

Impact of fuel price variations on road freight transport and its CO2 emissions

Impact des variations du prix du carburant sur le transport routier de fret et sur ses émissions de CO2

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Summary

The diesel oil price elasticity of road freight traffic in France is estimated using :

The results of French survey on Heavy Duty Vehicle use (TRM) that gives, per quarter, road freight traffic in tkm and vehicle.kilometer and a transport price index.

And the CNR (Road National Committee) price of diesel oil.

Simple 'log log' or 'non log' models are used, the demand being expressed in tkm or in vehicle km. For Own Account transport (OA), the explanatory variables are GDP and diesel price while for Hire and Reward (H&R), transport demand is expressed as a function of GDP and transport price; and transport price is a function of diesel price.

Using log log models (constant elasticity over time), we found nearly the same elasticity estimates for H&R, own account and total demand in vehicle km. (-0.25, -0.26, -0.24) but rather high differences for TKM : when the diesel price increases, own account road freight demand, expressed in tkm decreases more than H&R. These elasticity estimates are comparable with what can be found in the literature.

Constant elasticities to diesel oil price (log log models)	Freight transport demand expressed in				
	Ton km		vehicle km		
	Own Account	H&R	Own Account	H&R	total
	-0.14	-0.054	-0.26	-0.25	-0.24

The 'non logarithmic' models show an increase of vehicle km elasticities to diesel fuel price over time and this evolution is very similar for OA and H&R.

Applying the French Kyoto 'target' (to have in 2010 the same level of emission of CO2 as in 1990) to road freight sector implies a 45% decrease from 2007 to 2010. With a constant price elasticity of -0.24 and 'caeteris paribus' (no technology nor GDP evolution), a diesel price increase of 191% would be necessary to get a fall of 45% of vehicle km.

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