basket of goods used to calculate the CPI. Similarly, for the stock prices, the study uses a single stock market index, for example S&P 500 Composite Index for USA stock market without taking into consideration all types of indices and other stock market indicators available in the country surveyed. The home price indexes are also the general price level of the home prices in the economy while investment in a certain property in certain area might not be as good as the general home price index suggests.⁷ In case of CPI, however, the study partially solves the problem by introducing “Implied Inflation”, which is derived from the equation of exchange.

1.6 ORGANIZATION OF THE STUDY

The current study is organized in seven chapters. Chapter 2 provides understanding of inflation based on the literature review and theories and highlights practical implications of inflation to the economy and people. Chapter 3 talks about the nature of the current monetary system, its evolution and its implication to the economy and wealth of people. Chapter 4 reviews the selective relevant literatures on the subject of hedging against inflation and econometric methods and techniques adopted by the past studies in testing inflation hedging characteristics of various assets. Chapter 5 describes the methodology and hypotheses of the current study followed by chapter 6 that presents the results of empirical analysis. Finally, Chapter 7 concludes the study

⁷ In fact, this study gives the results based on general price levels while the outcome or the effectiveness of individual investment in these assets depends on other factors specific to the chosen investment portfolio.

by highlighting the main findings of the analysis, describing its policy implications, and making suggestions for further analysis.

CHAPTER 2

UNDERSTANDING INFLATION

2.1 INTRODUCTION

Inflation is one of the most widely discussed topics among economists. It may be defined as a continuous and persistent increase in the general price level in a given economy. It is a situation where aggregate demand for all goods and services exceeds their aggregate supply. Such excess could be due to increased demand of goods and services caused by increased spending or due to the shortage of goods and services caused by increased cost of production. The first case is referred to as demand-pull inflation while the second case is cost-push inflation (McConnell and Brue, 1996).

Factors leading to demand-pull or cost-push inflation explain the initial shock of inflation only. The persistence of inflation, on the other hand, can be explained only by a continuous increase in money supply. This view is in line with the view of monetarism which is mainly associated with the works of the Noble Price winner economist Milton Friedman.⁸ According to them, all inflation stems from increased demand for goods and services that is caused by monetary expansion. Rising costs might lead to rising prices in some markets, but they cannot do so unless the quantity of money in the economy is growing (Buttler, 1985). Therefore, inflation is said to be a fundamentally monetary phenomenon. The ultimate cause of inflation and volatility in financial markets can be said to be in the nature of the money that we use today (Kameel, 2002). The paper money that we use today has no intrinsic value. Instead, the value of the money is determined by the confidence that people have in its value.

⁸ Milton Friedman and Anna Schwartz in their influential book, *Monetary History of the United States 1867-1960*, argued that inflation is always and everywhere a monetary phenomenon.