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COMPARATIVE STUDY OF STOCK MARKET WITH GOLD PRICES AND INDIAN ECONOMY

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INTRODUCTION

In this paper we discuss the trends of the Indian Stock market with respect to gold and the Indian economy. Our primary objective was to observe the trends of Stock market and gold only but since there's a lot more that affects the stock market other than gold prices, we found it appropriate to include Indian Economy in comparison as well. Another reason for doing so, is that the gold prices are determined by the international demand and supply of the commodity. This implies that even though the stock market and the economy of India might be low or high, this doesn't necessarily equate to any change in the gold price unless the change is due to global activity. In order to capture the trends of gold during covid 19, we first observed the trends of Gold prices , stock market and the Indian economy during previous recessions. For this study we took the recession of 1991 also known as the Indian Economic Crisis, The Global Financial Crisis (2008) and then we proceed to look at the trends of all three during the 2020 Covid pandemic crisis. Since it is next to impossible to calculate monthly data of GDP in a nation as big as India, instead we used high frequency indicators in its place like core growth and IIP or the Index of industrial performance to measure the productivity or the performance of the economy. In order to measure the performance of the Indian stock market we used a composite index known as sensitivity index or SENSEX.

LITERATURE REVIEW

- *Dynamic correlation between stock market and oil prices: The case of oil-importing and oil-exporting countries - George Filis, Stavros Degiannakis and Christos Floros*

Shows that oil price shocks result in a negative effect across all stock markets, with the 2008 crisis being the only exception (it had a time-lagged positive correlation). The oil market should not be used as a haven for finances in terms of global crises.

- *Dynamic linkages among oil price, gold price, exchange rate, and stock market in India – Anshul Jain and Pratap Biswal*

Empirical evidence suggests that fall in gold and crude oil prices lead to fall in the Rupee and by extension- the stock market i.e. Sensex.

- *Macro economy, stock market and oil prices: Do meaningful relationships exist among their cyclical fluctuations? – George Filis*

This study centered on Greece suggests that oil prices and stock market have a positive effect on the consumer price index. No relationship to be established between the industrial production and the nation's stock market.

- *Does Stock Market Development Cause Economic Growth? A Time Series Analysis for Indian Economy - Soumya Guha Deb and Jaydeep Mukherjee*

Stock market growth does lead to growth in the economy. There exists unidirectional causality between stock market movement and movement in the real GDP growth in the Indian context. The money raised in the financial market plays a huge role in the growth of India's economy.

- *Causal relations among stock returns and macroeconomic variables in a small, open economy – Øystein Gjerde and Frode Sættem*

Based on Norwegian data, it is consistent with studies on other countries. There are repercussions to changing real interest rates on both stock markets and inflation. The stock market also responds, albeit with a delay, to changes in oil prices. The same goes the other way around – changes in domestic activity show delayed responses in the stock market.

- *Spillover of COVID-19: Impact on the Global Economy - Peterson K Ozili and Thankom Arun*

By increasing the number of days that the lockdown was imposed, economic activity and financial activity suffered greatly. It was a dilemma between choosing to save the lives of the people or saving the economy which will impact the people in the future.

- *Lockdown and GDP Contraction in India: A National Income Perspective - Gopal K. Basak, Pranab Kumar Das and Sandip Sarkar*

The GDP suffered great losses (67.78%) over that of no lockdown GDP. It was calculated using private final consumption expenditure. Thus significant contractions affecting both demand and supply in the byproduct of the crisis.

- *Growth Record of the Indian Economy, 1950-2008: A Story of Sustained Savings and Investment – Rakesh Mohan*
- *Gold Price Volatility and Stock Market Returns in India - P.K. Mishra, J.R Das and Santosh Kumar Mishra*

By analyzing BSE 100 index in relation to domestic gold prices, this paper attempts to find a relationship between the two variables. It was found that they have significant relations to each other. Knowing one variable can help to reliably predict the other variable. This was done so by using the Granger causality test.

- *A Contrary View on Indian Economic Crisis of 1991 - Ashutosh Kolte and Biagio Simonetti*

The fall of the USSR (heavy importer of oil to India) hurt India's exports and scrambled India's rupee trade. The Gulf War increasing oil prices and devaluing the currency led to costly imports and very high inflation. The country going through such a tough time was because of the government failing to accumulate sufficient Foreign Currency Assets. It wasn't an overnight problem but instead a slow buildup of economic reforms and political instability that led to the problem.

- *What Caused the 1991 Currency Crisis in India? - Valerie Cerra and Sweta Chaman Saxena*

Increasing government spending depreciates the real exchange rate, this opens up the economy to more investors and foreign investment. Current account deficits were significant in the 1991 crisis, this led to investor confidence falling. By using Granger and Gonzalo's method, it was determined that the Rupee was overvalued at the height of the crisis.

- *Policy response to the economic challenge from COVID-19 in India: A qualitative enquiry - Gagan Deep Sharma, Gaurav Talan and Mansi Jain*

The government must put together stimulus packages for the public till the time a reliable vaccine or cure isn't developed as a stop-gap measure. Policy measures on economic, financial and medical policies must be put in place to interact with each other effectively and try to minimize the damage caused by the pandemic. According to the SBI's chief economist, Saumya Kanti Ghosh a stimulus of Rs. 3.55 trillion is needed.

- *The COVID-19 lockdown in India: Impacts on the economy and the power sector - Tejal Kanitkar*

India's economic losses for the year 2020-21 can be estimated to be anywhere between 10%-31%. India's primary sector-agriculture is expected to experience losses of 9%-28%. The World Bank has its own predictions of the growth rate slowing down to 1.5%-2.8%.

- *STUDY ON DYNAMIC RELATIONSHIP AMONGGOLD PRICE, OIL PRICE, EXCHANGE RATE ANDSTOCK MARKET RETURNS – K.S. Sujit and B. Rajesh Kumar*

The stock market is definitely influenced by variables like gold, oil prices and exchange rates. A weak relationship can be reliably established among the variables.

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STATUS OF KNOWLEDGE

The 1991 Economic Crisis

The 1991 Economic Crisis in India originated as a result of poor economic policies and the trade deficits that resulted from them. The problem started when the in the year of 1985 the imports swelled and exports went down the investors at that time also took their money out of the market. The economy was already under a large fiscal deficit, combined with trade balance deficit in the economy. The Gulf War also showing its impact on the Indian economy as oil prices spiked and the government could not afford to finance its imports for more than 3 weeks.

All this led the government to default on its own financial obligations, because of which Moody's downgraded the countries' bond ratings making it further impossible for the Indian government to seek short term loans, which further intensified the economic problem of the country. The World bank and the International Monetary Fund also stopped their assistance leaving with nation's gold as the only way to finance its payments to avoid defaulting on payments. with a total debt of $72 billion to the World Bank. To prevent defaulting that, India secured a loan of $2.2 billion by giving away 67 tonnes of India's gold reserves to the Bank of England and Switzerland. This move would prove to be the difference between the economy tanking and surviving. After this, forex reserves would improve to Rs. 1000 crore.

Recovery:

Opening up of industries for private players: Liberalization

The government at that time took a loan of 2 billion dollars against its gold. This made India adopt new set of policies which later came to be known as **liberalization**. Under these new policies the government adopted new set of regulations, under which the government lifted its excess market controls and tight regulations on industries which lead to a free market Economy. Many industries like Iron and steel, power generation, aviation, ship building, heavy machinery was open for private players to invest in.

This gave a clear indication that the government wanted a greater participation by the private sector in the key areas of the economy. But still there were six industries which still continued to be reserved under public sector. The new policy also changed the role of the public sector. The resources in the Public Sector were now to be allocated towards development of strategic and high technology industries and key infrastructure areas and for social sector such as education and public health and poverty alleviation programs.

Licensing system abolition:

The new policy also abolished licensing for all but 15 type of industries, for which license was still required. These included essential industries for security and safety purposes, protection of the environment. Even for these industries the guidelines and licensing process were relaxed.

Privatization of public sector Enterprises: Privatization

This introduced that the government should not operate commercial enterprises. The government can sell its enterprises completely to the private sector or disinvest a part of its equity and give it to the private sector or open market.

This allowed the government to gather good amount of resources which it later used to strengthen the public sector enterprise which had a good potential. These resources were also later used to pay back public debt.

Globalization:

Up until 1991 the foreign investment in India was regulated very tightly in India. For any sort of foreign technology agreement sought the Indian firms needed prior approval by the government at that time. This hampered the decision-making businesses at that time of the firms that needed foreign technology at that time.

But under the new policy the government firms received automatic approval to make agreements related to foreign technology in India.

In order to open up the economy under the new policy quantitative restrictions like licensing for imports had been removed. To promote competitiveness and efficiency, the import duties were also relaxed to 20 percent.

2008 Financial Crisis

The crisis of 2007-08 was the worst US disaster since the Great Depression of 1929. It would originate in the States, before wreaking havoc across the world economy. The global financial crisis started surfacing in US in August of 2007. It proceeded to wipe out nearly $8 trillion in value from the US stock market alone and $9.8 trillion in wealth from American citizens as the value of their homes would proceed to plummet.

How the economic crisis originated in the USA

The financial crisis was set in motion after the collapse of a housing bubble which was being created through a subprime mortgage problem. CDOs or the **Collateralized Debt Obligations** are considered to one of the biggest reason for the crisis. Everything started when the Federal funds rate was lowered from 6.5% in May 2000 to 1% in June 2003. This move would flood the country with cheap credit and everyone was out to buy homes and fulfill the American Dream. The loans taken out were then sold to Wall Street institutions in the form of low-risk financial instruments. A considerably large market was formed where these subprime loans were originated and traded.

Increasingly easy initial terms and the thinking that houses continually go up in prices, encouraged everyone to take out loans; they thought these could be easily refinanced in the future. However, the securitization process was not performed diligently in many cases, this led to increase in the number of dishonest borrowers or the borrowers who came with the intention to default. when interest rates would rise and home prices would fall, people were unable to refinance. These loans would default and foreclosure activity would go up. With house prices falling, the demand for the said securities would also disappear and their prices would also fall. This whole situation led to a wide scale cycle of defaults in the financial system which ultimately led to a collapse in the system.

How it affected India

The global recession would start in December 2007 and its impact on India was initially muted. GDP growth started to slow from 9% in 2007 to 7.8% in April-September 2008. This would decrease drastically after Wall Street's collapse to 5.8%. However, it exceeded the World Bank's predictions of 4% growth in 2009. So India did suffer, but not as much as its Western counterparts and other South Asian Economies. How did India somewhat avoid the complete catastrophe that was the 2008 financial crisis?

- One of the most critical reasons for this is that the Indian economy was less dependent on exports and imports and most of the contribution to its GDP was domestic.
- Indian financial institutions avoided mortgage-backed financial instruments and securities that failed and destroyed financial institutions in the US.
- While merchandise exports did suffer and fell by approx. 30%, service exports remained untouched and didn't budge, this was an important cushion to the GDP.
- FDI's remained high despite the global crisis. Financers reversed their financial flows into India, and would invest into plants, factories and ongoing projects.
- The Reserve Bank didn't tighten the monetary policy to save the currency. Instead the Bank lowered interest rates and expanded credit. Demand was encouraged through the use of fiscal policies. This combination of fiscal and monetary policies proceeded to cushion the shock to the economy.

2020 Covid-19 Crisis Measures:

Category	Measures Taken
General Information	Two separate economic relief packages were announced: • INR 1.7 trillion on 26 March by the Finance Minister • INR 20 trillion on 15 May by the Prime Minister
Tax Measures	*Direct Tax* • No penalty and prosecution shall be sanctioned. • Complete tax deduction to all donations made towards PM Cares FUND. • TDS for non-salaried payments to residents reduced by 25% for the rest of the financial year. • Refunds to all charitable trusts and non-corporate businesses will be issued at immediate notice. • Due date of all income tax return extended from 30 Sep 2020 to 31 Oct 2020. *Indirect Tax* • Option to defer tax payment and GST filing to 24 June 2020 without penalty or fee. • Issue all GST and Customs refunds immediately. • Postponing direct tax payment deadline to June 30, 2020 without additions. • Postponement of filing GST returns and all related payments.
Employment and Compensation	• Farmers receiving INR 6000 every year through the PM-KISAN scheme in three equal payments will receive the first installment upfront. • MGNREGA wage increased from INR 182 to INR 202. • Medical insurance of INR 50 lakhs per healthcare worker. Covers 2 million workers. • 200 million Jan Dhan account holders given INR 500 per month for the next 3 months. • Welfare fund of INR 310 billion to be used for those facing economic disruption during lockdown.
Economic Stimuli	• Repo rate dropped from 5.15% to 4.4%. • CRR reduced to 3% from 4% for 1 year. • Liquidity coverage ratio for banks reduced to 80% from 100%. • All these measures are expected to release a liquidity of INR 4.74 lakh crore.

	• All lending institutions allowed to have a moratorium of three months on repayment of installments for terms loans. Similarly deferment of 3 months of payment of with interest.
Relief for Institutions	• INR 3 lakh crore collateral free loan to MSMEs. • MSME dues to be cleared in 45 days. • INR 30k crore liquidity infusion for NBFCs. • INR 45k crore partial credit guarantee scheme for NBFCs

METHODOLOGY

A secondary data approach will be used in this paper whose data will be sourced from various sources like BSE, MOSPI, Ministry of Commerce & Industry, United Nations World Bank, Statista etc. Data for the following variables will be collected and examined for any correlations and relations with the stock market:

- S&P BSE SENSEX closing points
- Gold Prices
- 8 Core Industries Index (part of the Index of Industrial Production)
- Index for Industrial Production

All these variables will be tracked over a period of time and their MoM growth rates will be compared to the MoM growth rates witnessed in the S&P BSE SENSEX index. Prevalent trends, patterns during times of crisis (1991, 2008, and 2020) and otherwise will be studied. For the current ongoing pandemic, reliable data to measure economic wellbeing wasn't possible; so a proxy variable in the form of 8-core industries index was chosen. Statistical methods will be applied will be applied to determine the strength, direction of the implied relationship.

VARIABLES USED

Gold

Gold has been seen as a store of value by many Indians for centuries as it has its roots deep within the Indian culture. Gold is used in many functions and customs as well. For example, in Indian weddings gold is used as gift from one family to another. Gold adds significant value to a nation's economy by generating employment. It contributes greatly to trade balance between countries and foreign exchange earnings. It has been estimated to contribute over $30 billion directly to the Indian economy. In the past gold is also notorious for being used as a hedge and a safe haven for many investors. This leads us to believe that price fluctuations in gold has financial as well as socio and economic consequences given its deep-rooted history with the country. But since gold prices are determined by global demand and supply, we do not expect to see much fluctuations in the overall percentage change in price of gold.

Eight-Core Industries

This production volume index is derived from the IIP (Index of Industrial Production) which comprises 40.27% of the weight of items included in it. The 8 core industries are – coal, crude oil, natural gas, refinery products, fertilizers, steel, cement and electricity. These sectors and their weightage index are given below. These have a profound impact on the economic and industrial activity.

Industry	Percentage
Coal	10.35%
Natural Gas	8.98%
Crude Oil Production	6.88%
Petroleum Refinery	28.04%
Fertilizers	2.63%
Steel	17.92%
Cement Production	5.37%
Electricity Production	19.85%
Total	**100%**

Figure 2 – Eight Core Industry composition

It’s chosen as a variable for analysis because it’s an important high frequency economic indicator (indicators whose observations are taken on a regular basis). Since the COVID crisis is still ongoing and it’s really difficult to gather effective measures of economic health, a proxy variable in the form of eight-core industries was chosen.

SENSEX

Movements in stock prices cause great movements in the economy. An increase in the prices increases the confidence among the public. Public spending and investor confidence get boosted, feeding into more economic development in the country. A fall in prices causes people to be wary of their spending and invest in low-risk, low-reward assets. This further depresses the state of the economy.

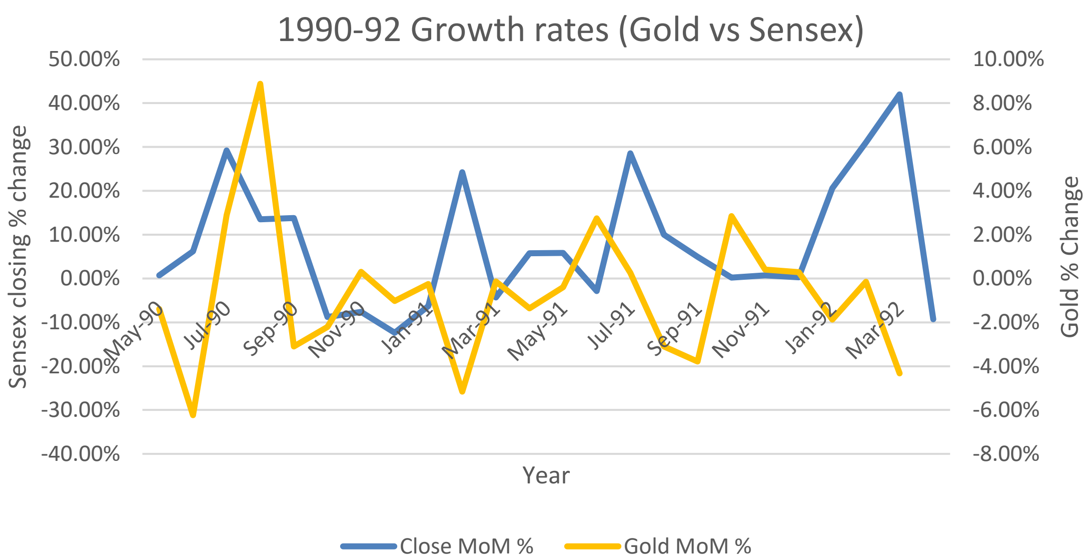
SENSEX (**Sens**itivity Ind**ex**) is a free-float stock market consisting of 30 established and sound companies listed on the BSE. These companies are some of the most actively traded companies and represent various sectors across the country.

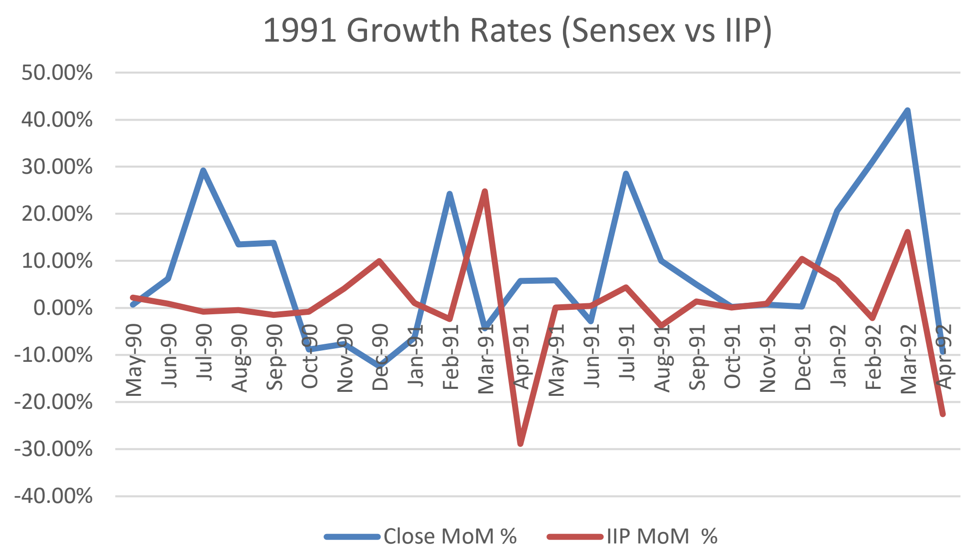
Index for Industrial Production

It's an index which shows the growth of multiple sectors in the Indian economy. It's a short term indicator for the economy's growth through industries. Its base value is 100 and is calculated on the basis of the base year. It's published every month by the Central Statistics Office by the Ministry of Statistics and Programme Implementation. Data is sourced from 16 different ministries and administrative departments and then compiled by MOSPI.

ANALYSIS

<u>1991 Indian Economic Crisis:</u>

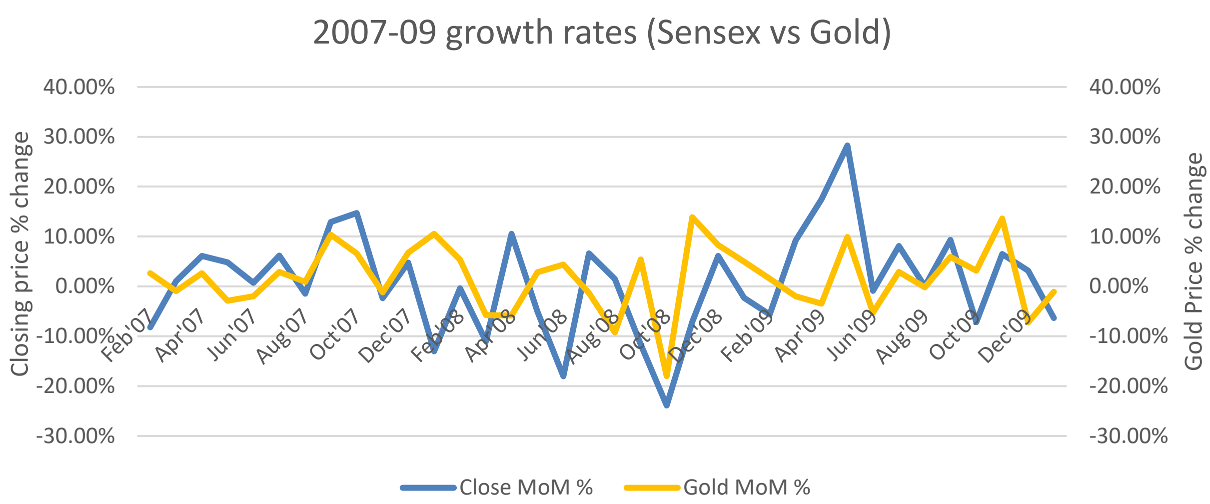


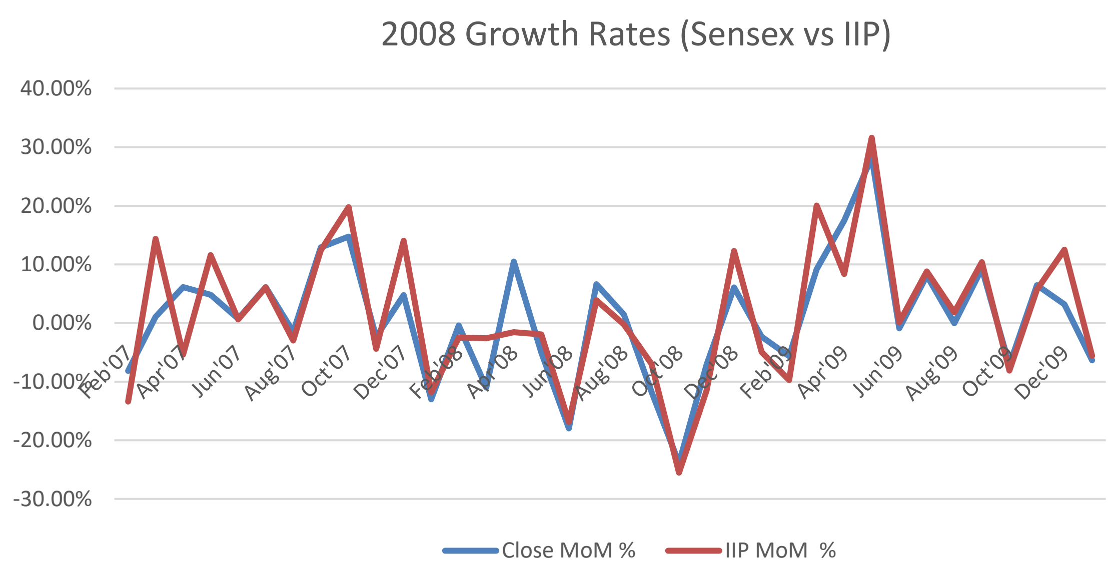


As we can see it is pretty evident that Gold price growth rate has been lower when Sensex was on rise. Since Gold is an **independent variable** here and whenever the gold prices went down it was due to major **global event** but in case of Sensex it was mostly contributed to internal and international events. The crisis of 1991 can be traced back to the years leading to it. From mid-year of 1990, we can see a huge spike in the prices of gold. This can be contributed to the **Gulf War**; In the month of August of 1990 we can see that gold reaches a record high growth rate as the months lead up to tension in the region of Iraq and Kuwait. Afterwards in Sensex we can see a negative growth rate in the month of October to January in the Feb of 1991 Sensex did jump back a little bit but then it again crashed in the month of March, many believe it can be contributed to the fact that Prime Minister of India Chandra Shekhar resigned due a dispute with Rajiv Gandhi. Towards the end of the year of 1991 we can see a sudden spike again in Sensex again but it crashed again in the month of April of 1992 due to the **Harshad Mehta scam**. By manipulating stocks and overinflating stocks like ACC by almost 4400% and cashing out, he single handily crashed the markets across the nation. His securities scam was even bigger (Rs. 4000 crores) wreaked even more havoc.

The liberalization of the economy yielded great results, setting India onto the path for progress in the future. The GDP went from $299 billion in 1991 to $3 billion in 2019. Even India's purchasing power parity saw incredible strides.

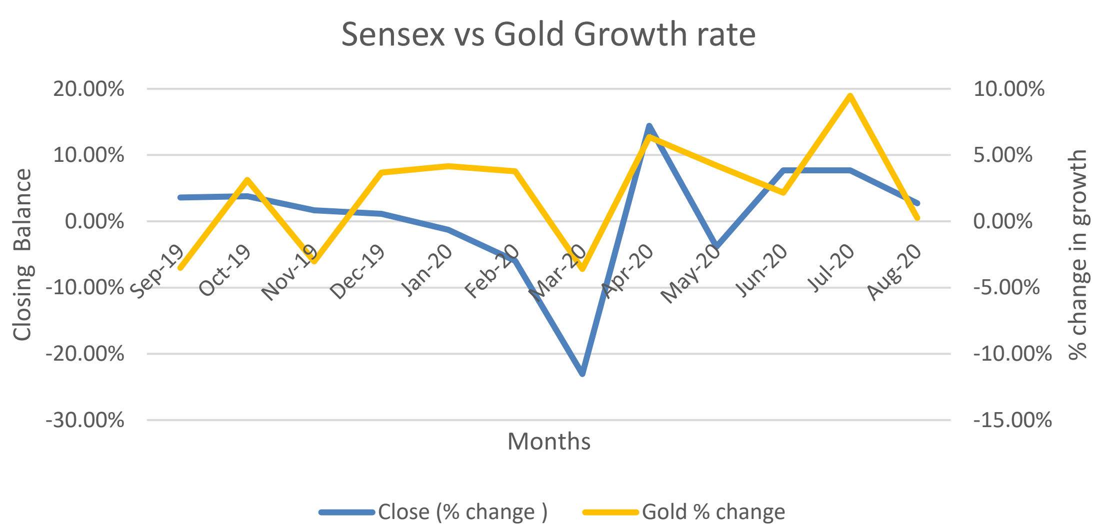
<u>2007-2009 Global Financial Crisis:</u>





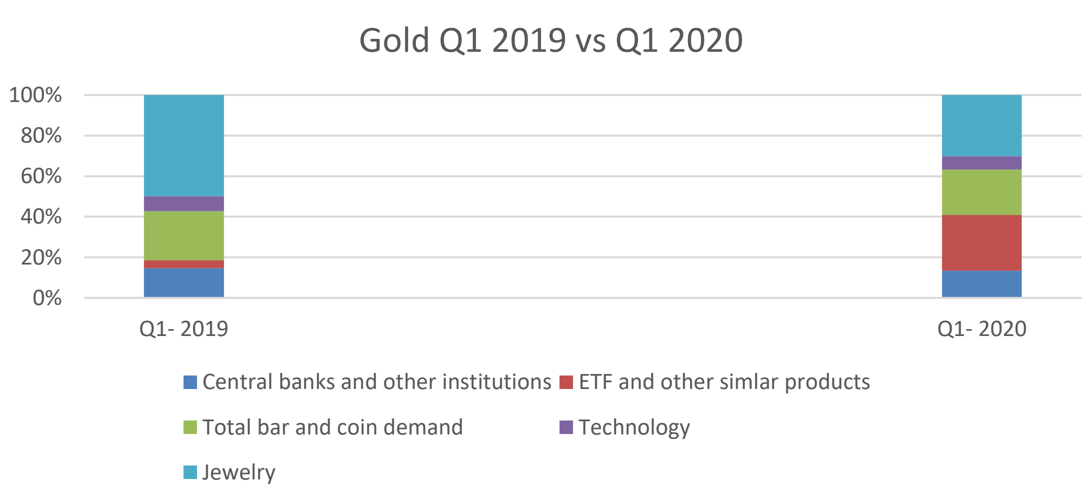
As we can see from both the graphs the fluctuations in all three Gold, Sensex and the Indian economy followed a similar pattern during the recession. The primary reason for this is considered to be that both Gold Sensex and IIP were being affected by the same global event that was the 2008 crisis. We can see that both sensex Gold and IIP took a deep dive consistently during the whole year of 2008 and a somewhat similar pattern can be seen bleeding into 2009 also. Overall as stated above the Indian Economy did not suffer as much as the export oriented economies. One of the reasons why this recession lasted this long is considered to be that this was a financial crisis because of which the financial system was notworking properly. The 2008 crisis showed the yellow metal rising from Rs.12,590 to Rs. 17,008 for 10 grams; showing an increase of 36% in a year.

2020 Covid-19 Pandemic Crisis



In the first quarter of 2020 we can see that the demand for gold was consistent with the December 2019 trend and the growth ahs been pretty stagnant. As we can see this trend of stagnant growth lasted till Feburary of 2020 and then we can see a sudden downward spike in the graph during the month of March.

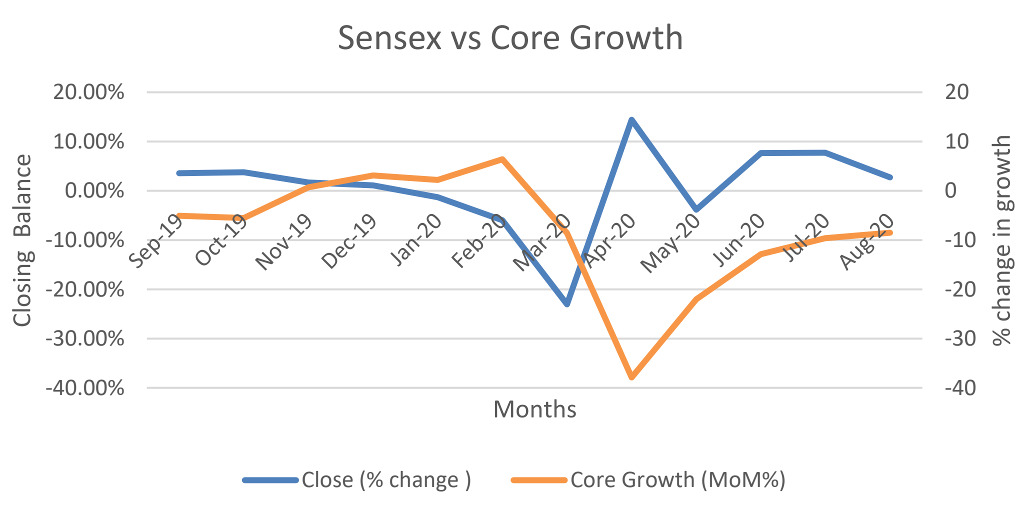
Performance of gold during Q1-2019 and Q1-2020



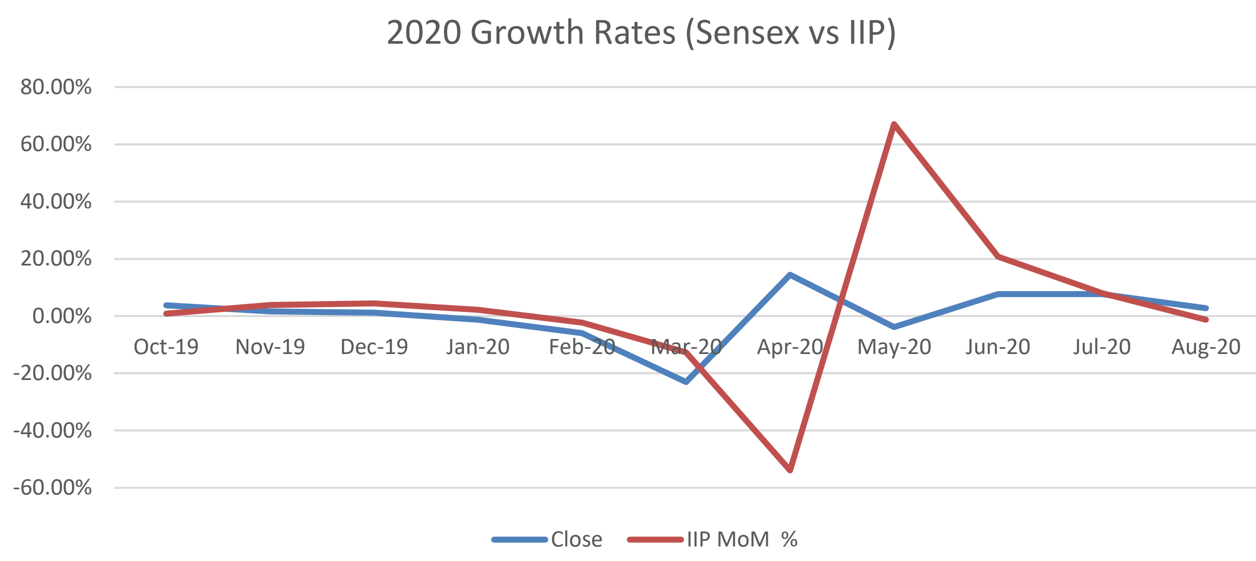
As the graph shows during the first quarter of 2020 compared to 2019 the total amount of gold traded this quarter has definitely increased overall but only by a small amount last year it was 1070.8 tonnes during Q1 this year it is 1083.8 tonnes during Q1 of this year. But the composition has changed, where as last year jewelry was the biggest product of gold that was traded. This year it ETF and other similar products were more popular and have increased their share in the total percentage.

In the second quarter of 2020 we can see that the downward spike ends and the upward trend begans during the month of April, the growth in the gold prices went from -3.6% to + 6.37 % a percentage point difference of almost 10% in two months. Coronavirus is assumed to be the biggest factor affecting the demand of gold here. As the spread of the virus increases more and more investors were worried about their investments and the potential economic impact of the pandemic and hence sought to safe havens. Gold has always been to be safe haven during the time of crisis, and this attracted huge inflows. This also led to a global new record high in global holdings.

The 2008 crisis showed the yellow metal rising from Rs.12,590 to Rs. 17,008 for 10 grams; showing an increase of 36% in a year. The COVID-19 crisis is no different as its prices remained undeterred and would instead go up Rs.53,250 per 10 grams. As the economy is slowly starting to recover, gold demand is now starting to gradually decline. It dropped by almost 30% to 86.6 tonnes during July-September due to disruptions caused by the pandemic.



With the call for the country shutting down from the 23rd of March, economy took a nosedive and fell sharply. It was expected that the same would happen with Sensex but it bounced back very sharply to almost 35000 points before converging back together. Core growth is a good short term, high-frequency indicator of the economy. This can primarily be credited to RBI for reducing their interest rates, which helped add liquidity to the market of Rs 8.1 lakh crore.



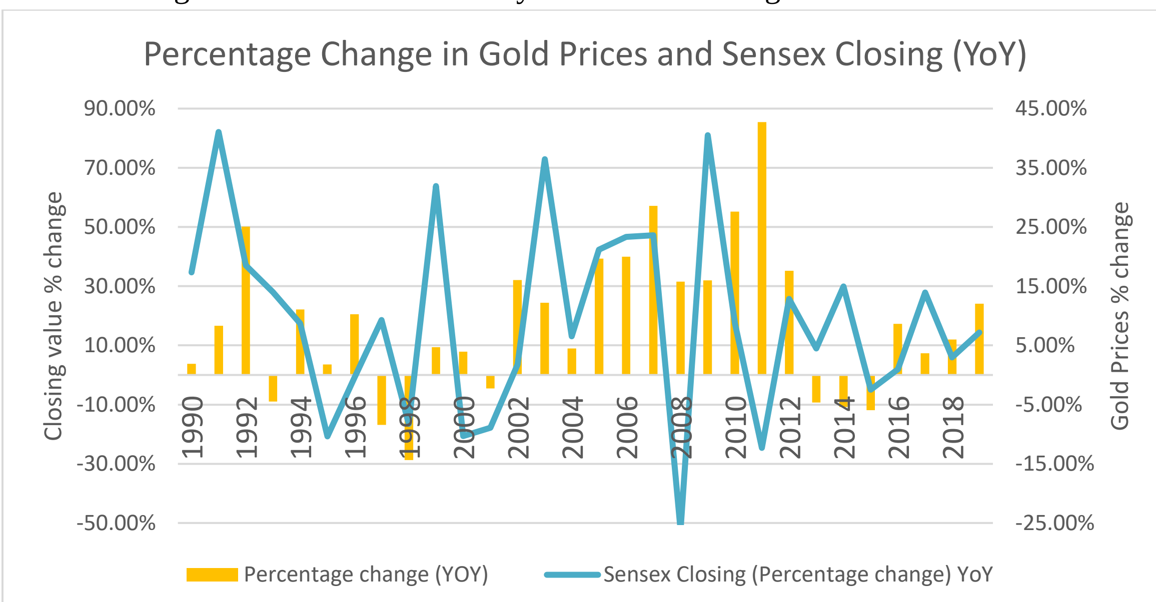
Top market expert Seema Shah duly notes: “Unlike the global financial crisis, or previous bear markets, the current crisis wasn't triggered by an unwinding of imbalances, central bank tightening, or high oil prices.” When the origin of the virus, China initiated a lockdown on the entire nation, a subsequent supply chain disruption took place. Indian companies (from electronics to medicines) depend greatly on Chinese raw exports or finished products and this sent the entire world into a downward spiral. Investors can be seen hoping to take advantage of the loose monetary policies and the built-up demand. Riding the wave of a reviving economy would make for great opportunities to make quick money.

Since then, much time has passed and companies, countries are slowly getting back on the track to recovery. While many suffered from massive layoffs at work, people at the top of the economic food chain made serious money. Three of India’s biggest stocks- RIL, HDFC, and Infosys added Rs. 6.3 lakh crore to their market capitalization between March and June and would account for almost 43% of the rise. . Also the market correction of almost 40 percentage points in March tempted investors to rush into the market and buy heavily to make some quick profit. Massive stimulus packages, interest rates being dropped have improved people’s appetite for risk. They are willing to risk more and traders are also taking advantage of this.

CONCLUSION:

From the results derived from the MoM graphs showing the comparison between the economy and stock market, it is clear that:

1. Gold is somewhat inelastic and remains steady unless there is a global event that affects its prices.
2. Gold is mostly used for the purpose of hedging during a financial crisis.
3. Sensex and other composite indexes are more volatile than gold prices as gold price is determined by international demand and supply.
4. Sensex is affected by both global and national events.
5. IIP and Core growth follows Sensex only but with a time lag.



The 1991 crisis is credit to part national and part international events, in the analysis of the graphs we can clearly see gold moved much drastically due to gulf war and sensex moved both due to gulf war an international event and national event like resignation of Chandra Shekhar and Harshad Mehta Scam.

During the 2008 crisis we witnessed that both Gold, Sensex and IIP followed a similar pattern as the reason for turmoil was external. Gold was again used as a hedge during the different stages of the financial crisis.

In 2020 we saw a somewhat robust recovery in the months after lockdown, this can be credited to the fact that our financial system was in a healthy condition unlike in 2008 where the financial system broke down itself. Hence the recovery during the Global Financial Crisis was shaky and took longer to recover. Also, because of government intervention markets were able to continue working in right direction.

DATA REFERENCES

1) Sensex data – Bombay Stock Exchange historical data
2) Gold Prices – Yahoo Finance
3) IIP data – Ministry of Statistics and Program Implementation
4) Core Growth - DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE