
**THE CHANGING NATURE OF PASSENGER CARS AS A COMMODITY:
AN EXAMINATION OF THE ALTERED RELATIONSHIP BETWEEN
CONSUMER PURCHASING POWER, PRICE OF PASSENGER CARS
AND ITS DEMAND**

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Abstract:

It is evident by the law of demand that for any normal good, the demand for the good varies negatively with price and positively with income. This law is violated if the good in consideration is an 'Inferior' or a 'Giffen good'. In case of the former, the slope of the Engel curve is negative. The change in the purchase of the commodity has an opposite relationship with change in a person's income. In case of the latter, the slope of their demand curve is positive. When price goes up, the quantity demanded of a 'Giffen Good' also goes up. The paper aims to establish through factual assessment, that in recent years, cars as a commodity are portraying the characteristics of an 'Inferior' and 'Giffen good'. An examination of the relevant income and price situations over a period of time helps to assess the same. The paper also looks into the possible causes for the occurrence of the observed trend.

Keywords:

Demand, Income, Giffen Good, Commodity.

The Changing Nature of Passenger Cars as a Commodity:

In case of a Giffen Good, the slope of their demand curve is positive. When price goes up, the quantity demanded also goes up. A Giffen good is so strongly an inferior good (being more in demand at lower income) that the contrary income effect more than offsets the substitution effect, and the net effect of the good's price rise is to increase demand for it. The question that now arises is, are we observing the same trend in the Passenger Car market? Cars are no longer the luxury commodity that they once used to be. In the modern day, they are like any other normal commodity. It is however noticeable that, though the prices of Passenger Cars have been on the rise consistently, so are their sales. This anomaly is further enhanced by the fact that inflation in India has been consistently rising, relatively more than the rise in income levels, thus effectively bringing down the per-capita real income of the people. So we are left with one observation – even with a fall in the real income and a steady increase in the prices of cars, the demand for cars are on the rise, making them more like Giffen Goods! The present study aims to establish this through the study of the relevant income and price situations over a period of time. In other words, the paper attempts to present a factual assessment that in recent years, cars as a commodity are portraying the characteristics of an 'Inferior' and 'Giffen good'

The per capita GDP and the per capita Real GDP:

GDP is the sum of gross value added by all domestic producers in the economy added to the total amount of product taxes paid after deducting all such subsidies which had not been included in the value of the products. GDP per capita is obtained by dividing the gross domestic product by the midyear population. The per capita GDP directly measures the productivity of the resources of an economy and indirectly measures the standard of living of its citizens. The Real GDP per capita takes into account the existing inflation in an economy. A GDP deflator can be used to "deflate" or take out the effect of inflation from the per capita nominal GDP in order to convert it to per capita real GDP. The GDP deflator is a measure of the average price of all of the goods and services produced in an economy, relative to the base year prices used to calculate real GDP. In this paper, we use the Real GDP per capita as an indicator of the real income of consumers.

Trends in Real Per-Capita Income in India over the Years:

If we look at the nominal per capita income in India over the years, it seems to have grown steadily over the years, sometimes by an impressive 28 per cent (on a year to year basis) during certain years. However, it has not left the average Indian better off. In fact, a more aggressive inflation has robbed the Indians of all the positive impacts of a rising GDP, leaving them worse off than before in terms of the purchasing power of their income. This has led to a fall in the standard of living of the rich and the poor alike. Table 1 provides a comparison of the nominal and real GDP over the years since globalization which clearly shows that for all the years, the real per capita GDP is less than its nominal value and the difference between them, which signifies that the fall in the purchasing power of an average Indian, have intensified by 45 per cent between 1996 and 2014.

Table 1: Nominal and Real Per Capita GDP in India

| Year | Nominal GDP per capita(USD)¹ | GDP deflator² | Real GDP per capita(USD)³ |
|-------------|--|---------------------------------|---|
| 1996 | 408.2 | 1.076 | 379.4 |
| 1997 | 424.1 | 1.065 | 398.2 |
| 1998 | 421.8 | 1.08 | 390.6 |
| 1999 | 451.1 | 1.031 | 437.5 |
| 2000 | 452.4 | 1.036 | 436.7 |
| 2001 | 460.8 | 1.032 | 446.5 |
| 2002 | 480.6 | 1.037 | 463.5 |
| 2003 | 557.9 | 1.039 | 537 |
| 2004 | 640.6 | 1.057 | 606.1 |
| 2005 | 729 | 1.042 | 699.6 |
| 2006 | 816.7 | 1.064 | 767.6 |

| Year | Nominal GDP per capita(USD)¹ | GDP deflator² | Real GDP per capita(USD)³ |
|-------------|--|---------------------------------|---|
| 2007 | 1,050.00 | 1.058 | 992.4 |
| 2008 | 1,022.60 | 1.087 | 940.8 |
| 2009 | 1,124.50 | 1.061 | 1059.8 |
| 2010 | 1,387.90 | 1.09 | 1273.3 |
| 2011 | 1,471.70 | 1.064 | 1383.2 |
| 2012 | 1,449.70 | 1.076 | 1347.3 |
| 2013 | 1,455.10 | 1.063 | 1368.9 |
| 2014 | 1,581.50 | 1.03 | 1535.4 |

Source: 1: World Bank data, 2: Calculated by author based on World Bank data, 3: Calculated by author

When purchasing power falls, people look for cheaper substitutes to include in their consumption bundle, excluding the more expensive items to make up for the fall in purchasing power and thus reinforcing the substitution effect and the negative income effect. Passenger Cars being a normal commodity, its sales over the years should have reflected the consumer's reduced purchasing power. Apparently, it is not so. The sales and per capita car ownership figures give a completely different picture! Table 2 clearly shows us that except in 1999, 2001 and 2002, all the other years show an increase in the number of vehicles sold, thus affirming the suggestion that in spite of a fall in real income over the years, the demand for automobiles have increased. As for the outliers, in 1999, the Supreme Court had passed an order directing all car manufacturers to comply with Euro I emission norms and in early 2001, the introduction of VAT was proposed. These two major events might have caused a temporary fall in demand in 2001 and 2002. However, if we put aside these years as outliers, we can find an almost consistent growth in the industry despite the persistent problem of inflation. The data shows that domestic sales have increased by a whopping 457 per cent between the years 1996 and 2014!

Table 2: Domestic Sales of Passenger Vehicles and Per Capita Car Ownership in India over the Years.

| Year | Domestic Sales of Passenger Vehicles | Car Ownership (per 1000 people) |
|-------------|---|--|
| 1996 | 449,600 | 3.6 |
| 1997 | 545,946 | 4.0 |
| 1998 | 555,022 | 3.9 |
| 1999 | 521,678 | 4.1 |
| 2000 | 762,061 | 4.7 |

| Year | Domestic Sales of Passenger Vehicles | Car Ownership (per 1000 people) |
|-------------|---|--|
| 2001 | 717,672 | 4.5 |
| 2002 | 675,116 | 5.0 |
| 2003 | 707,198 | 5.6 |
| 2004 | 902,096 | 6.5 |
| 2005 | 10,61,572 | 6.9 |
| 2006 | 11,43,076 | 7.7 |
| 2007 | 13,79,698 | 8.6 |
| 2008 | 15,49,882 | 8.1 |
| 2009 | 15,52,703 | 8.0 |
| 2010 | 19,51,333 | 10.0 |
| 2011 | 25,01,542 | 12.4 |
| 2012 | 26,29,839 | 13.8 |
| 2013 | 26,65,015 | 13.9 |
| 2014 | 25,03,509 | 14.2 |

Source: SIAM. Car Ownership: Calculated by author on the basis of population data obtained from World Bank Database. All figures represent absolute numbers.

A change in consumption pattern of normal goods is also seen with a change in its price. Generally, when demand increases, as shown in table 2, the law of demand ensures that the price for such commodities must have decreased. However, in case of passenger cars, the trend is just the opposite. The prices of cars, throughout models and brands, have increased rather steadily over the years. Table 3 shows the increase in the price of various models of passenger cars since 1998, which in some cases, is as massive as 285 per cent.

Table 3: Increase in the Price of Various Models and Brands of Passenger Cars since 1998.

| Name of the model | Year of comparison | Price in the Year of comparison (Rs Lakh) | Price in 2016 (Rs Lakh) | Per cent change in Price |
|--------------------------|---------------------------|--|--------------------------------|---------------------------------|
| Tata Safari | 1998 | 7 | 19 | 171.43 |
| Maruti Wagon R | 1999 | 3 | 4.1 | 36.67 |
| Mahindra Scorpio | 2002 | 5 | 18.5 | 270.00 |

| Name of the model | Year of comparison | Price in the Year of comparison (Rs Lakh) | Price in 2016 (Rs Lakh) | Per cent change in Price |
|----------------------|--------------------|---|-------------------------|--------------------------|
| Toyota Corolla | 2003 | 9.8 | 23 | 134.69 |
| Honda City Zx Series | 2003 | 6 | 8 | 33.33 |
| Toyota Innova | 2005 | 6.76 | 26 | 284.62 |
| Maruti Swift Petrol | 2005 | 3.86 | 4.71 | 22.02 |
| Hyundai Verna | 2006 | 6.21 | 8 | 28.82 |
| Hyundai i10 | 2007 | 3.4 | 4.35 | 27.94 |
| Hyundai i20 | 2008 | 4.8 | 5.55 | 15.63 |
| Ford Figo | 2009 | 3.49 | 4.46 | 27.79 |
| Chevy Beat | 2009 | 3.34 | 4.33 | 29.64 |

Source: Compiled by Author

Furthermore, it is also seen that if the price of a commodity increases, it affects the demand for its complimentary commodity. If we take cars and fuel to be complimentary, then the steady increase in the prices of diesel and petrol, as shown in figure 1, should have deterred the demand for cars. Again, table 2 proves that it has not been so. This marks a contradiction to the general perception of complimentary goods in economics.

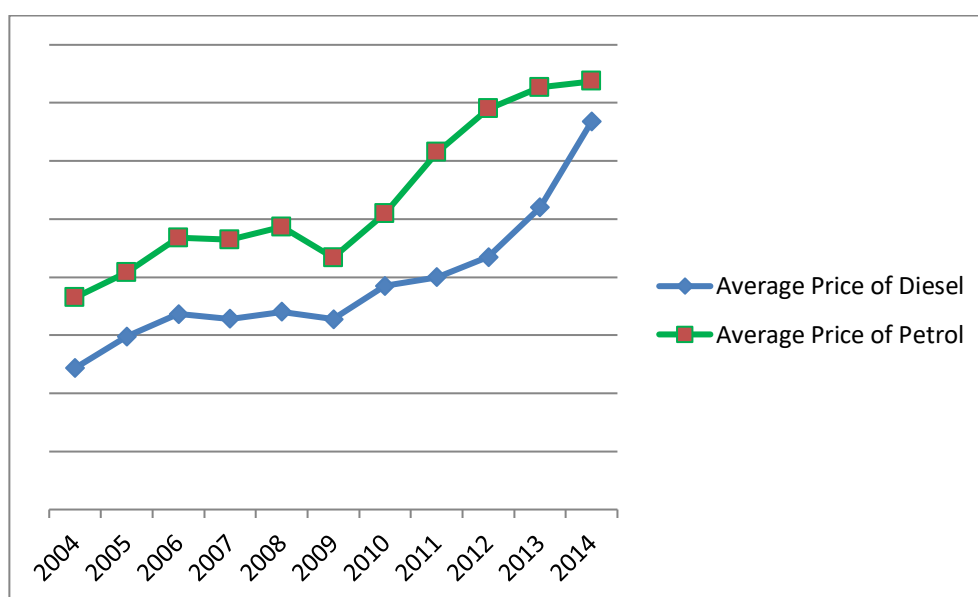


Figure 1: Increase In Fuel Prices between 2004 And 2014

Source: Compiled by Author

Results:

Table 1 tells us that in India the purchasing power of people have been on the decline between the years 1996 and 2014, as real income is much less compared to the nominal income, taking into consideration the lofty levels of inflation in the country. Table 2 tells us that the domestic sales of Passenger Cars in India during the same years have been on the rise continuously and have shown a 457 per cent growth in that period. Table 3 tells us that the prices of passenger cars, during the same period, have been on the rise across models and brands. Figure 1 tells us that the prices of fuel, an important complimentary commodity to cars, have steadily been on the rise.

These results suggest that cars no longer portray the characteristics of a normal good. They rather define the characteristics of a ‘Giffen good’, since, a decline in consumer purchasing power, a rise in prices of cars as well as a rise in price of its primary complimentary commodity fuel, still results in increased demand for the commodity.

Discussion: This change in the nature of a commodity is very obviously a result of a change in a variety of economic conditions. An investigation of the possible causes behind this violation of the law of demand brought to light some important facts. A brief discussion of those causal factors is given below.

Possible Causes of the Increased Demand for Automobiles:

Abundant Options: The first and foremost reason might be that the passenger car market is flooded with abundant options. So, if a consumer finds his favourite model beyond his reach, he either chooses a cheaper brand or chooses to pay in easy instalments, which are now a day offered by every seller. Easy financing and numerous substitutes have made buying a car not a very difficult proposition even for the so called middle class! Table 4 gives an account of the large no of passenger cars available under different price bands.

Table 4: Price Bands and Number of Cars

| Price | No of models available in 2016 |
|-------------------|---------------------------------------|
| Upto 4 lakhs | 13 |
| 4-7 lakhs | 56 |
| 7-10 lakhs | 62 |
| 10-15 lakhs | 30 |
| 15-25 lakhs | 20 |
| 25-40 lakhs | 36 |
| 40 akhs and above | 81 |

Source: Compiled by author

Easy Financing:

A favourable picture is also seen when we explore into the car financing market too. India's working age population is on the rise and is expected to be more than 64 per cent by 2021 (Economic Survey, 2014) and 70 per cent of India's population is below the age of 35 (Census of India 2001).

This makes automobile financing a safer option for financial institutions together with a promise of good future returns. At a time when many public as well as private banks and financial institutions are heavily burdened with their NPA overloads, these factors are motivating them to offer automobile financing at very competitive rates of interest.

This makes is easy for the common masses with not so great an income, to go and buy a car. It also makes it possible to own a car even in a real income decreasing scenario! Table 5 gives an account of interest rate bands charged by various banks for car loans.

Table 5: Interest Rates for Car Loans

| Bank | Interest Rates (per cent) in 2016 |
|----------------|--|
| ICICI Bank | 10.50 - 15.50 |
| HDFC Bank | 10.00 - 16.50 |
| Kotak Mahindra | 11.00 - 13.50 |
| SBI | 9.80 - 17.15 |
| Magma Fincorp | 12.00 - 16.00 |
| AXIS Bank | 11.50 - 12.50 |
| PNB Bank | 10.25 - 11.50 |

Source: Compiled by author

To make financing even more attractive and hassle free for the time and money constrained, e-service happy customers of today; some financial institutions have come up with a lot of innovative practices.

These practices have been introduced with the objective of giving people the courage to dream of owning a car even with a not so great income, as well as to make the process of loan disbursement efficient and swift. Table 6 assembles an account of a few such practices.

Table 6: Innovative Practices by Automobile Financers

| Innovative practices | Who gives | What is it? |
|-----------------------------|------------------|--|
| 30-Minute loans | HDFC bank | Using biometric technology to disburse car loans in about just 30 minutes. The biometric device, available with many car dealers, links a customer's fingerprint to his or her Aadhaar number and obtains necessary details linked to that number. After giving additional details, like job and income, and payment of margin money, the customer can drive his new car out in no time. |
| Captive financing | Many | The automobile company comes up with a financing company of its own, like Toyota Financial Services, Daimler Financial Services (for BMWs), TVS Services etc. As the loan is in-house, better terms are offered with benefits for customers. |
| Balloon repayment | Many | Lower EMIs are charged during the majority of tenure. At the end of this period, customers can choose to pay off the remaining amount, sell the car or go for refinancing. This proves useful to those who like to keep changing their cars frequently. It allows you to sell the car at a favorable cost. |

Source: Compiled by author

Good Returns On Investment:

The third reason may be that automobiles being durable goods, last for a long period of time during which they can help reduce the transportation cost of a buyer, increase his time efficiency and also increase his nominal as well as real income. Saying otherwise, it can function as an asset which rewards the buyer with returns.

The huge amount of profit that car rental services make serves to prove this fact. All leading car rental service providers like Carzonrent, ECO Rent A Car, Platinum Cars, Ola Cabs and Avis enjoy a profit margin of 5-15 per cent depending on the type of car provided.

The Indian Car rental business is growing rapidly at a (CAGR) of around 12% and is expected to be worth around USD 15 billion within next 5 years with the organized sector having almost 50% of this market.⁶

Recent Decline in Fuel Prices:

Another reason might be that very recently the price of fuel has started to come down, thus kicking in the extra demand caused by a cheaper complimentary good. Though the fall in the retail prices (15.7% for diesel and 4.7% for petrol) have been much lower than the fall in the price of wholesale crude (36%), the reason being the hikes in excise duty and value added tax, the retail prices are nevertheless on the decline.

While a decline in petrol price would be helpful for passenger car owners, a decline in the price of diesel would help to reduce freight costs and thereby lower the prices of commodities and increase the consumer's purchasing power!

Table 7 provides an account of the change in fuel prices between the years 2014 and 2015. Hopefully, both the price of petrol and diesel will further decrease over the years, leading to a steady boost in the demand for passenger cars.

Table 7: Decline in Fuel Prices

| | Retail price (Rs/ litre) | | Wholesale price (Rs/barrel) |
|------------------------|--------------------------|--------|-----------------------------|
| | Diesel | Petrol | Crude Oil(India) |
| November 2014 | 53.35 | 64.24 | 5146.16 |
| November 2015 | 44.95 | 61.2 | 3283.36 |
| Per cent change | 15.7 | 4.7 | 36.2 |

Source: compiled by author

Improvement In Road Infrastructure:

Talking of complimentary goods, there is obviously one more to consider. The roads! A recent surge of infrastructure development, with special emphasis on roads and bridges, has led to an increase in the desire of buying a personal car or to use heavy vehicles as a means of interstate transport of commodities. The construction of roads and bridges are forecasted to grow at a Compound Annual Growth Rate (CAGR) of 17.4 per cent over FY12–17 and touch US\$ 19.2 billion by 2017⁷. The budgetary allocation for roads and highways has also continually increased over the years and rigorous development can be seen all over the country, improving interstate, intrastate as well as rural urban connectivity. Table 8 indicates the rise in budgetary support for roads and highways. The government also plans to make certain amendments in the Motor Vehicles Act and open up the road transport sector in the passenger segment which is expected to increase efficiency as well as have a lot of other multiplier effects on the growth of the automobile industry as well as on other areas requiring development.

Table 8: Budget Allocation for Roads and Highways

| Year | Gross Budgetary Support (Rs Crore) |
|-------------|---|
| 2016-17 | 55,000 |
| 2015-16 | 47,107 |
| 2014-15 | 33,048 |
| 2013-14 | 23,300 |

Source: Ministry of Road Transport and Highways, Government of India

Conclusion:

With the current pace of technological development, cars are becoming more and more sophisticated. The software component is increasingly gaining importance in contributing to a vehicle's final value, than its hardware components. The competition amongst the manufacturers is gradually becoming more digital in nature rather than mechanical. This is resulting in massive changes in both the demand and supply situations. The buyer is demanding more customized vehicles and as a result the seller is witnessing a revolution in the industry's basic business model. The only concern for the industry may be the various legal and ethical restrictions that the state authorities are imposing on various categories of vehicles in an attempt to ensure safety standards as well as control the harmful effects of pollution. Therefore, as of today, price seems to be only a secondary factor in determining the demand for cars, the more important factors being keeping pace with consumer expectations, being technologically neoteric and simultaneously eco-friendly. A couple of decades from now may find the demand for automobiles being defined in yet other ways, depending on the changing perceptions of both the buyer and the seller.

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