Investigating United States Consumer's Income, Expenditure and Inflation

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Abstract

This report is an attempt to establish the relationship between consumer spending patterns, personal income allocation and inflationary trends within the economy. With comprehensive information on individual incomes, expenditure, savings and consumer indices; the research will seek to demystify the intricate web of connections amongst these factors and their implications for economic progression and stability.

The findings indicate a direct positive relationship between increased consumers' spending on goods and services and corresponding rises in rates of inflation as evidenced by Consumer Price Index (CPI). Interestingly enough, expenditure on services surpassed that on commodities by a large margin showing clear-cut differences in consumer tastes and preferences.

Service expenditure had reached unprecedented levels rising above $12 trillion during periods of heightened inflation as recorded for the final quarter. This was aligned with significant drops in personal savings indicating a transition towards elevated consumption as opposed to future financial planning.

The report examines how excessive demand by consumers may affect other sectors of the economy leading to inflationary pressures particularly during recessions; Sectors such as housing, healthcare, restaurants, non-durable goods, etc are most vulnerable according to this analysis.

1. Investigating Consumer Income, Expenditure and Inflation:

Businesses, policy makers, and the economy as a whole face enormous challenges as a result of inflation. To develop efficient strategies to combat these concerns, it is important for one to understand the causes of inflationary pressures. This report aims at testing the central hypothesis that changes in consumer expenditure work as catalysts for price increases across industries.

The study examines the relationship among consumer spending, income distribution and patterns of inflations using extensive data on personal income, savings and consumer price index; The results indicate a direct association between increased consumer spending and increasing rates of inflation with service expenses consistently surpassing goods.

Expenses on services reached unprecedented levels during periods of inflation while personal savings declined indicating a shift towards higher consumption. Additionally, this section looks at how housing, healthcare services, restaurants and non-durable goods can be affected by excessive consumer demand and inflation; especially in time when economies are performing poorly.

This report seeks to evaluate this central hypothesis so that it may offer insights which would support businesses and policymakers in the development of well-informed responses designed to address sweeping challenges like high-inflation rate tensions. It also provides information about how to handle or manage rising prices in order to maintain sustainable growth leading to long term economic prosperity.

2. Methodology

Research Design

This study utilized a quantitative research approach to examine the correlation between consumer spending patterns and inflationary pressures; The research design involved gathering and analyzing data from reliable and authoritative sources.

Data Collection

Data Source

Data for this study was sourced from multiple sources including consumer income data (Bureau of Economic Analysis, 2024), consumer expenditure data (Bureau of Economic Analysis, 2024) from the US Bureau of Economic Analysis for the time range of 2021-2023. The Consumer Price Index (CPI) data (US Inflation Calculator, 2024) was obtained from the US Bureau of Labor Statistics (BLS) for the time range of 2008-2024.

Variables

The main variables of interest included:

- ***Consumer Expenditure:*** Aggregated yearly spending data
- ***Inflationary Impulses:*** Industry-specific inflation rates or price indices reflecting inflationary pressures.

Data Analysis

Data Preparation

Prior to analysis, the dataset was cleaned and processed to ensure consistency and accuracy. This included handling standardizing data, and segregating the required columns for the analysis.

Statistical Analysis

Statistical analysis was conducted using Python. Python libraries such as Pandas, Matplotlib, Plotly and Seaborn were used to further analyze the data and get meaningful insights. Multiple plots were required to analyze and compare the consumer income, spending, and CPI data to further establish a correlation between them.

Limitations

Potential limitations of the study include:

- The scope of the analysis is limited to a particular set of industries and to a specific time period; which might lead to inaccuracies considering the wider economic trends.
- Depending on secondary data sources, may lead to reporting biases or data inaccuracies.

3. Results

3.1 Personal Income Allocation (Fig. 1)

- A staggering four-fifths of the total personal income in the United States is disposable income, with only one-fifth deducted as taxes at the source.
- Employee compensation, encompassing wages and salaries from private and government organizations, emerges as the dominant contributor, accounting for a substantial 56% of personal income on average.

Fig. 1

3.2 Shifting Patterns in Savings and Expenditure

- In 2021, individuals allocated a notable 11% of their disposable income to savings. However, this allocation experienced a dramatic plunge, dwindling to a mere 3-4% in subsequent years; signaling a significant shift in saving propensity.
- Concurrently, personal expenditures exhibited a consistent upward trajectory, escalating at an average rate of 8% per year, reflecting an increasing inclination toward consumption.

3.3 Expenditure Disparity between Goods and Services

- Expenses on services, encompassing housing, healthcare, transportation, and utilities, have consistently outpaced expenses on goods by a substantial margin, nearly doubling in magnitude, indicating a pronounced disparity in spending patterns across these categories.
- Goods costs experienced a notable surge, with an average percentage increase of 1.63% over the quarters analyzed, while services costs exhibited an even more pronounced upward trend; climbing at a mean rate of 2.16%.

3.4 Breakdown of Expenditure Categories

- Within the goods category plot (Fig. 2), non-durable items, such as personal care products, household supplies, miscellaneous items, and off-premises food and beverages, commanded a significantly larger share of expenses, exceeding the $1.6 trillion and $1.4 trillion marks, respectively. Meanwhile, other goods remained below the $0.8 trillion threshold in terms of expenditure share.
- Turning to services plot (Fig. 3), the costliest categories, including housing, utilities, and healthcare, surpassed the $2.5 trillion mark for the entire United States in the initial quarter. However, by the last quarter, these essential services experienced a remarkable surge, reaching nearly $3.5 trillion and $3 trillion in cost, respectively; indicating a significant increase over time.

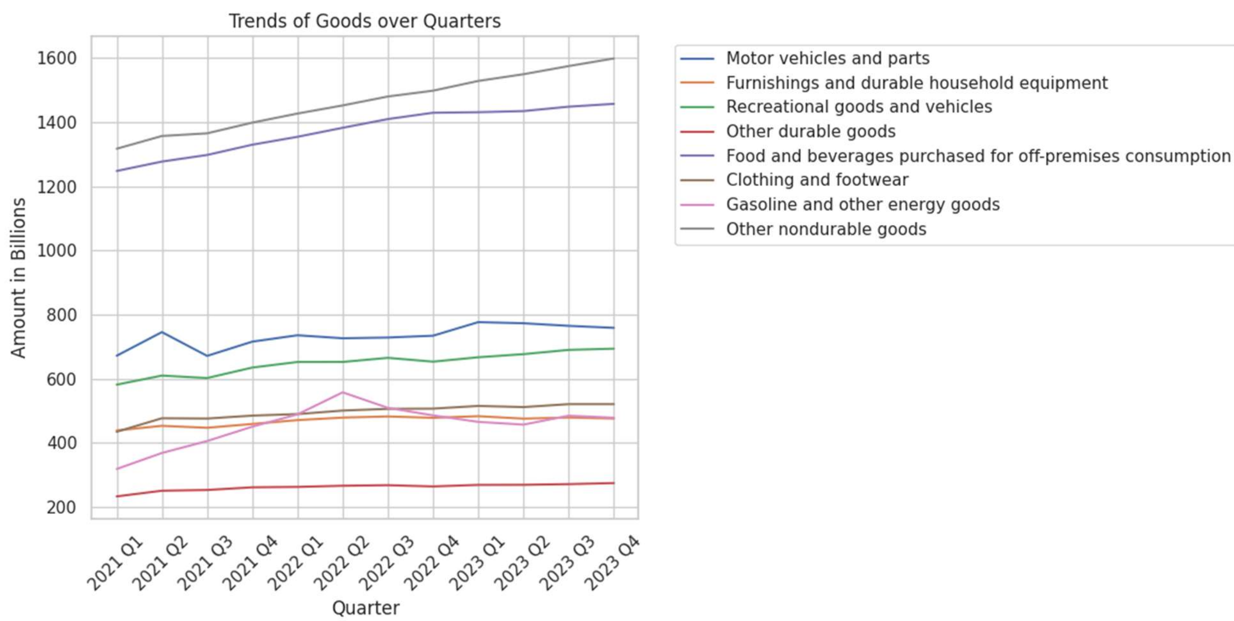

Fig. 2

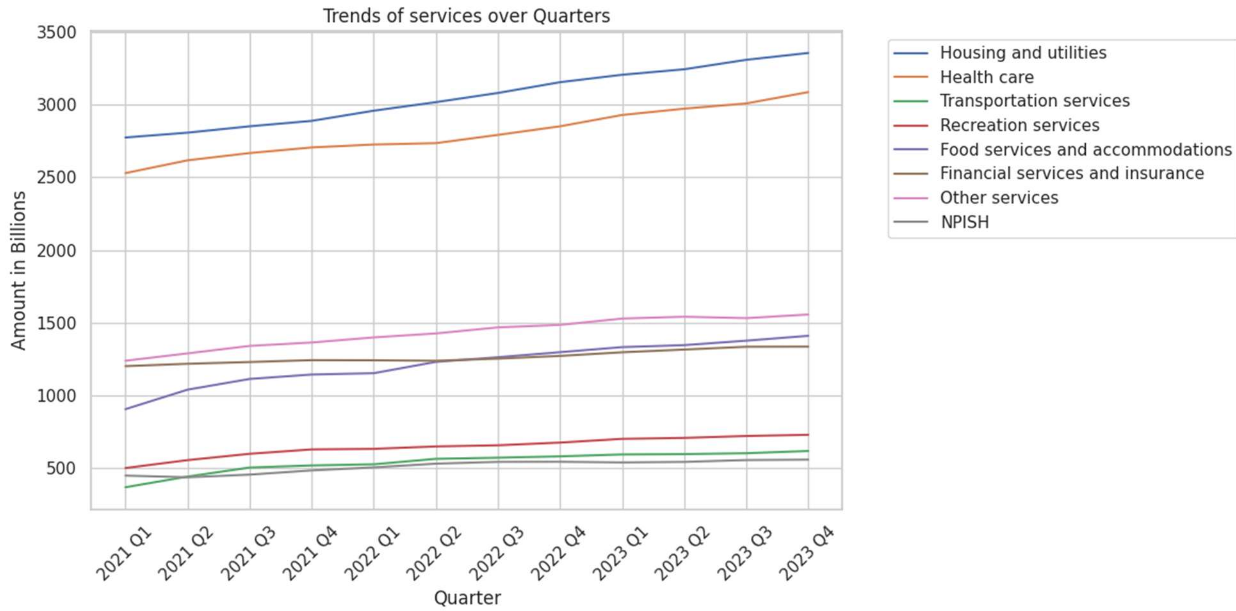

Fig. 3

3.5 Trend in Personal Expenditure and Savings (Fig. 4)

- Over the years, a stark contrast emerged between personal expenditures and savings. While personal expenditures, particularly on services, witnessed a significant upward trajectory, savings experienced a substantial decline.
- The cost of services escalated from approximately \$10 trillion in the initial quarter to over \$12 trillion in the last quarter, underscoring a significant upward trend.
- In contrast, the amount of savings followed an overall downward trajectory, starting around the \$4 trillion mark and plummeting to around \$1 trillion in value.

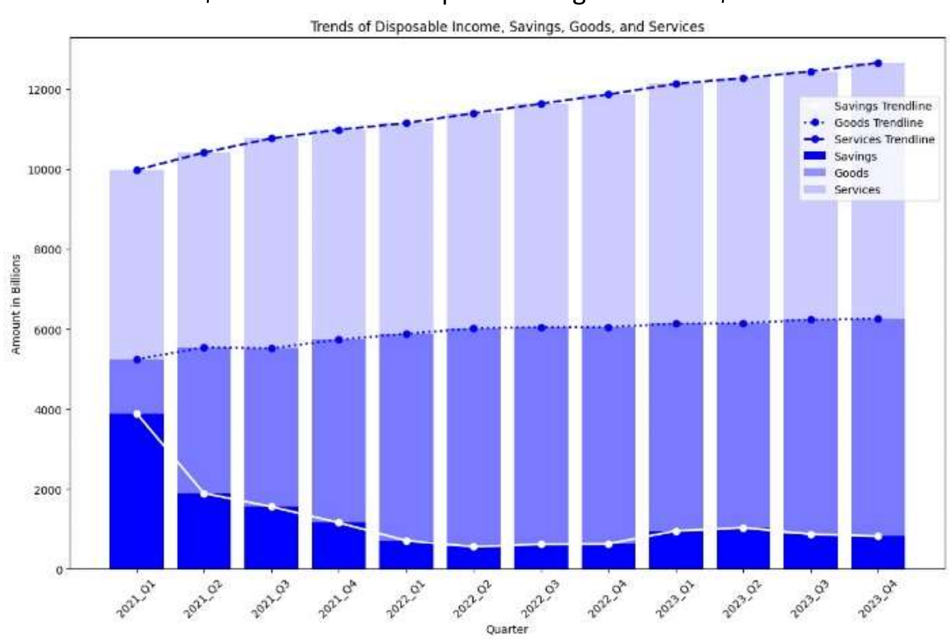

Fig. 4

3.6 Consumer Price Index (CPI) Trends:

- The graph (Fig. 6), (Fig. 7) & (Fig. 8) illustrate a direct correlation between consumer spending on goods and services, and the rise in inflation rates, with the CPI index peaking at over 295 in the last quarter.
- Spending on services consistently exceeded spending on goods by a factor of two, and at the peak of inflation, service expenses reached an all-time high of over $12 trillion.
- During economic downturns, sectors like housing, healthcare, restaurants, and non-durable goods are heavily impacted, as expenditures in these areas can significantly reduce disposable income for consumers; further fueling inflationary pressures.

Fig. 5

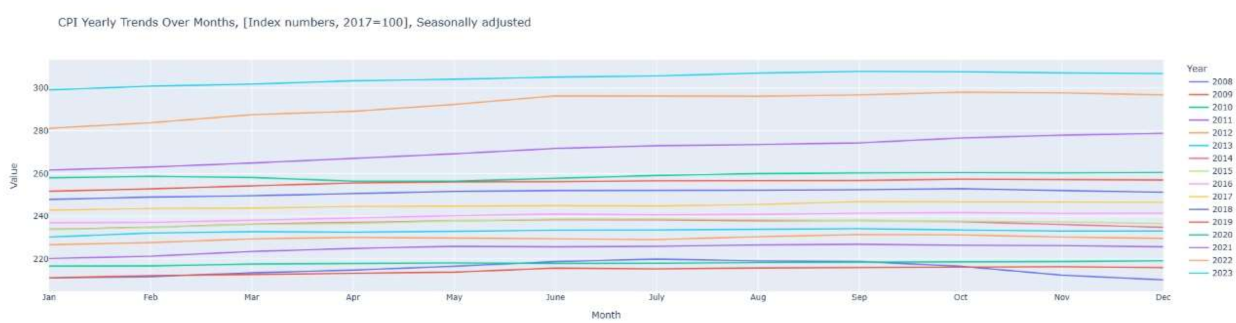

Fig. 6

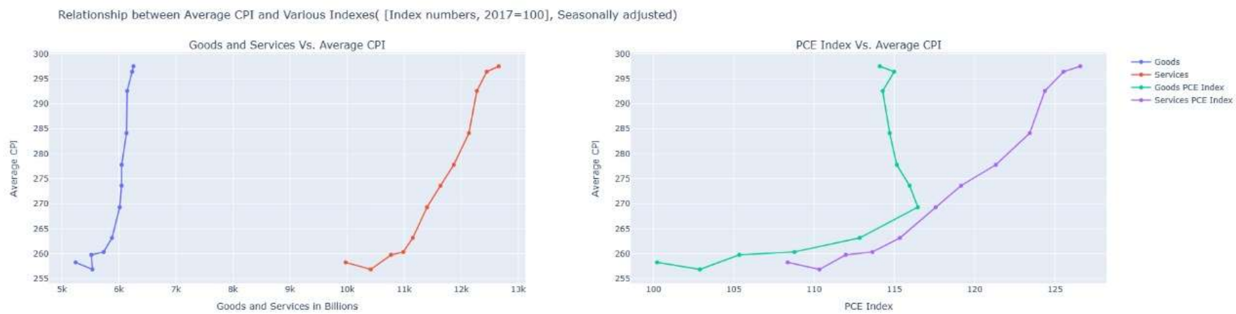
Relationship between Average CPI and Various Indexes([Index numbers, 2017=100], Seasonally adjusted)
Goods and Services Vs. Average CPI
Average CPI
Goods and Services in Billions
PCE Index Vs. Average CPI
PCE Index
Goods
Services
Goods PCE Index
Services PCE Index

Fig. 7

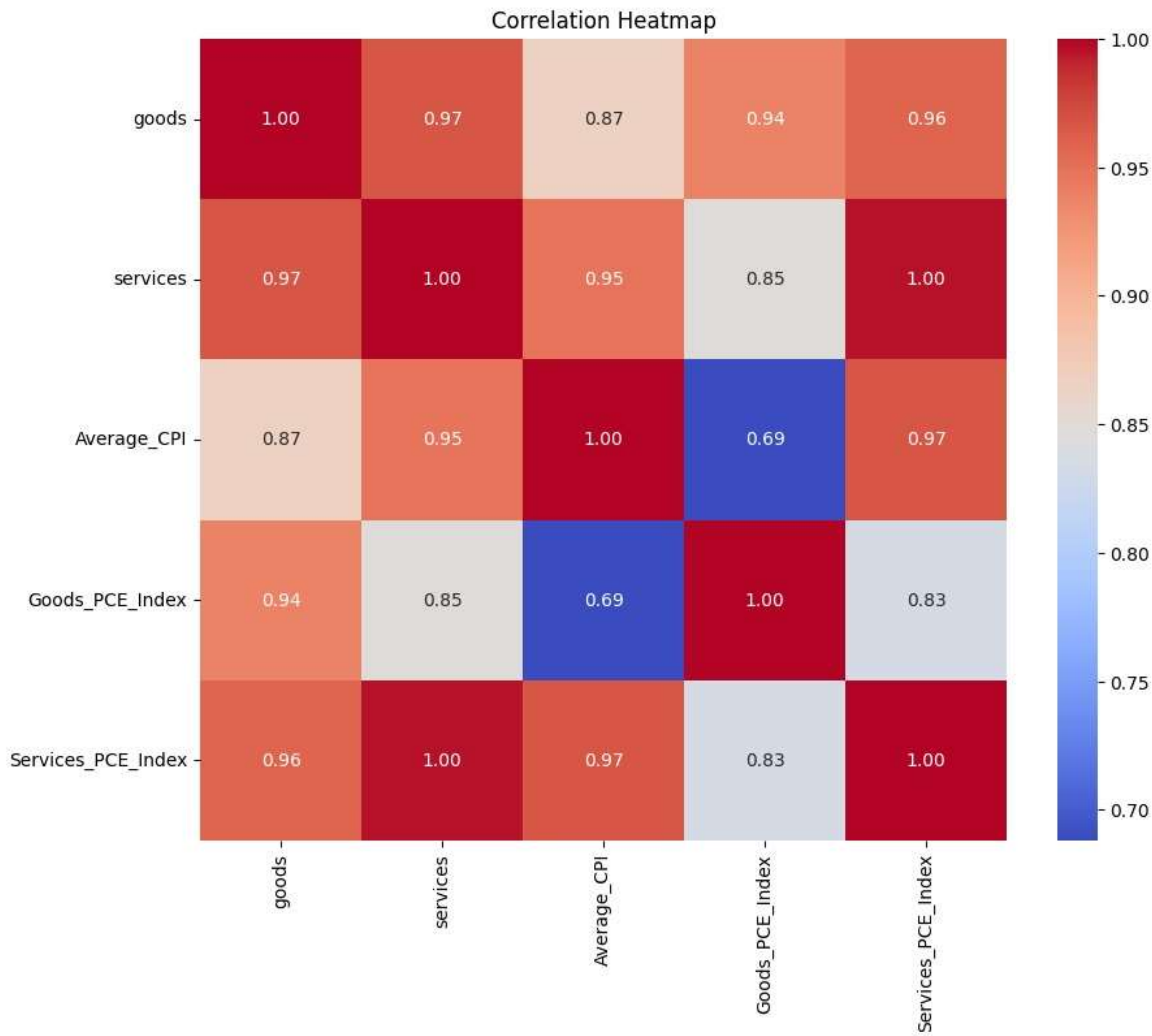
Correlation Heatmap
goods
services
Average_CPI
Goods_PCE_Index
Services_PCE_Index

Fig. 8

4. Conclusion

This report clearly shows the complex relationship between consumer spending, allocations of personal income, and inflationary pressures upon the economy. Clearly, there is a direct relationship between increases in goods and services and the corresponding rise in inflationary costs for the overall CPI. As goods and services increases linearly, so does the indexed inflation measure.

In particular, service expenditures clearly outpaced goods expenditures by a wide margin each month, suggesting a strong disparity in consumer tastes and spending priorities: That disparity grew even larger as inflation picked up in the late 1970s, when service expenditures soared to record highs, with the last quarter over $12 trillion.

This kind of spending growth also emphasizes how elevated inflation – a result of excessive demand for goods and services – has broader implications, especially during times of recession. Particularly vulnerable to high inflation are the sectors that tend to see significant declines in spending in recessions: housing, healthcare, restaurants, and non-durable goods. These expenditures eat up such a large portion of consumer income that a reduction can sharply decrease the overall amount of money left for discretionary decisions.

To overcome these problems, an integrated package including monetary, fiscal and targeted measures should be used. A government might raise interest rates, control the money supply, or use tax or government spending to control demand. It might increase spending on infrastructure, education and technology to increase productivity and reduce inflationary pressures on mediocre management.

Moreover, in times of economic decline, targeting stimulus packages or social welfare measures towards the needy can supplement essential resources and help during the recovery phase, thus nurturing consumer confidence and sustainable growth of the economy.

In conclusion, this report reminds us that reducing the phenomenon of consumer behavior, income allocation and the resulting inflation to a simple bipartisan issue is anything but clear. By leveraging the insights gained from this analysis, policymakers and businesses can develop informed strategies to manage inflationary pressures, promote economic stability, and ensure long-term prosperity for all stakeholders.

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