South-Eastern Europe Journal of Economics 2 (2008) 213-226 SEEJE

TRANSPORTATION COSTS AND FINAL PRICES: A CASE STUDY OF FUELS IN GREECE

ARISTEA GKAGKA
GRIGORIS ZAROTIADIS*
University of Ioannina, Greece

Abstract
In the present study, we focus on the regional differentiation of final fuel prices in major cities of Greece. While recognizing the significance of transportation costs, we observe the implications of other socioeconomic and geopolitical factors. This allows us to consider the inefficiencies of the Greek fuel market and to discuss relevant policy considerations.

JEL classification: L91, R10
Keywords: Transportation Costs, Fuel Prices, Market Inefficiencies

* *Corresponding Author:* Department of Economics, Ioannina 45110, Greece
e-mail: gzarotia@uoi.gr

1. Introduction

Transportation costs are receiving continuously growing attention in the analysis of production and trade, as well as in the discussion of regional development. On the company level, the emergence of logistics reflects the intensifying importance of transportation costs (Pedersen 2003, Vickerman 1987). Likewise, the fact that many technological advances involve (external and internal) transportation underlines the same point. Kilkenny (1998) concludes that social welfare increases significantly with decreasing transportation costs for industrial goods. At the same time, this enhances the development of a country's provinces.

Note however, that this intense consideration of transportation costs was not typical of traditional theoretical and empirical analysis up until a few decades ago: standard models of international trade ignored transportation for a considerable period of time, while there was a long-lasting stagnation in the development of spatial economics. Several empirical studies proceeded with similarly simplifying hypotheses and assumed for instance that marginal transportation costs were equal to zero (Marvel 2003).

Recent theoretical advances (Krugman, 1991) and several modeling tricks like the Dixit-Stiglitz monopolistic competition, or Samuelson's "iceberg"-costs (Fujita *et al*., 1999) facilitated a more sophisticated consideration of transportation costs in the frame of the standard models of economic analysis. Gravity models are the best example of how economic geography is being introduced in theoretical analysis and empirical studies regarding trade and regional development. Besides this more generalized analysis, the consideration of transportation costs also affected discussion regarding the behavior of individual companies. Mills and Hamilton (1994) distinguish between firms that choose their location according to the regional differences of production costs ("production-cost oriented") and those that locate accordingly in order to minimize transportation costs. Regarding the latter, they make a further distinction: firms that choose to locate near to their suppliers ("materials oriented") versus those that locate near to their customers ("market oriented"). This type of distinction helped to explain numerous empirical puzzles, like the insignificant effect of transportation costs on location and pricing decisions of British manufacturing firms, reported by Tyler and Kitson (1987).

Much more relevant to the content of the following pages, several papers focus on the price effect of fuel transportation costs, especially in the US. Hastings and Gilbert (2002) and Comanor and Riddle (2003) consider price differentiations that result from using different means of transportation, while Alizadeh and Nomikos (2004) reveal a long-term relationship between transportation costs and petrol prices in the US.

In the present study, we focus on a very specific case: the regional differentiation of final fuel prices in major cities of Greece. While recognizing the significance of transportation costs, we observe the implications of other, regionally defined socio-economic characteristics. This allows us further to consider the inefficiencies of the Greek fuel market. We then present the data set we have used and the applied empirical methodology. Next, we proceed with a discussion of the results. Finally, we draw our conclusions and discuss relevant policy considerations.

2. Methodology and Data

There are numerous case studies that deal with the price effects of transportation costs. For instance, the Institute for Building Economy (2002) in Greece concludes that transporting building materials for 30 km means a 50% increase in their initial price. The Eurisles network (1997) conducted a Europe-wide study regarding the additional transportation costs faced in European islands and the resulting socioeconomic disadvantages. Similarly, in the following pages we try to see to what extent regional price differences in fuels in different Greek cities and areas can be justified by transportation costs. Apart from the theoretical interest, the question has various political implications. Arndt and Sundrum (1975) noticed that regional price differentiations, which relate fully to the actual difficulties of transporting the different goods, are probably necessary, while state interventions, motivated by an intention to boost regional development, might have exactly the opposite effect.

Before we proceed to discuss the data we have used and the applied methodology, it is important to clarify the reasons for using fuels as the subject of the present study. First, the significance of fuel prices for the cost of living in each area and the resulting intensity of debate regarding the need for interventions by the Greek government were powerful motivations for our focus. Besides, access to energy is a major factor affecting regional development. Second, the (relative) homogeneity of the products together with the fact that there are very specific places where the production of fuels takes place (refineries are situated either in the wider area of Athens or in Thessaloniki) were of great importance for carrying out the study. On the one hand, it was reasonable to consider the average price for different types of fuels in each specific area and on the other, we were able to determine precisely the distance of each area from the location of production[1].

Legal regulations define three different levels of activities in the Greek fuel market: Refinement of imported Brent in the four existing refineries, trade and distribution of the products, and retail sale. Trading companies buy the fuels “ex refinery”. In order to deliver to the different filling stations all over Greece they use tankers, following the specific logistic strategy that each company applies. In the present study,

1. The fact that all providers use the same means of transportation justifies further the use of distance as an unbiased proxy for transportation costs.

we focus on the prices of five types of fuels for domestic use: unleaded, super unleaded and super petrol and two types of diesel, one for cars and one for oil-heating systems.

Our study will be based on cross-sectional data gathered from different sources[2]. As dependent variable, we used the published averages prices[3] for the above-mentioned types of fuel in each one of 53 major Greek cities (48 in case of diesel used for heating) all over mainland Greece. Prices will be further distinguished into two periods: winter- and spring-averages for heating-diesel and winter- and summer-averages for the other four types.

Our main explanatory variable is the distance of each city from Thessaloniki and Athens (the two locations of refineries and of trading companies' establishments), as a proxy for transportation costs. In order to deal with the fact that we were not certain which refinery was supplying each area we proceeded with three alternative approaches:

i. If d_{iA} is the distance from Athens to city i and respectively d_{iT} the distance from Thessaloniki, our explanatory variable is simply the smaller distance $\min(d_{iA}, d_{iT})$.
ii. We include both distances as two separate explanatory variables.
iii. We consider the average of both distances.

In addition, we used the GDP per capita of each city's prefecture in 2003 and average rents (obtained from the Hellenic Institute for Consumption).[4] Moreover, in case of the specific type of diesel used in oil-heating systems, we included two additional explanatory variables, altitude and average temperature for each different area. In order to find data on temperature for all 48 cities we combined information from three different sources: National Meteorological Service (EMY), the site "Forecasts over Greece" provided by the National Observatory of Athens and the Institute for Environmental Research and finally a database with meteorological information from the information company INFOTE. When we dealt with winter or spring prices for heating-diesel, we used average temperatures for February 2006 and for the period March-May 2006, respectively.

Finally, we include four dummy-variables in order to characterize the cities of our sample, whether they are urban and/or administrative centers, if they lie next to the

2. Detailed data are available on request: gzarotia@uoi.gr

3. Published weekly by the Hellenic Ministry of Development.

4. Rents have been used as a proxy for cost-of-living differences among the different areas. As there are more suitable indexes that can be used, we recognize here a prospect of improving the following analysis. Further, there is also an additional problem with using the specific proxy: it reduces substantially our sample, as we were able to find data only for 24 out of the 53 cities we have.

sea or next to the country's borders, and if they lie next to hubs of wider transportation networks.

Based on the aforementioned data, we estimate with OLS the following log linear model, where fuel prices represent the dependent variable:

$$(1) \qquad \ln(p_i) = a_0 + a_1\ln(D_i) + a_2\ln(y_i) + a_3\ln(r_i) + a_4C_i + a_5S_i + a_6B_i + a_7T_i + a_8\ln(h_i) + a_9\ln(t_i) + \varepsilon$$

We remind the reader that D_i is the distance (a proxy for transportation costs), defined according to the above-mentioned three alternatives, y_i is GDP per capita in city i, r_i stays for rents, C_i, S_i, B_i and T_i become 1, if city i is the prefecture's capital, if it lies next to the sea, next to the borders, or next to transportation hubs respectively. Additionally, when we run the estimation for heating-diesel, we included in our equation altitude (h_i) and temperature (t_i) of the area.

3. Empirical Results

In this section we discuss the coefficients that we obtained by excluding rents from the equation. When we include rents in the set of our explanatory variables (and we reduce accordingly our sample) the results we get are very different and insignificant: R^2-adjusted falls dramatically, significance of GDP per capita disappears completely, together with the significance of being a prefecture's capital or being located next to transportation hubs. On the other hand, we get just two cases of significant positive coefficients for rents: in the winter regression for super petrol and in the spring regression for heating-diesel.

Table 1 gives the estimated coefficients for each type of fuel separately. The first thing we should mention is that R^2-adjusted is remarkably high (for cross-sectional data particularly). Together with the exceptionally proper values of F-statistic, it speaks for the explainability and appropriateness of the applied empirical approach as a whole. Moreover, the fact that estimated coefficients are statistically significant too speaks for not facing multicollinearity. We come to the same conclusion when we look at sample correlation coefficients between pairs of our explanatory variables (Tables 3a and 3b in the Appendix). A commonly used rule of thumb is that a potentially harmful collinear relationship could arise if we have strong correlations of more than 0,8. As this is definitely not the case, multicollinearity should not be an issue.

Moving on to the estimations, there are two striking observations: first, the highly significant positive effect of distance (transportation costs) on the prices of all types of fuel. Second, equally significant is the positive effect of per capita GDP in the area where the filling station is located, at least for the fuels used in cars. Next, one cannot fail to see the importance of a city being the prefecture's capital and of being located next to transportation hubs. The first has a positive, while the second has a clear negative effect on the prices of fuels. Super unleaded petrol represents an exception.

Instead of these two characteristics, what matters is whether an area is littoral or not: cities which are located next to the sea, have significantly higher prices for that particular fuel.

The results concerning the type of diesel that is used for heating are very different. Especially in the "winter" regression, neither R^2-adjusted nor F-statistic are so appropriate; the only significant coefficient remains the one for distance. The picture becomes slightly better in the "spring" regression with the area's altitude and the proximity to the borders having a negative significant effect.

4. Conclusions

The paper fits into a literature that reveals the significance of transportation costs for regional price differentiation. It offers an analysis of fuel prices in Greece, which has previously been lacking. There are two main conclusions we can derive from this specific case study. First, transportation costs do matter! There is a clearly significant monotone (positive) effect on final prices of all types of fuels. Hastings and Gilbert (2002) and Comanor and Riddle (2003) were led to a similar conclusion regarding the market for petroleum products in the USA. According to their results, petrol, transported via pipelines or cargo ships, costs 1,2 cents (US$) per gallon, while it costs 2,3 cents when it is transported by tanker. The importance of transportation costs in determining prices for petroleum products has also been confirmed by Schmid and Hoffmann (2004), a study that was incorporated in the energy plan for Amazon/Brazil, and by Alizadeh and Nomikos (2004), who argue for the existence of a long-lasting relation between transportation costs and fuel prices in the USA.

Secondly, apart from transportation costs, the economic and geopolitical characteristics of an area or a city also explain a substantial part of regional price differences. For instance, we have clear signs that the degree of competition among the filling stations contributes to a reduction in prices (an explanation for the negative sign of the dummy regarding the location next to transportation hubs). At the same time, wealthier cities appear to have significantly higher fuel prices, other things being equal. The same is true of those which happen to be the capital of a prefecture.

Turning back to our introductory comments, regional price differentiations that result fully from actual difficulties of transportation are not necessary harmful (Arndt and Sundrum, 1975). Nevertheless, in the present study we saw that it is not only transportation costs that matter. Imperfect competition and regional socioeconomic specificities generate opportunities for speculative behaviour. In that case, government interventions are useful: not only as a tool for regional development policy but also as a way to reverse the resulting inefficiencies.

Making use of the existing legal framework can help in keeping a better control of pricing behaviour, discouraging speculations and cooperation between trading companies in forming unjustified regional price differences (cartels). Furthermore, note that our findings do not support the statement that the price of heating fuel is supposed to be higher in areas with higher income per capita. On the contrary, the message of the present study to policy makers is that prices are higher in the most remote areas, which usually have more unfavourable conditions for economic growth. Hence, there is an obvious need for a system of heating-diesel allowances, fully integrated into the framework of a regional development policy.

Table 1: Regression results (without rents)[5]

Coefficient[6]	Unleaded		Super Unleaded		Super		Diesel for Cars		Diesel for Heating	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Spring
ln (D_i)	**0,029**	**0,027**	**0,042**	**0,026**	**0,024**	**0,026**	**0,020**	**0,020**	**0,015**	**0,014**
	5,73	***6,59***	***5,28***	***4,95***	***3,95***	***5,90***	***5,76***	***5,72***	***1,90***	***2,60***
ln (y_i)	**0,043**	**0,038**	**0,035**	**0,027**	**0,049**	**0,037**	**0,034**	**0,033**	0,020	0,013
	4,36	***4,78***	***2,25***	***2,66***	***4,05***	***4,29***	***5,10***	***4,77***	*1,32*	*1,25*
ln (t_i)	-	-	-	-	-	-	-	-	0,010	-0,037
									0,38	*1,05*
ln (h_i)	-	-	-	-	-	-	-	-	-0,005	**-0,005**
									1,18	***1,64***
C_i	0,009	**0,009**	0,004	0,001	**0,013**	**0,009**	**0,011**	**0,010**	0,017	0,006
	1,43	***1,70***	*0,34*	*0,19*	***1,65***	***1,62***	***2,30***	***2,03***	*1,63*	*0,87*
S_i	0,006	0,005	**0,016**	**0,012**	0,008	0,006	0,005	0,003	-0,020	-0,003
	0,94	*1,10*	***1,67***	***1,93***	*1,12*	*1,08*	*1,19*	*0,65*	*1,59*	*0,39*
B_i	0,007	0,003	-0,010	-0,008	0,010	0,002	-0,001	0,002	-0,016	**-0,018**
	0,91	*0,54*	*0,81*	*1,06*	*1,07*	*0,34*	*0,15*	*0,40*	*1,40*	***2,31***
T_i	**-0,016**	**-0,010**	-0,005	-0,007	**-0,013**	**-0,009**	**-0,008**	**-0,008**	0,007	0,002
	2,55	***2,08***	*0,52*	*1,05*	***1,68***	***1,69***	***1,87***	***1,90***	*0,76*	*0,29*
Constant (a_0)	**-0.649**	**-0.463**	**-0.454**	**-0.212**	**-0.612**	**-0.395**	**-0.507**	**-0.433**	**-0.790**	**-0.537**
	-6.46	***-5.69***	***-2.87***	***-2.04***	***-4.96***	***-4.46***	***-7.34***	***-6.08***	***-4.67***	***-3.62***
R^2-adjusted	0,48	0,55	0,43	0,42	0,35	0,49	0,54	0,50	0,12	0,32
Prob(F-statistic)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,12	0,00
White test[7]	8,73	10,79	6,45	4,40	6,84	13,94	11,88	10,11	9,97	7,95
DW statistic	1,67	1,84	2,58	2,18	1,60	1,63	2,33	1,91	2,13	1,65

5. In *italics*: t-statistic in absolute values.

6. Note that the results we present have been obtained by using the first alternative in defining distance: $\min(d_{iA}, d_{iT})$. After running the regressions with the three alternative definitions, we selected the first as more appropriate based on the relevant statistics (R^2-adjusted and F-statistic).

7. The empirical results have been controlled for heteroskedasticity using the White test. We do not reject the null hypothesis of homoskedasticity in any case.

Table 2a: Descriptive Statistics of Dependent Variables

Descriptive \ Variable p_i	Unleaded		Super Unleaded		Super		Diesel for Cars		Diesel for Heating	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Spring
Mean	0.910	1.037	1.097	1.191	0.983	1.099	0.928	0.989	0.594	0.628
Median	0.909	1.035	1.099	1.191	0.979	1.095	0.926	0.984	0.592	0.630
Maximum	0.974	1.115	1.222	1.263	1.063	1.179	0.983	1.046	0.637	0.668
Minimum	0.865	0.995	0.953	1.107	0.935	1.046	0.901	0.960	0.558	0.594
Std. Dev.	0.025	0.025	0.044	0.032	0.030	0.027	0.018	0.020	0.017	0.014

Table 2b: Descriptive Statistics of Independent Variables

Descriptive \ Variables	D_i	y_i	t_i		h_i	C_i	S_i	B_i	T_i
			Winter	Spring					
Mean	190.566	13,450.040	9.192	15.958	172.583	0.736	0.472	0.208	0.528
Median	189.000	12,035.000	9.522	16.289	65.000	1.000	0.000	0.000	1.000
Maximum	455.000	36,639.000	12.444	19.210	960.000	1.000	1.000	1.000	1.000
Minimum	0.000	8,686.000	4.663	11.429	3.000	0.000	0.000	0.000	0.000
Std. Dev.	110.101	5,377.801	1.585	1.585	234.015	0.445	0.504	0.409	0.504

Table 3a: Correlation matrix between the explanatory variables for fuels for cars

	D_i	y_i	C_i	S_i	B_i	T_i
D_i	1.00					
y_i	-0.23	1.00				
C_i	0.07	-0.07	1.00			
S_i	0.17	-0.07	0.05	1.00		
B_i	0.12	-0.21	0.10	-0.30	1.00	
T_i	0.02	-0.07	0.38	0.06	0.11	1.00

Table 3b: Correlation matrix between the explanatory variables for diesel for heating

	D_i	y_i	t_i^w	t_i^s	h_i	C_i	S_i	B_i	T_i
D_i	1.00								
y_i	-0.22	1.00							
t_i^w	-0.33	0.10	1.00						
t_i^s	-0.33	0.10	1.00	1.00					
h_i	-0.11	0.17	-0.61	-0.61	1.00				
C_i	0.04	-0.02	-0.33	-0.33	0.12	1.00			
S_i	0.20	-0.12	0.25	0.25	-0.56	0.07	1.00		
B_i	0.11	-0.22	-0.16	-0.16	-0.04	0.06	-0.29	1.00	
T_i	-0.02	-0.08	0.09	0.09	-0.13	0.36	0.09	0.04	1.00

Table 4a: Correlation matrix between the variables of equation "Unleaded/winter"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.53	1.00					
y_i	0.26	-0.23	1.00				
C_i	0.12	0.07	-0.07	1.00			
S_i	0.14	0.17	-0.07	0.05	1.00		
B_i	0.00	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.18	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4b: Correlation matrix between the variables of equation "Unleaded/summer"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.61	1.00					
y_i	0.25	-0.23	1.00				
C_i	0.16	0.07	-0.07	1.00			
S_i	0.18	0.17	-0.07	0.05	1.00		
B_i	-0.05	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.13	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4c: Correlation matrix between the variables of equation "Super Unleaded/winter"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.65	1.00					
y_i	0.10	-0.23	1.00				
C_i	0.08	0.07	-0.07	1.00			
S_i	0.33	0.17	-0.07	0.05	1.00		
B_i	-0.19	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.06	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4d: Correlation matrix between the variables of equation "Super Unleaded/summer"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.59	1.00					
y_i	0.14	-0.23	1.00				
C_i	0.03	0.07	-0.07	1.00			
S_i	0.34	0.17	-0.07	0.05	1.00		
B_i	-0.24	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.07	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4e: Correlation matrix between the variables of equation "Super/winter"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.46	1.00					
y_i	0.30	-0.23	1.00				
C_i	0.18	0.07	-0.07	1.00			
S_i	0.14	0.17	-0.07	0.05	1.00		
B_i	0.02	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.03	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4f: Correlation matrix between the variables of equation "Super/summer"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.59	1.00					
y_i	0.27	-0.23	1.00				
C_i	0.18	0.07	-0.07	1.00			
S_i	0.20	0.17	-0.07	0.05	1.00		
B_i	-0.07	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.04	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4g: Correlation matrix between the variables of equation "Diesel for cars/winter"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.53	1.00					
y_i	0.30	-0.23	1.00				
C_i	0.22	0.07	-0.07	1.00			
S_i	0.21	0.17	-0.07	0.05	1.00		
B_i	-0.13	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.15	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4h: Correlation matrix between the variables of equation "Diesel for cars/ summer"

	p_i	D_i	y_i	C_i	S_i	B_i	T_i
p_i	1.00						
D_i	0.56	1.00					
y_i	0.29	-0.23	1.00				
C_i	0.20	0.07	-0.07	1.00			
S_i	0.13	0.17	-0.07	0.05	1.00		
B_i	-0.05	0.12	-0.21	0.10	-0.30	1.00	
T_i	-0.08	0.02	-0.07	0.38	0.06	0.11	1.00

Table 4i: Correlation matrix between the variables of equation "Diesel for heating/ winter"

	p_i	D_i	y_i	t_i	h_i	C_i	S_i	B_i	T_i
p_i	1.00								
D_i	0.19	1.00							
y_i	0.16	-0.22	1.00						
t_i	-0.08	-0.33	0.10	1.00					
h_i	-0.05	-0.11	0.17	-0.61	1.00				
C_i	0.27	0.04	-0.02	-0.33	0.12	1.00			
S_i	0.05	0.20	-0.12	0.25	-0.56	0.07	1.00		
B_i	-0.19	0.11	-0.22	-0.16	-0.04	0.06	-0.29	1.00	
T_i	0.11	-0.02	-0.08	0.09	-0.13	0.36	0.09	0.04	1.00

Table 4j: Correlation matrix between the variables of equation "Diesel for heating/ spring"

	p_i	D_i	y_i	t_i	h_i	C_i	S_i	B_i	T_i
p_i	1.00								
D_i	0.41	1.00							
y_i	0.07	-0.22	1.00						
t_i	-0.19	-0.33	0.10	1.00					
h_i	-0.16	-0.11	0.17	-0.61	1.00				
C_i	0.19	0.04	-0.02	-0.33	0.12	1.00			
S_i	0.32	0.20	-0.12	0.25	-0.56	0.07	1.00		
B_i	-0.32	0.11	-0.22	-0.16	-0.04	0.06	-0.29	1.00	
T_i	0.00	-0.02	-0.08	0.09	-0.13	0.36	0.09	0.04	1.00

References

Alizadeh A.H. and N.K. Nomikos, 2004, Cost of carry, causality and arbitrage between oil futures and tanker freight markets, Transportation Research Part E: Logistics and Transportation Review, 40 (4), p. 297-316

Arndt H.W. and R.M. Sundrum, 1975, Regional price disparities, Bulletin of Indonesian Economic Studies, 11 (2), p. 30-68

Comanor W.S. and J.M. Riddle, 2003, The Cost of Regulation: Branded Open Supply and Uniform Pricing of Gasoline, International Journal of the Economics of Business, 10 (2), p. 135-155

Eurisles Network, 1997, Statistical Indicators for Regional Inequalities due to Insular Characteristics, http://www.eurisles.org/Textes/nea/gr/Default.htm

Fujita M., P.R. Krugman and A.J. Venables, 1999, The Spatial Economy: Cities, Regions and International Trade (Cambridge: MIT Press), p. 6-9.

Hastings J. and R. Gilbert, 2002, Market power, vertical integration, and the wholesale price of gasoline, Dartmouth Economics working paper: http://www.dartmouth.edu/~jhasting/Hastings2.pdf

Hellenic Institute for Consumption (IN.KA.): http://www.inka.org.gr/articles_surveys.htm

Hellenic Ministry of Development: http://www.ypan.gr/flash-fuel/kafsima/MESES-TIMES.htm

Hellenic National Statistical Service: http://www.statistics.gr/

INFOTE Database: http://www.xo.gr/weather/indexgr.jsp

Institute for Building Economy (2002): http:///www.tee.gr/online/epikaira/2002/2203/pg136.shtml

Kilkenny M., 1998, Transport Costs and Urban Development, Journal of Regional Science, 38 (2), p. 293-312

Krugman P.R., 1991, Geography and Trade (Cambridge: MIT Press)

Marvel H.P., 2003, On the economics of branded open supply, International Journal of the Economics of Business, 10 (2), p. 213-223

Mills E. and B.W. Hamilton, 1994, Urban Economics - 5th edition (HarperCollins Publishers, London)

National Meteorological Service (EMY): http://www.hnms.gr/hnms/greek/forecast/forecast_region_html

National Observatory of Athens & Institute for Environmental Research, Forecasts over Greece, http://www.meteo.gr/main.asp

Pedersen P. O., 2003, Development of freight transport and logistics in Sub-Saharan Africa: Taaffe, Morrill and Gould revisited, Transport Reviews, 23 (3), p. 275-297

Schmid, A. L. and Hoffmann, C. A. A. (2004) Replacing diesel by solar in the Amazon: short-term economic feasibility of PV-diesel hybrid systems. Energy Policy. 32 (7), 881-898.

Tyler P. and M. Kitson, 1987, Geographical Variations in Transport Costs of Manufacturing Firms in Great Britain, Urban Studies, 24, p. 61-73

Vickerman R. W., 1987, The Channel Tunnel: Consequences for Regional Growth and Development, Regional Studies, 21 (3), p. 187-197