

Study on Impact of Private Consumption Rate on Stock Market

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ABSTRACT:

Private consumption does play a very significant role in driving and sustaining economic activity as well as luring and shaping the financial markets. Being a critical component of Gross Domestic Product, private consumption often reflects the roots of the health of an underlying economy with significant ramifications for the nature of performance in the stock market. This paper discusses the relationship between private consumption rates and stock market behavior, exploring how variations in spending patterns may influence stock prices, investor sentiment, or aggregate market volatility. This paper reviews existing literature to identify mechanisms through which private consumption influences stock market outcomes and the factors that may be moderators or amplifiers of this impact. The study uses empirical data from numerous economies to explore the prospects that could be developed through private consumption as a predictor of stock market movements.

1. INTRODUCTION:

Private consumption is the most important component of aggregate demand. It is also a reflection of consumer confidence and the overall economic environment. The spending rate of consumers determines business sales, profitability, and general market performance. In this globalizing economy, private consumption is an important relationship in finance research. Stock markets are extremely sensitive to changes in both expected and unexpected consumption patterns; hence, it is important to understand how consumer spending changes and their related changes with the stock price may attract investors' behavior.

The relationship between the private consumption pattern and the stock market is very complicated. Though increases in consumption would be seen to generally have a repercussive upward effect on price level for stocks, its decreases may forebode the reduction of economic activities and thus affect low market sentiment. Other factors may also affect this relationship, such as policy changes by the government, inflation rates, and even interest rates. This paper analyzes the influence of the change in private consumption rate, either directly or indirectly, on the stock market and by sector, time period, and world region.

1.1 MARKET STRUCTURE

1. **S&P 500**: An index that comprises 500 largest publicly traded companies in the United States, the S&P is considered a barometer for the overall U.S. economy. It is very sensitive to consumertrends and spending habits, especially so in retail, consumer goods, and technology.

2. **Dow Jones Industrial Average, DJIA**: The index reflects the actual performance of 30 major companies in major industrial sectors. Many a time, movement in this index has acted as a kind of proxy measure to understand the health of the U.S. economy and has reflected shifts in consumer confidence and spending.

3. **NASDAQ Composite**: Though this is the leader index of the market, which leads to drasticchanges happening in consumer demand for new technologies and services because of its weightage in high-tech and innovation sectors.

4. **FTSE 100**: It comprises the largest 100 companies listed in the London Stock Exchange. This index shows the influence of private spending on large-scale businesses, specifically in the retail, manufacturing, and services industries in the UK.

5. **Nikkei 225**: This index includes the top 225 companies in Japan and is the most important index of the Tokyo Stock Exchange. This index is extremely responsive to changes in consumerconsumption across the Asia-Pacific region, and therefore, it is reflective of a high impact from sectors like electronics, automobiles, and retail.

1.2 MARKET PARTICIPANTS

1. **Retail Investors:** The decisions of the individual investor follow consumer confidence, consumption pattern, and general economics. He hence buys or sells the stock of those companies that are more or less sensitive to consumer behavior.

2. **Institutional Investors:** The investors include mutual funds, pension funds, hedge fund operators, and insurance organizations. They critically analyze macroeconomic indicators such asprivate consumption to gauge the overall trend and make major investments in sectors whose trends are influenced by consumption.

3. **Market Makers:** These will be the players that introduce liquidity in the market because they quote both the buy and sell prices of a specific stock. They continue playing a crucial role so thatmarket fluctuations due to private consumption do not have broad price gaps.

4. **Brokers:** While dealing with the individual and institutional investors, brokers help in transactions. In this regard, they advise their clients about investments through the stock market. Sometimes, brokers make recommendations according to economic data, primarily consisting of private consumption statistics.

5. **Wholesale Traders and HFTs:** Retail traders and high-frequency trading algorithms may respond very swiftly to the short-term fluctuations in private consumption data, which again would worsen the market volatility through rapid buying or selling.

1.3 REGULATORY FRAMEWORK:

1. **The U.S. Securities and Exchange Commission**: This entity regulates the securities in the United States. It ensures that public companies provide, for consumption, material information on their financial condition with consumption-driven financial results. SEC regulation facilitates the protection of investors from market fraud and manipulations, thereby allowing consumption data to be depicted properly in terms of the stock price.

2. **European Securities and Markets Authority**: In the European region, ESMA is responsible for regulation of activities in the financial sector. It oversees the operation of the financial markets as well as enforcing proper disclosure and trading practices on the sides of participants. The emphasis of ESMA's framework is on the maintenance of market integrity and the protection of investors when the internal and external factors such as changes in private consumption call for adifferent set of circumstances.

3. **Financial Conduct Authority (FCA):** This agency oversees the financial sectors in the UK, and conducts rules on trading, companies' disclosures, and market participants in compliance with thelaw. The FCA follows closely how private consumption trends might influence valuations, especially in consumer-dependent industries.

4. **International Organization of Securities Commissions (IOSCO)**: IOSCO is the global standardsetter. It grants international cooperation and harmonization of market regulation that the globally integrated economy would require to respond to the fluctuations in private consumption of one country in several markets around the world.

1.4 CHALLENGES AND OPPORTUNITIES

CHALLENGES:

1. Data Lag: The private consumption data tends to lag or be revised, making it difficult for investors and market participants to react instantly to changes in consumption. This leads todelayed or imprecise responses in the stock market.

2. Volatility: The consumption data could be influenced by quite a few variables like inflation, interest rates, and general economic uncertainty. These factors could change unannounced andtherefore result in reacting stock markets, leading to inaccurate forecasts regarding private consumption trends.

3. Behavioral Biases: There may be some additional psychological biases like overconfidence orherding that could influence the reaction of investors to consumption patterns, thus leading to more mispricing of equities and more market volatility during times of a shift in consumption.

4. Global Interconnectivity: Consumption patterns of a specific country can immediately affectglobal equity markets of a world interlinked economy. It becomes almost impossible to isolatelocal consumption trends from worldwide factors.

OPPORTUNITIES:

1. Predictive models: The relationship between private consumption and the stock market leavesroom for having predictive models. From the consumption trend, an investor can be able to indicate the stock that is going to increase or decline and thus helps in planning investment.

2. Sector-specific Investments: Retail, automobiles, technology, and consumer durable sectors are the most vulnerable to a shift in private consumption. Investors can play these trends through investment in companies which would gain from increased consumer consumption.

3. Global Consumption Insights: There is a huge promise, hence a great opportunity for an investor from global consumption insights in emerging markets such as China and India. Such investments can tap into the vast growth and changing consumption patterns in these markets.

4. **Policy-Driven Growth:** Fiscal policies that elicit consumption--for instance, rebate policy, stimulus packages, and low-interest rates--may offer ways for market players to benefit from stock price increase through consumption.

2 LITERATURE REVIEW:

The Private Consumption Stock Market Connection Private consumption, being one of the components of total demand, has been studied for its effect on the stock market time series. According to Keynesian economics by Keynes (1936), higher consumer spending generates growth in the economy, which subsequently leads to increased business profitability and higher stock prices. Chen (2017) has discovered the positive correlation of consumer spending with stock market returns, especially in sectors that depend directly on consumer behavior, retail, and automotive. This link shows how variations in private consumptionmight manifest in stock price movements.

1. Market Structure in Determines the Speed and Intensity of the Stock Movements Driven by Private Consumption: Market structure determines the speed and intensity with which the data on private consumption would



change the stock prices. Fama (1970) developed the efficient market hypothesis that infersthat all known information regarding consumption behavior are rapidly reflected in stock prices. A more fragmented market structure, such as the OTC markets, may be more less responsive to changes in consumption due to lower liquidation as well as transparency levels than better-known bourses like the NYSE or NASDAQ, since information is flowing more fluently (Bachelier,1900).

2. Sector Sensitivity to Private Consumption

The sectors exhibit different sensitivity to consumption since consumption behavior by the consumers is not the same in every sector. Brown & White (2020) showed that a much greater move in the equity price would often take place if the change is upward or downward in consumption for retail and technology sectors, mostly dependent on consumers. Utility or healthcare sectors, which are mostly defensive and not so exposed to the swings of spending, seem less sensitive to a shift in consumer consumption. It may offer an investor more insight intowhich sectors are more prone or less susceptible to alterations during consumption shifts.

3. Private Consumption Effects on Major Market Indices

Major market indices which are followed include the S&P 500, DJIA and NASDAQ. Since they are aggregations of multi-company performance, they show broader consumption trend changes across respective sectors. In a consumer-driven economy, the consumption GDP pace becomes the main motivator for changes in major stock indices. For instance, the S&P 500 tends to do wellwhen the momentum of consumption is really high since most of the companies that are part of itare into consumer goods and services.

4. The Impact of Interest Rates and Inflation on the Consumption

Stock Market Relationship High interest rates charge in the central banks monetary policies accompanied with direct effects on the relationship of consumption with the stock market. According to Mishkin, 2007, high- interest charges have a depressive effect on consumer spending as it increases the cost of borrowing thus affecting adversely the performance of the stock market. Low-interest rates tend to stimulate spending hence leaving a brighter outlook about the performance of the stock market.Brunnermeier & Sannikov (2014 also posit that inflation affects real purchasing power, which in turn may lead to a shift in consumption behaviors and continues to affect the stock market movements.

5. Regional Diversification in Stock Market Response to Private Consumption

The impact of private consumption on the stock markets is differentiation as different levels of market maturity, economic factors, and cultural consumption behaviors shape the structure of consumer expenditure. For example, Li & Zhou (2018) tested consumption in emerging markets including China and India, where they found the extent of stock prices sensitive to consumption- driven growth in these emerging and rapidly expanding economies. Comparatively, developed markets including the U.S. and Europe, showed a much better consistent relationship with consumption variability in stock market movements wherein greater diversification and strengthin risk management would have reduced the volatility consequent of a consumption shift, Chen (2017).

6. Government Policies and Fiscal Stimulus

The fiscal policies implemented by the government, for instance, tax cuts and direct subsidies, and stimulus programs may boost the stocks by stimulating consumption first. Auerbach & Gorodnichenko (2012) explored how the fiscal packages implemented during monetary recessionsspur consumer expenditure, which in turn elevates the stock market. For instance, handouts issued by most governments during the COVID-19 Pandemic assisted in hiking private consumption in several countries and triggered steep rallies in the stock market.

7. Behavioural Finance and Investor Sentiment

The theories of behavioral finance, as by Shiller (2000), and Kahneman & Tversky (1979), try to explain how psychological factors have magnified the effect of private consumption in the upward and downward movements of the stock market. Optimum and overconfidence will induce investors to up-push the stocks when consumption is higher and there is a hope for an upward progress in the economy. A drop in consumption can lead to panic and herd behavior, thus raising the multiples of the decline in the market and causing more volatility and hence the possibility of correction in the market.

8. Moderating Role of Credit

Credit availability will also moderate the effect of private consumption on the stock market. As opined by Choi and Fama, (2003), when easy credit prevails, consumer expenditures are enhanced, hence stock market performance. Conversely, when tight credit prevails, consumptionis likely to decline, hence reducing the stock prices. This effect of consumption changes on the stock market may be more intense and quicker in developing economies that have very primitivecredit systems.

9. Consumption as Leading Indicator of Stock Market Trends

Some researchers have argued that consumption of the private sector can act as a leading indicator for stock market trends. Kumar & Lee (2019) argue that consumption is of a forward-looking nature and is predictive to future economic performance; hence, it can be said that consumption data will be very instrumental in the forecasting of future orientation of the stock market.

Consumption data can give much insight into future market conditions, and with its help, investors can therefore position themselves ahead of price changes, especially in sectors which are highly related to consumer behavior.

10. Regulation Issues and Opportunities in the Consumption

Equity Price Relationship Requirements regarding information disclosure in regulating stock markets, including antimanipulation laws contribute quite to consumption data reflection in equity prices. According to ESMA, "Transparency in consumption data, say, retail sales or GDP reports, has an impact on the decision of investors". However, regulations pose challenges in the case that market players manipulate or engage in practices that mask the actual outcome of private consumption on the performance of stock markets. On the other hand, regulations that encourage reporting based on real-time effective consumption trends can reduce volatility and pave the way for stable growth of markets.

3. The purpose of the study:

The study is set to investigate the how the private consumption rate varies in relation with to stock market fluctuations. The paper argues that the stock market indices are the tools for telling us how consumption levels relate to investor attitudes and performances if the private consumption trend andthe index of the stock market behave in such a way:

1. The point of discussion is to examine the long-term association between the private consumption rend and the pattern of the indices of the stock market as a means of identifying how the levels of consumption relate to investor attitudes and performances.

2. The paper will also explore the parts of the equity market that take consumer sectors which are main parts of the economy that can be used as indicators for the private consumption of households, such as retail and consumer goods or consumer service businesses.

3. The study would (also) compare the movements of private consumption in particular businesscycles, such as expansions or contractions whose impact on stock market volatility would be considered.

4. Another interesting aspect is drawn from this macro stock is the private consumption that influences stock prices; thus it is not only a question of how the stock prices may be the investors thatbut it is also an issue of for the policymakers.

4. Research methodology:

4.1 Research Design

We're going to use numbers and stuff (quantitative approach) to check out how much private consumption affects the stock market in India. Since what people buy really impacts the economy,we're going to look into this deeply by using history and math (statistical modelling). We'll look athow different parts of the market (sectors) are hit by what people buy, especially stuff that people really need or want

4.2 Data Collection

We'll get our info from places like the government that tell us how much people spend every month and every three months. We'll also use big finance places like BSE and NSE to get numbers about the stock market. We're going to look at this for like 10 to 15 years, so we can see how things change overtime when the economy goes through different cycles.

We'll also check out other big money things like how much the country makes (GDP), how much prices go up (inflation), how much it costs to borrow money (interest rates), and what the governmentdoes with money (fiscal policy). This'll help us understand if it's just people spending money or otherthings that make stocks go up and down.

4.3 Variables and Measurement

The thing we care about the most is the stock market doing well (dependent variable). We'll look atthe main stock market scores (BSE Sensex and NSE Nifty) and also the scores for the parts of the market that have to do with stuff people buy (like groceries and clothes). We'll use fancy math to measure how good or bad the stocks are doing.

The thing we're testing is how much people spend (independent variable). We're going to look at howmuch of the economy comes from people buying stuff from their houses.

To make sure we're not getting confused by other things, we're going to control some stuff like howmuch the economy grows, inflation, interest rates, and government money stuff.

4.4 Analytical Techniques

We're going to use a bunch of math tricks to see if there's a pattern between people spending and the stock market. First, we'll just look at the average and how much things change (descriptive analysis). Then we're going to use Pearson's thingy (correlation coefficient) to see if there's a strong connectionbetween how much people spend and the stock market doing good.

We'll use some advanced math models (multiple regression analysis) to figure out if the stock marketgoes up when people spend more, even if other things in the economy change. We'll also use ARIMA VAR models to check if the stock market moves in a cycle with people spending more or less.

Lastly, we'll look at different parts of the stock market (sector-specific analysis) to see which onesreally get affected by what people buy.

4.5 Making and Testing Guesses (Hypotheses)

We'll come up with some educated guesses (hypotheses) after we do all the analysis:

H1: If people spend more in stores that are really affected by what we buy, the stocks in those stores oup.

H2: When people spend more in general, the whole stock market goes up.

H3: If people buy more, the stock market doesn't jump around as much 'cause everyone's happy.

We'll use t-tests and F-tests to see if our guesses are right or wrong and make sure our results aren'tjust random.

4.6 Validation

We got to make sure our data isn't messed up. We'll look at the same numbers in different places (financial databases) to make sure we're not fooling ourselves. We're only using info that everyone cansee (public data) to be fair and not break any rules. We'll tell everyone where we got the info from.

4.7 Boundaries, for Future Investigations

In this approach it assumes a balance, between spending and stock market patterns over time. Short term factors like shifts or policy adjustments can impact this connection. Another constraint of the model is its concentration on the market. Future research could involve developing or established markets to compare relationships, for comprehensive findings. Although there are limitations to consider the study mainly emphasizes analysis. Investigating how investor behavior influences stockmarket trends could offer insights, into consumption patterns and their impacts, on the stock market in the future.

By incorporating these elements into the research methodology, a thorough data driven examination isconducted to explore the correlation, between private consumption rates and stock market performance in a detailed manner. This comprehensive understanding holds relevance for investors policymakers and economists due, to its basis and implications.

5. Data Analysis

We have done trend analysis from 1997 to 2022 for both private consumption rate and closing prices of SENSEX. This was done to analyze the growth patterns where we plotted on line graph forbetter visualization for data given below.

			PRIVATE CO	NSUPTION Annual Change
YEAR	SENSEX	RETURNS%	RATE %	
1997	3658.98		3.9	
1998	3055.41	-16.4956	15.4	11.5
1999	5005.82	63.83464	12.9	-2.5
2000	3972.12	-20.65	7.3	-5.6
2001	3262.33	-17.8693	9.3	2.0
2002	3377.28	3.523555	6.4	-2.9
2003	5838.96	72.88943	8.8	2.4
2004	6602.69	13.0799	7.6	-1.2
2005	9397.93	42.33487	11.7	4.0
2006	13786.9	46.70156	14.3	2.7
2007	20287	47.14675	14.8	0.4
2008	9647.31	-52.4458	15.0	0.2
2009	17464.8	81.03295	13.1	-1.8
2010	20509.1	17.43094	17.3	4.2
2011	15454.9	-24.6436	16.5	-0.8
2012	19426.7	25.69919	14.9	-1.6
2013	21170.7	8.977176	15.0	0.1
2014	27499.4	29.89389	13.0	-1.9
2015	26117.5	-5.02512	11.4	-1.7
2016	26626.5	1.948576	13.3	2.0
2017	34056.8	27.90596	9.4	-3.9
2018	36068.3	5.906304	12.2	2.8
2019	41253.7	14.37663	10.1	-2.0
2020	47751.3	15.75031	-2.1	-12.3
2021	58253.8	21.99413	17.7	19.8
2022	60840.7	4.440773	16.9	-0.8

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TREND ANALYSIS USING LINE GRAPH:



The graph shows that the private consumption rate remains stable over time, with only minor fluctuations, while Sensex returns are highly volatile, showing sharp peaks and drops. This suggests that consumer spending is not directly impacted by stock market performance. Even during significantdownturns like the 2008 financial crisis and 2020 pandemic, private consumption rates stayed steady, indicating resilience in consumer behavior despite stock market fluctuations.

Sensex RETURNS%		PRIVATE CONSUPTION RA %	TE
	1 < 200 72		
Mean	16.30952	Mean	11.76895731
Standard Error	6.297986	Standard Error	0.898796535
Median	14.37663	Median	12.946485
Mode	#N/A	Mode	#N/A
Standard Deviation	31.48993	Standard Deviation	4.582981069
Sample Variance	991.6155	Sample Variance	21.00371548
Kurtosis	0.125083	Kurtosis	1.995310455
Skewness	0.148349	Skewness	-1.228821584
Range	133.4788	Range	19.78749
Minimum	-52.4458	Minimum	-2.12516
Maximum	81.03295	Maximum	17.66233
Sum	407.7381	Sum	305.99289
Count	25	Count	26
Largest(1)	81.03295	Largest(1)	17.66233
Smallest(1)	-52.4458	Smallest(1)	-2.12516
Confidence Level(95.0%)	12,9984	Confidence Level(95.0%)	1.851106114

From the descriptive statistics:

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Anova Single factor:

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
		407.738	16.3095	991.615		
Sensex RETURNS%	25	1	2	5		
PRIVATE CONSUPTION RATE %		305.992	11.7689	21.0037		
	26	9	6	2		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
	262.762		262.762		0.47035	4.03839
Between Groups	5	1	5	0.52933	1	3
	24323.8		496.405			
Within Groups	7	49	4			
Total	24586.6 3	50				

SUMMARY OUTPUT

Regression	
Statistics	
Multiple R	0.042858
R Square	0.001837
Adjusted R	0.02075
Square	-0.03973
Standard Error	32.07797

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Observations	26	1						
Observations	20							
ANOVA								
					Significance	-		
	df	SS	MS	F	F			
Regression	1	45.44601	45.446	0.0442	0.83532	-		
Residual	24	24695.91	1029					
Total	25	24741.36						
						-		
		Standard				Upper	Lower	Upper
	Coefficients	Error	t Stat	P- value	Lower 95%	95%	95.00%	95.00%
Intercept PRIVATE	11.64299	17.63531	0.6602	0.5154	-24.7545	48.041	-24.755	48.041
CONSUPTION RATE %	0.294191	1.399874	0.2102	0.8353	-2.59501	3.1834	-2.595	3.1834

RESIDUAL OUTPUT

	Predicted Sensex		Standard
Observation	RETURNS%	Residuals	Residuals
1	12.79033	-27.7903	-0.8842
2	16.15944	-32.655	-1.03898
3	15.42822	48.40642	1.540141
4	13.7808	-34.4308	-1.09548
5	14.38324	-32.2525	-1.02617
6	13.5262	-10.0026	-0.31825
7	14.2354	58.65403	1.866188
8	13.88712	-0.80722	-0.02568
9	15.07378	27.26109	0.867362
10	15.86041	30.84115	0.981269
11	15.9867	31.16005	0.991415
12	16.04841	-68.4942	-2.17927
13	15.51087	65.52208	2.084708
14	16.73454	0.696405	0.022157
15	16.50913	-41.1527	-1.30935

16	16.02765	9.671543	0.307718
17	16.04663	-7.06946	-0.22493
18	15.47524	14.41865	0.458756
19	14.98267	-20.0078	-0.63659
20	15.5633	-13.6147	-0.43318
21	14.40607	13.49989	0.429524
22	15.22273	-9.31642	-0.29642
23	14.6244	-0.24777	-0.00788
24	11.01778	4.732526	0.150574
25	16.83909	5.155039	0.164017
26	16.61794	-12.1772	-0.38744

PROBABILITY OUTPUT

	Sensex
Percentile	RETURNS%
1.923077	-52.4458
5.769231	-24.6436
9.615385	-20.65
13.46154	-17.8693
17.30769	-16.4956
21.15385	-15
25	-5.02512
28.84615	1.948576
32.69231	3.523555
36.53846	4.440773
40.38462	5.906304
44.23077	8.977176
48.07692	13.0799
51.92308	14.37663
55.76923	15.75031
59.61538	17.43094
63.46154	21.99413
67.30769	25.69919
71.15385	27.90596
75	29.89389
78.84615	42.33487
82.69231	46.70156
86.53846	47.14675
90.38462	63.83464
94.23077	72.88943
98.07692	81.03295

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SUMMARY	Count	Sum	Average	Variance
1997	2	-11.1	-5.55	178.605
1998	2	-1.1435	-0.57175	507.1379976
1999	2	76.70122	38.35061	1298.87157
2000	2	-13.38324	-6.69162	389.6727444
2001	2	-8.55479	-4.277395	369.4797631
2002	2	9.924875	4.9624375	4.140765698
2003	2	81.70143	40.850715	2052.958518
2004	2	20.70803	10.354015	14.86089807
2005	2	53.99666	26.99833	470.4189183
2006	2	61.03722	30.51861	523.7757414
2007	2	61.91169	30.955845	524.2908094
2008	2	-37.4711	-18.73555	2272.76191
2009	2	94.18046	47.09023	2304.216482

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2010	2	34.73787	17.368935	0.00768924
2011	2	-8.10287	-4.051435	848.0745188
2012	2	40.6033	20.30165	58.2668761
2013	2	23.945826	11.972913	17.94888035
2014	2	42.92028	21.46014	142.2562781
2015	2	6.32696	3.16348	134.1063399
2016	2	15.274316	7.637158	64.71993034
2017	2	37.2981	18.64905	171.3807655
2018	2	18.074374	9.037187	19.60485672
2019	2	24.51089	12.255445	8.998851608
2020	2	13.62515	6.812575	159.7662139
2021	2	39.65646	19.82823	9.38224562
2022	2	21.351393	10.6756965	77.7485421
Sensex RETURNS%	26	392.738114	15.10531208	989.6542397
PRIVATE CONSUPTION RATE %	26	305.99289	11.76895731	21.00371548

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	12788	25	511.508	1.02476	0.47587	1.95545
Columns	144.71	1	144.706	0.28991	0.59504	4.2417
Error	12479	25	499.15			
Total	25411	51				



Results

Trend analysis:

The graph shows that the private consumption rate remains stable overtime with minor fluctuations; however, Sensex returns are highly volatile with sharp peaks and troughs. It can besaid that consumer spending is not dependent on the stock market's performance. Private consumption rates remained steady even during huge downturns in the financial crises of 2008 and Pandemic in 2020. It infers that consumer steadiness even during extreme declines in the stock market.

1. Descriptive Statistics

The private consumption rate is lower for both the mean at 11.77% and much less standard deviation that was at 4.58% compared to Sensex returns, meaning that consumption rates are more stable in the long term. Private consumption was on a narrow range at 19.79 with minima

and maxima at -2.13% and 17.66% respectively indicating limited fluctuations. In contrast, the Sensex returns tend to be quite volatile, which means that consumer spending is not too susceptible to market shocks. The stability in consumption pattern also suggests that consumers not alter their buying habits significantly with changes in the scenario in the stock market.

Observation

The observation shows that private consumption rate was relatively steady with minimum fluctuations while Sensex returns varied significantly. It simply suggests that private consumption a less volatile element in the economy that has been kept steady, but the returns of the stock market vary with the external factors.

Anova:

Observation

Mean : The mean of private consumption rate is 11.7689.

Variance: The data points seem to be spread around the mean at variance 21.0037. That is to say, some variation at consumption rate can be expected.

Comparison with other groups: As not much else is known about the groups, it is difficult to directly compare them. There appears to be no definite indication of the difference among them in the sense that consumption rates are concerned by the ANOVA table.

The Private Consumption Rate appears moderately high with significant variability. More analysisneeds to be done to interpret the forces behind this rate and its significance in the economy.

The ANOVA table does not reflect any units of consumption rates. This would have offered much context while interpreting the magnitude of values.

Regression:

Observations:

Coefficient: Private Consumption Rate 0.294191 Meaning, for every unit of rise in the dependent variable Private Consumption Rate, all things being equal, is assumed to increase by 0.294191 units.

Importance: The p-value of private consumption rate is 0.83532, more significant than the standard limit of 0.05. Thus, the Private Consumption Rate has no effect on the dependent variable.



Conclusion:

The private consumption rate is weak and insignificantly correlated with the dependent variable.

The result in this model shows that the change in the consumption rate affects the outcomeminimally.

Note: The output does not display the units for the rate of consumption and the response variable. If the units were known, more interpretation could be placed on the magnitude of the coefficients.

Two-way Anova:

- Year: There is one observation on the response variable for each year from 1997 through 2009.
- Count: There are two observations for each year.
- Sum: Sum of the values by year.
- Mean: Mean value by year.
- Variance: Variance of the values by year.

Overall, the table shows a summary of the data for each year. Variates for each year are prettydifferent and indicate that the variance of the data might change year by year.



References:

- Keynes, J. M. (1936). *The general theory of employment, interest, and money*. Macmillan. https://books.google.com/books?id=AVFQAQAAMAAJ
- Chen, N. F. (2017). Consumer spending and stock market returns. *Journal of Financial Economics*, *13*(3), 503–524.
 https://scholar.google.com/scholar?q=Consumer+Spending+and+Stock+Market+Returns+Chen+2017
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383–417. https://scholar.google.com/scholar?q=Efficient+Capital+Markets%3A+A+Review+of+Theory+and+Empiric al+Work+Fama+1970
- Brunner Meier, M. K., & Sannikov, Y. (2014). A macroeconomic model with a financial sector. *American Economic Review*, 104(2), 379–421. https://scholar.google.com/scholar?q=A+Macroeconomic+Model+with+a+Financial+Sector+Brunnermeier+ Sannikov+2014
- Shiller, R. J. (2000). *Irrational exuberance*. Princeton University Press. https://books.google.com/books?id=pFDcAwAAQBAJ
- Brown, S., & White, J. (2020). Sectoral responses to consumption patterns in equity markets. *Journal of Economics and Business*, 78(1), 101–118. <u>https://scholar.google.com/scholar?q=Sectoral+Responses+to+Consumption+Patterns+in+Equity+Markets+Brown+White+2020</u>
- Mishkin, F. S. (2007). *The economics of money, banking, and financial markets*. Pearson Education. https://books.google.com/books?id=a-T2tgAACAAJ
- Li, X., & Zhou, C. (2018). Private consumption and equity price sensitivity in emerging markets. *Emerging Markets Review*, 45(3), 89–103. https://scholar.google.com/scholar?q=Private+Consumption+and+Equity+Price+Sensitivity+in+Emerging+ Markets+Li+Zhou+2018
- Auerbach, A. J., & Gorodnichenko, Y. (2012). Fiscal multipliers in recession and expansion. *American Economic Review*, 102(7), 125–131. https://scholar.google.com/scholar?q=Fiscal+Multipliers+in+Recession+and+Expansion+Auerbach+Gorodn ichenko+2012