CAR OWNERSHIP IN RELATION TO INCOME DISTRIBUTION AND CONSUMERS' SPENDING DECISIONS

François Lescaroux

Dr François Lescaroux, Direction des Etudes Economiques, Institut Français du Pétrole, 1 et 4, avenue de Bois-Préau – 92852 Rueil-Malmaison – France.

francois.lescaroux@ifp.fr

Abstract

(1) Overview

The increasing needs for mobility at a global level have raised many concerns about the sustainability of our way of living.

From the standpoint of the energy economist, about one half of total oil consumption is used in the transportation sector, where the substitution possibilities are very limited (at least in the medium term) and the demand for mobility in emerging countries is rapidly growing. The surge in oil consumption in the last few years is directly responsible for the oil price hike that has occurred. Further, the growing demand for motor fuel puts pressure on the refining sector where the upgrading capacities tend to saturate.

From the environmental economics' point of view, about 25 per cent of global CO2 emissions from fossil fuels come from the transportation sector alone. The projected growth of this sector raises worries about global warming and clean air because of the limited possibilities of substitution and because of the impossibility to capture the pollutants.

Other important aspects include the needs for infrastructure to develop and for intra-city traffic to adapt and avoid congestion.

As a consequence, a lot of projections of passenger cars' stocks are performed by national and international institutes, as well as individual researchers to help politics and industrials in their decision making. Quite all of them rely on S-shaped curves estimated on pooled or panel data, with or without country-specific effects. The most widely used is the Gompertz function. Other S-shaped curves have been proposed, like the log-logistic function or a truncated log-quadratic specification.

The main limit of the forecasts obtained by simulating these various functions is that they are very sensitive to the functional form used and these functional forms are not justified by any theoretical model.

Another limit of the previous models is that they rely just on the mean of the income distribution and do not take into account the shape of its density. Yet, the importance of income distribution on passenger car demand has been confirmed by Storchmann (2005), who showed that "*high inequality leads to a higher car stock in poor countries, while it leads to a smaller car stock in rich countries*".

(2) Methods

This paper proposes a formal model of per-capita private car ownership based on very simple and general assumptions on income distribution and consumers' spending decisions. The author justifies a theoretical S-shaped curve describing changes in ownership as a function of average per-capita income, income's dispersion and the "Cost/utility" ratio of owning a car.

(3) Results

He applies the model on a panel of 99 countries and 2 regions which cover the whole world and he explains past variations in their ownership rates. Then, projections are performed to the year 2030.

(4) Conclusions

They suggest that the actual trends are not sustainable, which implies a need for important technical and sociological evolutions.

Main references

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