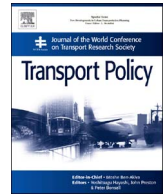




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Urban travel behaviour and household income in times of economic crisis: Challenges and perspectives for sustainable mobility

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ABSTRACT

This article investigates the type and quality of changes in the mobility behaviour caused by the persistent economic and social shock in Greece manifested in 2010 onwards with regard to household income. A trip survey was conducted in 2014 to explore the impacts of the economic crisis on the trip characteristics between the city centre and the greater area of Thessaloniki, the second largest city of Greece. The sample consisted of 853 randomly selected users of the city centre and is representative of the sex and age distribution of the overall population of the urban agglomeration. Aiming to minimise their expenses, the individuals have reduced the trip frequency by private car, notably for optional trip purposes like shopping and entertainment, or they have shifted to public transport, motorbike, walking and cycling for downtown trips. In some cases, this reduction in expenses led to household relocation. These changes were more evident in the lowest income groups. In general, the effects of the economic crisis are proving more effective in limiting car use compared to any sustainable mobility measure that has been implemented in the past. However, households, despite their income, appeared mostly uncertain to preserve any sustainable mobility behaviour. In fact, their decision seems to depend on the future economic conditions.

1. Introduction

A financial or social crisis can result in determinant changes in the everyday life of citizens, as well as in the sectors of production, trade and consumption, employment, governance and in policy-making at the international, regional or urban level. During a crisis, living conditions and standards gradually rebalance and habits that had existed for years may change during the process of adjustment to a new status quo. The global financial crisis of 2008 has affected 80% of cities participated in a survey by the European Union (Guidoun and Soto, 2010) in terms of economic development and social conditions. Travel behaviour is not an exception, even though changes of urban mobility require a long period to be observed.

In the case of passenger transport, the experience from economic crises have shown that the modifications in travel behaviour differ in relation to the household income, the travel distance and the transport means. According to Lee (2010), the most noticeable changes concerned travel for specific purposes and activities that for many people no longer existed or were significantly reduced, such as work and shopping. The decrease in transport demand affected both private and

public transport (PT) modes. Citizens adjusted their mobility behaviour in order to reduce the costs allocated for transportation and acceptance of sustainable mobility seemed to be higher among younger ages and higher income classes (Vlastos, 2013).

The major factors affecting travel choices are divided into two interrelated categories (ADD HOME, 2010):

- External factors: factors related to the spatial shape and structure of the city, the topography of the transport networks, the mobility options and the level of accessibility, the quality of the transport infrastructure and services, the spatial planning policies and governance.
- Personal factors: factors defined by the person or the household related to the demographic and socio-economic characteristics, such as age, gender, education level, profession, employability, residential location, income, lifestyle and social activities.

In this context, factors that had not played a major role prior to the crisis were henceforth of crucial importance and vice versa. Some of the factors that may expedite a modal shift during the crisis are the

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Table 1
Categories of economic crisis and consequences for households (adapted from Ray et al., 2012).

Category of economic crisis	Consequences for households			
	Mobility behaviour	Residential location	Consumption and activities	Preservation of changes
Short term / low intensity	Decrease of travel expenses	No change	Budget optimisation, limited use of savings	No
Long term / low intensity	Suppression of some trips, but no change of transport mode	No change	Reduction of activities in order to preserve the current status of living, fragile financial balance	No
Short term / high intensity	Deeper mobility changes	No change	Economic adjustments anticipating a longer crisis	Yes, temporally
Long term / high intensity	Structural and profound changes in travel patterns	At risk	Significant changes in the consumption habits, and income reductions	Yes, permanent

following (Ray et al., 2012):

- The forced shift towards a new transport mode (e.g. transit) because of the crisis might change a person's perception of this mode. If the perception of the new mode is positive it may lead to a permanent shift, while if it is negative then the user will have the tendency to return to the previous transport means, of which the perception is better (e.g. private vehicle).
- During a crisis, individuals may go through personal changes that affect their way of life and the extent to which various transport means are used.

Households' reactions concerning mobility and housing differ depending on the intensity and duration of the crisis as presented in Table 1.

According to Vlastos (2013), during the financial crisis of 2008, the consequences of a high intensity economic crisis were observed in Europe. Citizens of European cities preferred residential locations in proximity to city centres over more spacious residences in the suburbs, in order to have easier access to various destinations and transit networks. Such personal choices were mainly influenced by the crisis, along with policies and initiatives like urban regeneration projects, environmental awareness and upgrades in PT and sustainable mobility infrastructure.

This paper aims to explore and evaluate the impact of the high intensity Greek economic crisis on urban mobility in relation to household income. More specifically the study compares the travel behaviour of the users of Thessaloniki city centre, the second largest city in Greece, before and during the crisis. An important aspect of the study is to provide a critical understanding of the challenges and opportunities that the crisis offers towards the achievement of sustainable mobility. The remainder of this paper is organised as follows: Section 2 summarises the consequences of the financial recession on public transport sector and traffic conditions in Athens and Thessaloniki. Section 3 describes the study area characteristics, the research methodology and the survey questions. Section 4 presents and interprets the main survey results compared to available regional statistics. Finally, Section 5 offers conclusive remarks and discussion in relation with comparable studies identified throughout the literature review.

2. Economic crisis and urban mobility: consequences in Greece

The global financial crisis of 2008, the intrinsic and skewed Greek economic model from the 70s onwards, combined with the adopted austerity measures imposed by the Financial Assistance Programme (May 2010), resulted in sweeping and often violent changes in the society and in all strategic national sectors. Negative economic indicators did not only affect the prospects of the country, but also had a significant impact on the everyday life of citizens. During the last

eight years (2008–2014) the household consumption of basic goods and services such as electricity, heating and clothing as well as leisure expenses declined. Meanwhile, income reductions in combination with transport cost increases affected household mobility behaviour, the modal split, trip frequency patterns and the traffic conditions in the main Greek cities.

During the period 2008–2014, the GDP per capital in Greece dropped by 25.5%. This percentage represented the greatest decline of GDP in comparison to six other European countries affected by the crisis (Ireland, Portugal, Spain, Italy and France). Moreover, the unemployment rate surged from 7.3% in May 2008 to 27.2% in May 2014. Specifically, among youth aged 15–29, unemployment was 47.5% in 2014. The purchasing power of the average gross wage during the five years 2010–2014 decreased by 23% and returned to the salary levels of 1995 (INE/GSEE, 2014; ELSTAT 2013, 2014a).

Concerning the use of private cars, data deriving from Traffic Management Centres in the two largest cities in Greece (Athens and Thessaloniki) confirmed that traffic volumes decreased on main roads during peak and off-peak hours leading to an increase of 1–20% in the average speed of vehicles during peak time and the improvement of traffic conditions (Papadimitriou, 2013). According to Christoforou and Karlaftis (2011), one out of five citizens of Athens stated to have decreased the number of trips, while one out of two reported private car reduction in order to minimise the total cost of transportation. Likewise, a significant decrease in the use of taxis was particularly visible in the taxi stands, where the queues increased extending into regular traffic lanes. In the case of Athens, during 2009–2012, the traffic volume declined in main road arteries ranging between 6–16%. In Thessaloniki, as early as 2011, the rise in fuel prices combined with decreased income and increased unemployment caused a decrease in traffic volume by 15–20% in the main road network (Papaioannou and Konstantinidou, 2011).

Concerning the use of PT modes, the changes varied and depended on the specific local characteristics. In the case of Athens, national budget cuts in the transport sector resulted in reduced staff, less frequent services and line merging, as well as an increase in ticket price (from €0.8 in 2008 to €1.4 in 2013). According to Athens Urban Transport Organisation (OASA, 2015), the total passenger volume in Athens mass transit system decreased by 24.6% in the period 2009–2013 (from 854.6 million to 644.6 million passengers respectively). This reduction is also related to the increase of unemployment, since travel for work concern 80% of the total number of everyday travels (Vogiatzis and Mandalozis, 2013). Crisis consequences were more evident for the bus rather than the metro. The majority of the survey respondents preferred to reduce or even stop using the bus (30%), while many, yet significantly less (10%), decided to reduce metro use. Yet, from 2014 we see that there has been a turn in this tendency. Compared to the previous year, in 2014 the passenger volume of mass transit increased by 1.4%, after five years of continuous decrease (OASA, 2015). This increase was a consequence of the new pricing policy which reduced the ticket price from €1.4 to €1.2 and the

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