



ASSOCIATION AMONG CPI, IIP AND CRUDE OIL PRICE IN INDIA

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ABSTRACT

This research delves into the complex interconnections among the Consumer Price Index (CPI), the Index of Industrial Production (IIP), and Crude Oil Prices in the Indian economic landscape. These variables play pivotal roles in shaping the country's economic trajectory, influencing policy decisions, and impacting the daily lives of its citizens. Understanding their relationships is crucial for policymakers, economists, and market participants to formulate effective strategies and navigate the intricate web of economic dynamics.

The study employs a rigorous time-series analysis spanning a substantial period to unravel the intricate associations among CPI, IIP, and Crude Oil Prices in India. By utilizing advanced econometric techniques such as Vector Autoregression (VAR) models, Granger causality tests, and impulse response functions, the research aims to provide comprehensive insights into both short-term fluctuations and long-term trends.

Consumer Price Index (CPI) serves as a crucial gauge of inflationary pressures, reflecting changes in the average prices of a basket of goods and services consumed by households. Fluctuations in CPI not only impact purchasing power but also influence interest rates, investment decisions, and overall economic stability. Index of Industrial Production (IIP), on the other hand, measures the performance of various sectors within the industrial landscape, serving as a barometer of economic activity and production trends. A robust industrial sector is vital for employment generation, income growth, and sustainable economic development. Lastly, Crude Oil Prices exert significant influence on the Indian economy, given the country's heavy reliance on oil imports to meet its energy needs. Oil price fluctuations can disrupt fiscal balances, trade dynamics, and overall macroeconomic stability.

The findings of this research contribute to a nuanced understanding of the dynamic relationships among CPI, IIP, and Crude Oil Prices in India. Through VAR models, the study examines how changes in one variable affect the others over time, capturing the feedback loops and interdependencies within the system. Granger causality tests shed light on the directionality of causality among the variables, discerning whether past values of one variable can predict future values of another. Additionally, impulse response functions offer insights into the short-term reactions of each variable to shocks in the system, unravelling the transmission channels and dynamics of adjustment.

By unravelling the intricate web of interactions among CPI, IIP, and Crude Oil Prices, this research provides valuable insights for policymakers tasked with managing inflation, promoting industrial growth, and mitigating the impact of external shocks. Understanding how these variables influence each other allows for more informed decision-making, enabling policymakers to design targeted interventions and policy measures to stabilize the economy, foster sustainable growth, and enhance the overall welfare of the populace. Moreover, the findings

offer actionable intelligence for investors, businesses, and analysts seeking to navigate the Indian economic landscape and capitalize on emerging opportunities while managing risks effectively.

CHAPTER1: INTRODUCTION

The global economic landscape is a complicated web of interdependence, with the rise and fall of many indices organizing national patterns. In the context of India, a rising economy with specific challenges and possibilities, the relationship between the Consumer Price Index (CPI), Index of Industrial Production (IIP), and Crude Oil Prices emerges as an imp. Nexus. This study takes a comprehensive approach to decoding the complex relationships between these factors, revealing insight on their dynamics and the imp. Consequences they have for India's economic well-being.

Singh. A, Singh. R, (2017) The study investigates the association between global crude oil price shocks and Indian macroeconomic indicators using MS-VAR regime-dependent impulse responses. It focuses on two regimes: lower and larger oil price variance regimes. In the lower regime, crude oil shocks have a negative influence on industrial production and consumer prices, but in the higher regime, both elements have a positive link, resulting in cost-driven inflation. This demonstrates the significance of oil subsidies and supply-side restraints in India's industrial development. The study shows that policymakers should exercise caution during turbulent periods to sustain industrial production and consumer demand.

Haydar, (2021) This study investigates the link between the industrial output index, Brent crude oil prices, and CPI in the Turkish economy. The findings suggest that rising oil prices raise production costs and CPI, impacting the economy. To avoid decreasing industrial productivity, the report proposes continuously monitoring oil prices and working on alternate energy sources. Allocating cash toward renewable energy sources and manufacturing industrial items such as high-speed trains and electric vehicles can also be beneficial.

CostinRaduBoldea et al, (2023) The publishing of this study is made possible by the finances of the University of Life Sciences "King Mihai I" from Timișoara and the Research Institute for Biosecurity and Bioengineering Timișoara. This research paper was funded by the project Increasing the impact of excellence research on the capacity for innovation and technology transfer within the USAMVB Timisoara (code 6PFE), which was submitted in Competition Program 1—Development of the National System of Research and Development, Subprogram 1.2—Institutional Performance, and Institutional Development Projects—Development Projects of Projects of Excellence in R&D.

Chen. S et al, (2020) Using the VAR model, this research investigates how oil prices affect consumer and producer pricing in China. It investigates the non-linear transmission of oil prices, as well as the mediating impacts of financial markets and government debt on the oil price-consumer/producer pricing mechanisms. According to the study, monetary policy may impact the pass-through of oil prices, with a larger pass-through of Brent oil price to producer pricing suggesting accuracy. The report also emphasizes the need of tracking the financialization of crude oil markets and boosting the role of government debt in the oil price-producer pricing mechanism.

This study used a two-block structural VAR model to examine the effects of oil price shocks on emerging nations' economic activity and pricing levels. The findings indicate that the impact of oil price shocks on inflation and the consumer price index (CPI) in emerging nations is determined by the underlying cause of the fluctuations. The transmission mechanisms of oil price changes varied greatly between the United States and emerging markets, with certain nations witnessing considerable price drops. The study also finds that reaction patterns differ among rising nations, with Russia being the only one that has no long-term impact on output.

Osmanoğlu K (29th May 2015) This study looks at the long-term link between industrial production, oil prices, inflation, and GDP in Turkey from 1961 to 2012. It demonstrates how variations in oil prices effect industrial production, as Turkey relies largely on imported crude oil. Future study should look at 11

alternative approaches and long-term solutions to lessen reliance on fossil fuels.

Nyangarika .M, (2018) Using data ranging from 1991 to 2016, this analysis validated the influence of oil shocks on the Russian Federation's currency rate. According to the study, oil prices have a considerable effect on the dollar-Ruble exchange rate. If oil prices fall, the Russian economy's income from oil sales decline, prompting Ruble depreciation.

CHAPTER 2: REVIEW OF LITERATURE

Singh. A, Singh. R (2017) Various studies have attempted to account for crude shocks' impact on macroeconomic variables, including GDP growth rates and employment levels. The Markov Switching (MS) approach captures regime-changing behavior, allowing for time-varying responses towards structural oil price adjustments. Ehrmann et al.'s approach helps compare impulse responses across different regimes.

Haydar, (2021) The paper examines the link between the industrial output index, oil prices, and CPI in the Turkish economy from 2010 to 2020. It uses linear and nonlinear unit root tests, including ADF unit root tests, to prove causation.

CostinRaduBoldea et al, (2023) The study employed Core Consumer Price Index data from the Word Bank Database to compare price index variations in six European nations.

Shuanglian Chen et al (2020) Using a causal stages method, this study investigates how oil prices affect consumer and producer prices in China. The study discovered that Brent oil prices had a direct and indirect impact on the Chinese Pound Index (CPI) via the financial sector, with a direct influence of 0.448 and an indirect effect of -0.091. The financial market indirectly impacts producers.

Prices have a greater indirect influence on the MPPI due to excise charges. The research emphasizes the role of financial markets in determining oil price-consumer/producer pricing.

Sakashita.Y and Yoshizaki.Y, (2016) To quantify demand and supply shocks in the global oil market, we use a two-block structural VAR model for IIP and CPI in each nation, as described by Kilian and Park (2009) [1]. The first block is the "global oil market block," while the second is the "domestic aggregate economy block". The descriptions of each block will be detailed later.

Osmanoğlu. K (2015) Three different tests are used to explore the link between oil prices, GDP, inflation, and industrial production. First, the most generally used unit-root test, the Philips-Perron (PP) (Philips and Perron, 1988), was used to assess the variables' integration ordering. Then, the long-run connection between these variables was investigated using Johansen's (1988) co-integration technique. Finally, after co-integrating vectors (equations) have been identified, the Granger causality test is used to determine the direction of long-run interactions.

A M Nyangarika1 , (2018) In this paper, we used the vector model of autoregression (VAR-model) to calculate Russia's real exchange rate using time series from 1991 to 2016, which is commonly used for prediction systems of related time series and analysing the dynamic effect of random perturbations on a system of variables. The construction of VAR models is based on structural modelling, with each endogenous variable in the system considered as a function of the lagged values of all other endogenous variables. A real exchange rate model was developed with five variables: consumer price index, GDP, oil price, total nation export, and a real effective exchange rate as the dependent variable. The real exchange rate model is defined as follows.

CHAPTER 3: RESEARCH METHODOLOGY

The study technique used to examine the relationship between the Consumer Price Index (CPI), the Index of Industrial Production (IIP), and crude oil prices is rigorously quantitative, with a strong emphasis on secondary data analysis. This technique allows for a thorough examination of the interactions between these major economic indicators. The study uses secondary data from scholarly publications, reports, and databases to get insights into the links between CPI, IIP, and crude oil prices.

The study is structured around a correlational research design, which allows for the investigation of the relationships between the variables of interest. This architecture is well-suited for evaluating the complicated interactions between CPI, IIP, and crude oil prices.

The data is analysed using a variety of statistical methods. Descriptive statistics are used to summarize the essential properties of data, giving an overview of the central tendencies, variability, and distribution of the variables being studied. This stage is critical for acquiring a basic understanding of the data and finding potential patterns or trends.

Correlation analysis is then performed using Pearson's correlation coefficient to determine the degree and direction of the links between CPI, IIP, and crude oil prices. This study quantifies the degree of linear relationship between the variables, providing useful insights into their interdependence.

Furthermore, regression analysis is used to predict the effect of crude oil prices on CPI and IIP while accounting for another imp. Factors. Regression research identifies the precise effect of crude oil prices on CPI and IIP changes while controlling for relevant confounding variables. This phase is critical for distinguishing the impacts of crude oil prices from other variables that may influence CPI and IIP.

The data analysis plan calls for preparing secondary data to assure its quality and dependability. This involves organizing and cleaning the data as needed, fixing any missing numbers or discrepancies, and making sure the data is ready for analysis. The study protects the integrity and correctness of its data by using strict data preparation processes.

To ensure the integrity and confidentiality of secondary data sources, ethical issues must be prioritized throughout the study process. Measures are made to guarantee that the data is collected and handled in compliance with ethical standards and rules. This involves getting the necessary permissions to access and use secondary data, safeguarding the privacy of persons or organizations represented in the data, and ensuring confidentiality throughout the analysis and reporting stages.

In summary, the study methodology used to investigate the relationship between CPI, IIP, and crude oil prices is a strong quantitative approach that employs correlational research design and statistical analytic tools. By using secondary data sources and adhering to ethical constraints, the project hopes to give significant insights into the intricate linkages between these major economic indicators.

OBJECTIVES

1. The purpose of this study is to find a correlation between the IIP and crude oil prices in India
2. To find out if there is a correlation between the CPI and the crude oil prices in India

HYPOTHESES

IIP and Crude Oil Prices in India

1. the null hypothesis holds that crude oil prices do not have any relationship with IIP.
2. Alternative Hypotheses holds that there is relationship between IIP and Crude Oil Prices.

CPI and Crude Oil Prices in India

1. Null Hypotheses holds that there is relationship between CPI and Crude Oil Prices
2. Alternative hypothesis holds that crude oil prices do not have any relationship with CPI

SCOPE OF STUDY

An analysis of the relationship between the Industrial Production Index (IIP), Current Industrial Production (CIP), and crude oil prices involves a comprehensive look at how these variables interact with one another in the context of the larger energy and economic environment. It starts with a thorough analysis of the body of prior research to provide a baseline knowledge and pinpoint areas in need of further investigation. In order to find patterns, trends, and connections, historical data on CIP, IIP, and crude oil prices are then gathered and examined. In order to understand the fundamental mechanisms behind the links between industrial production and oil prices, the research explores economic theories, taking into account variables including supply and demand dynamics, energy economics, and governmental interventions. Sectoral assessments are carried out to identify vulnerabilities and sensitivities and to determine how various industries are affected by changes in oil prices and industrial production. In addition, the research examines the consequences for energy and economic policy, evaluating the ways in which market forces and governmental actions affect these factors. The global context is also taken into account, acknowledging the interdependence of the energy markets and economies as well as the influence of geopolitical considerations on the final result. Forecasting models are created to predict future trends, while sensitivity analysis examines how well conclusions hold up under different assumptions. In the end, the study makes findings and suggests courses of action for companies, investors, and governments. It also points out areas that need more investigation to advance knowledge in this intricate and important area.

CHAPTER-4 DATA AND ANALYSIS

DESCRIPTIVE STATISTICS

	Mean	Median	Minimum	Maximum
IIP	127.15	125.25	54.000	193.10
CPI	0.059632	0.054650	0.015400	0.13900
Crude Oil Price	165.99	161.95	50.450	275.43
	Std. Dev.	C.V.	Skewness	Ex. kurtosis
IIP	21.186	0.16663	0.54525	0.82085
CPI	0.024274	0.40706	0.85330	0.70749
Crude Oil Price	49.817	0.30012	-0.015498	-1.0297

	5% perc.	95% perc.	IQ range	Missing obs.
IIP	101.09	167.57	22.800	0
CPI	0.025385	0.099000	0.030300	0
Crude Oil Price	90.847	236.59	88.495	0

ANALYSIS: -

- 1) **IIP (Index of Industrial Production):** The average IIP is 127.15, with a standard deviation of 21.186, showing substantial variation around the mean. The values range from 54 to 193.10. The coefficient of variation (C.V.) is relatively low, indicating a modest amount of dispersion from the mean. The distribution seems significantly positively skewed (skewness = 0.54525), implying a larger right tail. The excess kurtosis (Ex. kurtosis) is positive (0.82085), indicating somewhat larger tails than a normal distribution.
- 2) **CPI (Consumer Price Index):** The average CPI is 0.059632, with a standard deviation of 0.024274. The data points range from 0.0154 to 0.139, demonstrating rather low variability. The coefficient of variation is 0.40706, indicating substantial dispersion from the mean. The distribution is strongly skewed (skewness = 0.8533), indicating a longer right tail, and the excess kurtosis is positive (0.70749), implying somewhat heavier tails.
- 3) **Crude Oil Price:** The average crude oil price is 165.99 with a standard deviation of 49.817. The data spans from 50.45 to 275.43, showing a significant level of variability. The coefficient of variation is 0.30012, indicating considerable dispersion from the mean. The distribution appears roughly symmetric (skewness close to zero) with slightly negative excess kurtosis (-1.0297), indicating slightly lighter tails than a normal distribution.

CORRELATION AMONG IIP, CPI AND CRUDE OIL PRICES

Correlation coefficients, using the observations 2010:01 - 2022:12

5% critical value (two-tailed) = 0.1572 for n = 156

IIP	CPI	Crude Oil Price	
1.0000	0.4410	0.0552	IIP
	1.0000	0.3595	CPI
		1.0000	Crude Oil Price

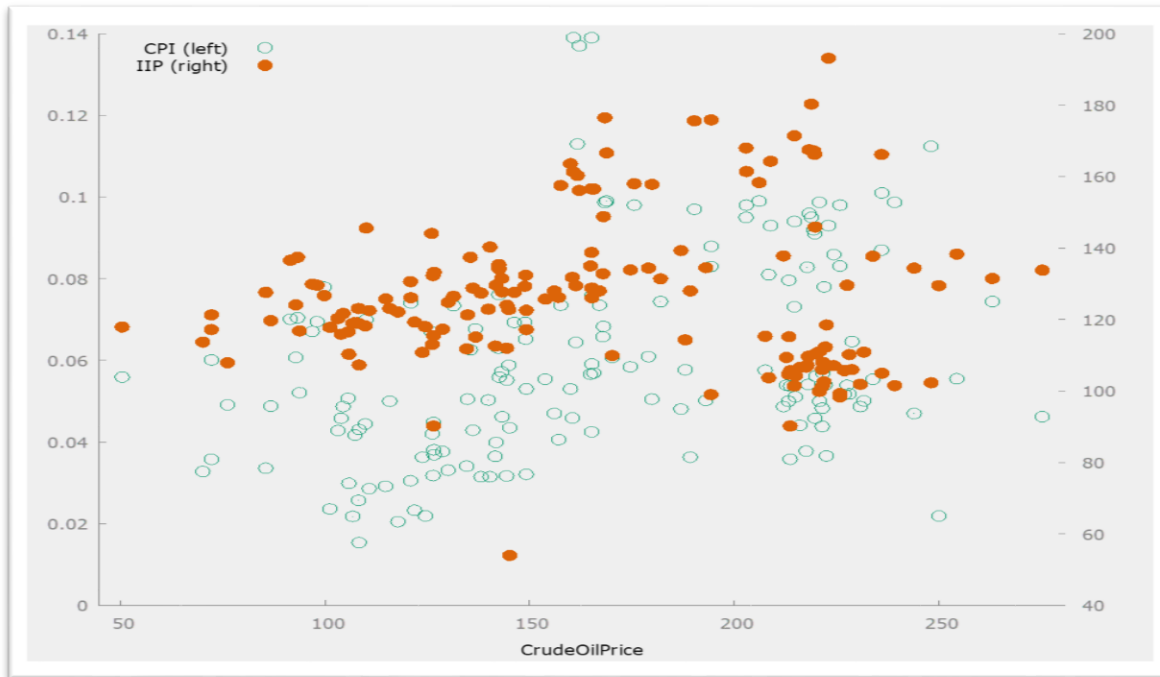
ANALYSIS: -

Correlation coefficients appear to have been supplied for the following three variables: Crude Oil Price, Consumer Price Index, and Index of Industrial Production (IIP) for the period spanning January 2010 to December 2022. What these associations suggest is broken out as follows:

- **IIP and CPI:** The somewhat positive correlation (0.4410) between the two indicates that there is a tendency for the Consumer Price Index to rise in tandem with the Index of Industrial Production. This suggests that rising industrial output might raise consumer prices because of rising demand or greater production expenses
- **Crude Oil Price and IIP:** The correlation between the two variables is very poor (0.0552), suggesting that there is little to no link between the two. This implies that throughout the specified time period, changes in industrial production could not have a major impact on crude oil prices or vice versa.
- **The Consumer Price Index and Crude Oil Prices** have a weak positive correlation (0.3595), indicating a minor propensity for the two variables to move in tandem. This suggests that fluctuations in the price of crude oil could affect consumer pricing in some way, especially if energy expenses are a major factor in manufacturing or transportation costs.

These correlations suggest that there may be some links between these factors, although they do not seem to be very strong. The economic variables influencing these relationships, such as the effect of oil prices on manufacturing costs or consumer spending trends on CPI, should be the subject of more investigation.





CHAPTER-5 RESULT AND CONCLUSION

The descriptive statistics and correlation study gave imp. Insights into the relationship between industrial production (IIP), consumer price index (CPI), and crude oil prices from January 2010 to December 2022.

First, let's look at the descriptive statistics. Mean values are a measure of central tendency, representing the average level of each variable throughout the specified time period. In contrast, median values indicate the data set's center values and are less impacted by outliers. For instance, the mean IIP stands at 127.15, while the median is slightly lower at 125.25, suggesting a slightly right-skewed distribution.

The lowest and maximum values offer information about the range of variation for each variable. Notably, the IIP spans from 54 to 193.10, indicating a significant fluctuation in industrial output levels. Similarly, crude oil prices fluctuate widely, ranging from 50.45 to 275.43.

The standard deviation quantifies the spread of data points around the mean, with larger values suggesting more variability. The IIP and CPI have small standard deviations (21.186 and 0.024274, respectively); however, crude oil prices have a wider spread (49.817), indicating the volatility inherent in energy markets.

The coefficient of variation (C.V.) is a relative measure of variability that allows for comparisons across variables in different units of measurement. In this scenario, the IIP has the lowest C.V. (0.16663), showing relatively low variability when compared to the mean. In contrast, CPI and crude oil prices have larger C.V. values, indicating more relative fluctuation.

Skewness measures the distribution's asymmetry. A positive skewness suggests a longer right tail, whereas a negative skewness indicates a longer left tail. The skewness values of IIP, CPI, and crude oil prices are 0.54525, 0.85330, and -0.015498, respectively. These results indicate that the distributions of IIP and CPI are significantly right-skewed, but crude oil prices have a virtually symmetric distribution.

Excess kurtosis quantifies the tails of a distribution in comparison to a normal distribution. Positive numbers suggest heavier tails, whereas negative values indicate lighter tails. IIP, CPI, and crude oil prices had excess

kurtosis values of 0.82085, 0.70749, and -1.0297, respectively. These figures indicate that the IIP and CPI distributions have larger tails than a normal distribution, but crude oil prices have smaller tails.

The Consumer Price Index (CPI) and Crude Oil Prices: -

- 1) The Consumer Price Index (CPI) and crude oil prices show a statistically significant moderate positive association.
- 2) Increases in crude oil prices often correlate to mild increases in the CPI, demonstrating a relationship between energy costs and consumer prices.

The Index of Industrial Production (IIP) and Crude Oil Prices: -

- 1) The Index of Industrial Production (IIP) has a very weak and statistically negligible association with crude oil prices.
- 2) Crude oil price fluctuations do not appear to have a substantial influence on industrial production levels, indicating that other variables may be more imp.in shaping industrial output.

Overall, the data indicate that, while crude oil prices have a significant impact on consumer prices, their impact on industrial output levels is negligible. This emphasizes the necessity of knowing how economic factors affect diverse sectors and components of the economy.



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ANNEXURE

Date	IIP	CPI	Crude Price	Oil
Jan-10	163.6	5.30%	160.03	
Feb-10	157.5	7.35%	157.63	
Mar-10	176.5	9.87%	168.42	
Apr-10	157.8	5.05%	179.93	
May-10	156.5	5.69%	165.69	
Jun-10	156.6	13.90%	165.14	
Jul-10	161.3	13.90%	160.71	
Aug-10	156.1	13.70%	162.19	
Sep-10	160.3	11.30%	161.72	
Oct-10	166.6	9.90%	168.87	
Nov-10	158.0	9.80%	175.61	
Dec-10	175.6	9.70%	190.3	
Jan-11	175.9	8.30%	194.39	
Feb-11	168.0	9.50%	202.93	
Mar-11	193.1	9.30%	223.07	
Apr-11	166.2	8.70%	236.05	
May-11	166.2	9.10%	219.71	
Jun-11	171.4	9.40%	214.77	
Jul-11	167.2	9.20%	219.52	
Aug-11	161.4	9.80%	203.03	
Sep-11	164.3	9.30%	208.9	
Oct-11	158.3	9.90%	206.16	



Nov-11	167.5	9.60%	218.33
Dec-11	180.3	9.50%	218.88
Jan-12	99.3	9.80%	225.89
Feb-12	105.0	10.10%	236.12
Mar-12	102.3	11.24%	248.16
Apr-12	101.5	9.87%	239.28
May-12	99.9	9.87%	220.83
Jun-12	99.0	8.79%	194.36
Jul-12	103.7	8.10%	208.47
Aug-12	98.3	8.31%	225.86
Sep-12	107.1	8.59%	224.39
Oct-12	107.2	8.28%	217.89
Nov-12	101.4	7.31%	214.74
Dec-12	115.2	7.96%	213.42
Jan-13	102.6	7.80%	222.01
Feb-13	106.0	6.46%	228.81
Mar-13	101.3	4.38%	221.55
Apr-13	104.7	5.00%	213.31
May-13	104.3	5.11%	215.01
Jun-13	105.7	5.37%	213.78
Jul-13	105.7	5.17%	226.91
Aug-13	101.9	4.87%	230.85
Sep-13	110.9	5.01%	231.74



Oct-13	112.3	5.40%	222.32
Nov-13	106.7	3.78%	217.61
Dec-13	118.5	3.66%	222.57
Jan-14	106.6	4.41%	216.11
Feb-14	111.0	5.00%	220.88
Mar-14	109.7	5.41%	218.15
Apr-14	110.4	5.61%	219.94
May-14	108.0	5.69%	221.71
Jun-14	110.2	5.18%	228.15
Jul-14	106.0	4.83%	221.56
Aug-14	109.4	5.39%	212.79
Sep-14	115.3	5.76%	207.61
Oct-14	114.3	5.77%	188.07
Nov-14	109.9	6.07%	170.23
Dec-14	121.3	5.05%	134.86
Jan-15	107.3	4.31%	108.34
Feb-15	113.0	4.20%	126.23
Mar-15	110.8	3.63%	123.82
Apr-15	111.8	3.41%	134.67
May-15	112.0	3.17%	144.43
Jun-15	112.6	3.65%	141.63
Jul-15	115.5	3.81%	126.59
Aug-15	110.3	2.99%	105.85



Sep-15	118.9	2.18%	106.8
Oct-15	118.9	1.54%	108.35
Nov-15	117.8	2.36%	101.21
Dec-15	127.6	3.36%	85.53
Jan-16	113.7	3.28%	70.15
Feb-16	121.3	3.58%	72.26
Mar-16	119.7	4.88%	86.75
Apr-16	116.8	5.21%	93.79
May-16	116.5	5.07%	105.65
Jun-16	118.2	4.44%	109.86
Jul-16	120.3	4.28%	103.17
Aug-16	115.9	4.58%	103.94
Sep-16	121.7	4.87%	104.46
Oct-16	123.1	5.00%	115.85
Nov-16	119.2	4.17%	107.41
Dec-16	133.2	3.69%	126.7
Jan-17	117.3	3.77%	128.75
Feb-17	124.8	3.31%	130.13
Mar-17	119.3	2.33%	121.94
Apr-17	118.0	2.19%	124.52
May-17	122.1	2.05%	117.84
Jun-17	123.1	2.57%	108.21
Jul-17	122.5	2.86%	110.83



Aug-17	125.8	2.92%	114.85
Sep-17	130.6	3.05%	120.9
Oct-17	132.3	3.18%	126.43
Nov-17	127.4	3.15%	138.15
Dec-17	140.3	3.15%	140.34
Jan-18	122.6	3.21%	149.22
Feb-18	129.6	3.99%	141.81
Mar-18	127.7	4.62%	143.34
Apr-18	125.7	5.54%	153.86
May-18	128.0	7.35%	167.08
Jun-18	128.8	7.59%	165.24
Jul-18	132.8	6.58%	167.92
Aug-18	126.1	5.91%	165.28
Sep-18	133.9	5.84%	174.66
Oct-18	134.4	6.09%	179.06
Nov-18	127.6	6.93%	146.29
Dec-18	144.1	6.69%	126.08
Jan-19	126.5	7.34%	131.42
Feb-19	135.4	7.61%	142.53
Mar-19	129.3	6.93%	148.86
Apr-19	131.8	4.59%	160.45
May-19	126.2	4.06%	157.12
Jun-19	122.9	5.03%	139.92



Jul-19	124.0	5.52%	144.45
Aug-19	128.8	4.29%	136.17
Sep-19	134.5	6.30%	142.33
Oct-19	137.4	6.26%	135.55
Nov-19	134.2	5.59%	142.6
Dec-19	117.2	5.30%	149.22
Jan-20	54.0	4.35%	145.14
Feb-20	90.2	4.48%	126.53
Mar-20	107.9	4.91%	76.22
Apr-20	117.9	5.59%	50.45
May-20	117.2	6.01%	72.25
Jun-20	124.1	6.07%	92.83
Jul-20	129.6	6.95%	98.08
Aug-20	126.7	7.79%	99.85
Sep-20	137.4	7.04%	93.32
Oct-20	136.6	7.01%	91.57
Nov-20	129.9	6.71%	96.88
Dec-20	145.6	7.00%	110.07
Jan-21	126.1	7.41%	121.01
Feb-21	115.1	6.77%	136.77
Mar-21	122.8	5.88%	144.97
Apr-21	131.5	5.72%	143.19
May-21	132.4	6.52%	149.01



Jun-21	129.5	6.44%	161.31
Jul-21	135.0	5.66%	164.91
Aug-21	128.0	4.70%	156.1
Sep-21	138.8	4.25%	165.15
Oct-21	139.3	4.81%	187.03
Nov-21	131.4	7.44%	182.05
Dec-21	148.8	6.83%	168.08
Jan-22	134.5	5.02%	193.11
Feb-22	137.8	4.87%	212.07
Mar-22	138.3	5.55%	254.43
Apr-22	134.4	4.70%	244.04
May-22	131.5	7.44%	263.12
Jun-22	133.8	4.62%	275.43
Jul-22	129.5	2.19%	250.05
Aug-22	137.7	5.54%	233.9
Sep-22	145.9	4.58%	219.82
Oct-22	129.6	5.39%	227.63
Nov-22	90.2	3.58%	213.71
Dec-22	128.0	3.63%	189.3

