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MEASURING THE BENEFITS FROM ROAD HAULAGE DEREGULATION - EXAMPLE OF SOME FRENCH RESULTS

RICHARD DARBERA
Research Fellow CNRS
LATTS - École Nationale des Ponts & Chaussées
77455 Marne la Vallée Cedex 2, FRANCE

Abstract

After years of price control and entry restrictions (a policy mostly aimed at protecting the national railways company), trucking was almost totally deregulated in France a decade ago. Since then, the trucking industry has undergone dramatic changes, not all of them attributable to deregulation. As a result of these changes, the price of freight transport fell, even in nominal terms, despite an increase in the price of most of its inputs, indicating a surge in efficiency.

Freight transport in France was deregulated in two major steps, in 1979 for short distance, in 1986 for long distance. This paper studies the case of long distance haulage. After discussing methodological issues, it gives a measure of the effects of deregulation on prices, and discusses the other impacts on general freight traffic, on rail transport, on safety, on labor conditions, etc. Its impact on prices is tremendous. Without deregulation, prices of long distance road haulage would probably be more than half higher. Evidence shows that this gain was not obtained at the expense of safety and suggests it did not have adverse effects on labor conditions.

INTRODUCTION

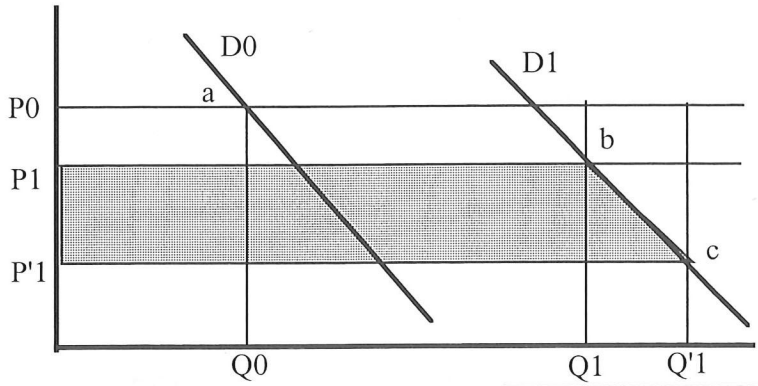
In every country where deregulation of road haulage has been carried out, it has brought about economic benefits. At the same time, it has triggered off a heated debate about the actual magnitude of this net benefit, and about the other impacts of deregulation such as those of safety, labor conditions, trafic congestion, etc. This paper will (i) discuss the methodological problems in measuring the economic benefit of deregulation, (ii) it will then propose a measure of the economic impact of the 1986 deregulation of the French trucking industry. In the final section (iii) an assessment of the other impacts will be proposed.

MEASURING THE ECONOMIC IMPACT OF DEREGULATION

Measuring the exact economic impact of deregulation is an impossible task for two reasons. First, because when prices are no longer administered and controlled they diversify and fall into business privacy. Keeping the same level of information as prior to deregulation would require extensive surveys that are seldom carried out. Second, and more importantly, because measuring the impact of deregulation implicitly requires one to answer the question: "what would have happened if deregulation had not been implemented?" and this is almost as difficult as predicting the future.

In our definition, the economic benefit of deregulation takes the form of an increment in consumer surplus. In the simple diagram below, we assume road haulage as a single market and perfect information is available. P_0 is the price of road haulage services prior to deregulation. With a demand D0, the quantity of services sold was Q0. Several years after deregulation has been implemented, and after markets have adjusted, the demand is now D1. P1 is the price that would prevail if deregulation had not taken place. It is different from P0 because of exogenous variables such as technology, or fuel prices which have evolved during the period. P'1 is the actual price and Q'1 the actual traffic. In this simple diagram, the difference $\Delta P = P1\text{-}P'1$ is the exact impact of deregulation on prices. The change in consumer surplus caused by deregulation could be represented by the shaded area.

Figure 1 — A simple model of the road haulage market



Note: P0 is the price before deregulation. P'1 is the price after deregulation has taken place and after markets have adjusted. P1 is the price that would prevail if deregulation had not taken place.

In this diagram, both point *a* and point *c* can be obtained from surveys. The problem is to determine point *b*. The main difficulty in measuring the impact of deregulation is thus to compute how prices and quantities would have evolved without deregulation.

Prices

Better competition forces operators to increase their productivity. Of course, all productivity gains cannot be attributed to deregulation. Some external factors such as better roads or improved vehicle technology also enhance productivity. However, experience shows that under poor competition, these gains are not passed on to the shipper in the form of lower prices but rather retained by the carrier mostly in the form of higher wages and sumptuary expenditure (According to an article published in the Journal of Law and Economics (Anonymous 1978), in the USA, the average wage of unionized truck drivers in the regulated sector was more than 50% higher than those in the unregulated sector. Similar figures are presented by Rose (1987)). One way of assessing the difference in prices with and without deregulation is to assume that, without deregulation, prices would have evolved the same way input costs have evolved.

Thus one good method to measure productivity gains from deregulation over time consists in comparing the relative evolution of input and output prices. The problem here is to select the adequate price indexes. Designing an index of input prices, i.e., a cost index, requires permanent surveys of input prices and, more importantly, permanent surveys of the evolution of the cost structure, i. e. the relative weights of the various inputs for each type of vehicle and for each type of transport operation.

Designing an index of output prices requires similar surveys, but it raises an additional problem. The usual price indexes of unit prices per ton-km or per vehicle-km do not reflect the fact that over time the quality of transport services has generally improved. Transport is not only faster now than it used to be, it is also better tailored to specific requirements of "just in time" industrial production, of refrigerated goods delivery, etc. Examples taken from the computer manufacturing industry and from the automobile industry, Rexecode (1996, pp. 37-42) discuses the problems involved with designing a price index that would reflect quality changes in the transport sector. Their conclusion is that much more research is still needed to come up with such an index.

Quantities

The second difficulty is to determine how quantities would have evolved if deregulation had not been implemented. Here again, no perfect solution exists. One reasonable method consists in first assuming that total freight volumes by all modes of land transport would have evolved at the same pace as GDP, i.e. the elasticity of ton-km carried to GDP is equal to the unit. This relation has been observed for the long run, in several countries over wide enough time periods. Short run elasticity is generally higher. Within this total volume, even without deregulation, road transport is increasing its share. A second assumption would be that without deregulation, this shift to road transport would have continued at the same rate. A third and last assumption is that within road freight transport, the share between "own account" and "public carriage" would have remained unchanged.

In the case of France, these assumptions seem reasonable.

THE DEREGULATION OF ROAD HAULAGE IN FRANCE

When compared to the maze of regulations that hindered US trucking prior to 1980, the regulation of road haulage in France prior to 1986 was fairly straightforward: prices were administered and entry was restricted through licensing by a national commission. Just like in the UK (Palmer, 1988), the main purpose of the system was to protect the state railway transport monopoly. However, as Bonnafous (1988) has pointed out, after a while, the main supporters of the system were the established road freight carriers themselves. Regulation protected them from the competition of new entrants into the market.

One visible effect of this regulation was the fact that, in 1985, type A licenses (for operating a truck on long distance haulage) cost around 200,000FF on the grey market (Bernadet, 1991, p.12), i.e., almost half the price of a new tractor.

Deregulation was implemented step by step. As a first step, in 1979, deregulation only affected short distance haulage (below 200 km). The TRO "***tarification routière obligatoire***" (mandatory haulage pricing) was abolished and entry restrictions were lighten considerably. They were kept unchanged only for long distance haulage.

As a second step, in 1986, entry restrictions for any distance were abolished and the "***tarification routière obligatoire***" was no longer enforced. It was removed altogether in 1989. For this reason, 1986 is the actual land mark of road freight deregulation in France.

IMPACT ON PRICES

As mentioned earlier, we will measure the impact of trucking deregulation on the economy by comparing the respective evolution of the sector's input and output prices. The problem here is to select the most relevant price indexes and to combine them when necessary. Over the period, several indexes have been produced by various institutions involved with road haulage. They vary both in scope and in precision. Some have been discontinued or revised.

Selecting an index of the industry's costs

At the time of the TRO, administered prices were adjusted periodically according to the evolution of input prices. After deregulation, the institutions involved in this price fixing, went on publishing "reference prices" based on indexes of the industry's costs.

Among these institutions, the CNR (*Comité National Routier* or National Road Committee) is the one which produces the index best suited to our purpose. The CNR was created in 1958 by the profession under a request from public administration, to fix and monitor haulage prices. At the head of the CNR is a board of directors composed of 18 members who represent all the sectors of the industry, from shippers to truckers.

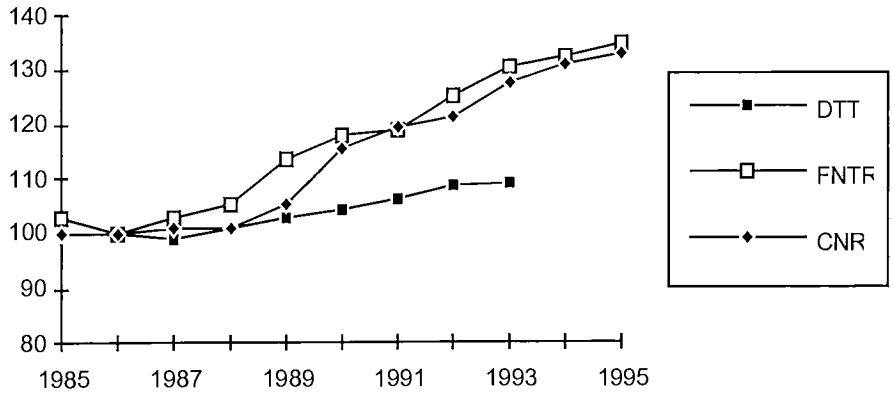
The CNR produces several cost indexes. These indexes are specific to various types of vehicles and various types of services. Among these indexes, we have selected the input price index for a common type of tractor+trailer combination of 40 tons (the "savoyarde") performing long distance services. This combination represents 70% of the fleet over 21 tons, those specifically affected by the 1986 deregulation.

The CNR indexes take into account the impact on the cost structure of exogenous productivity gains such as the 10% increase in the fuel efficiency of new vehicles (from 41.2 l/100 km in 1987 to 38.0 l/100 km in 1995) or the longer economic life of vehicles (between 1987 and 1995: 2 months increase for tractors and 6 months for trailers). These indexes, however do not reflect the productivity gains due to better management.

The CNR index we have selected can be compared to the indexes produced by the DTT (in the ministry of Transport) and the FNTR (a professional syndicate) for the same type of transport services. The comparison is presented in the diagram below.

Both the FNTR and the CNR indexes roughly follow the same pattern. It is not the case for the DTT index. The DTT index which took into account the changes deregulation imposed on the consumption of inputs by the carriers was closer to the actual costs of the industry, but is of much less interest to us since we want to have an indicator of how prices would have evolved if deregulation had not taken place. The series was discontinued in 1993 since it neither fully reflected actual costs nor gave the evolution of theoretical input prices.

Figure 2 — Several Cost Indexes Compared (current prices)



Sources: DTT, FNTR and CNR
Notes: 1986 = 100

Selecting a price index for road freight transport services

Among European countries, France certainly has one of the best data bases on road freight movements and on the supply of road haulage services. This data base mainly draws from the TRM (*Transport Routier de Marchandises*) permanent survey carried out by the SES, the statistical

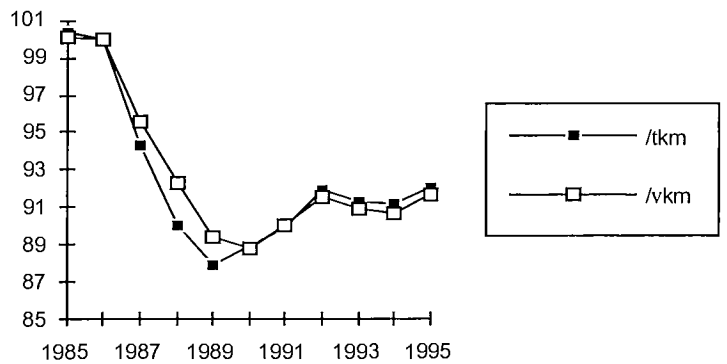
service of the ministry of Transport. Each week, 1650 vehicles are selected and surveyed about their characteristics and about their use in the past week.

One of the sub-products of this data base, is a series of monthly indexes of the average receipts per vehicle-km and per ton-km for various types of vehicles, short and long distance, national and international and various commodities (Daei/Ses-Insee, 1996, p.134). These indexes result from a Laspeyres aggregation of several strata taken among 110 market strata followed monthly.

The price index we have selected concerns non-specialized vehicles over 17 tons (net weight), carrying truck loads over 200 km nationwide. This type of transport services represents 40% of the traffic. It is rather homogeneous and quite representative of the fluctuations of the whole market deregulated in 1986. The series is available from 1985 to 1995. In figure 3 below we represented the fluctuation of this index in both price per vehicle-km and price per ton-km.

As we want to check if the 1986 deregulation introduced a break in the evolution of road haulage prices, it is necessary to know these prices in the years before deregulation. Unfortunately, the series available prior to 1985 are not exactly the same. For the period 1982 to 1985, we could extrapolate our series with a price index which the OEST (former name of SES) produced for vehicles over 17 tons and distances over 150 km in price per ton-km only. For 1980-1982 we used the TRO (the mandatory regulated price) for long distance haulage. After 1995, the SES renewed its methodology to produce a new set of price indexes whose coherence with the previous series does not raise any difficulty for our purpose.

Figure 3 — Price index per vehicle-km and per ton-km for non specialized vehicles over 17 tons net weight, carrying truck loads over 200 km within the country.

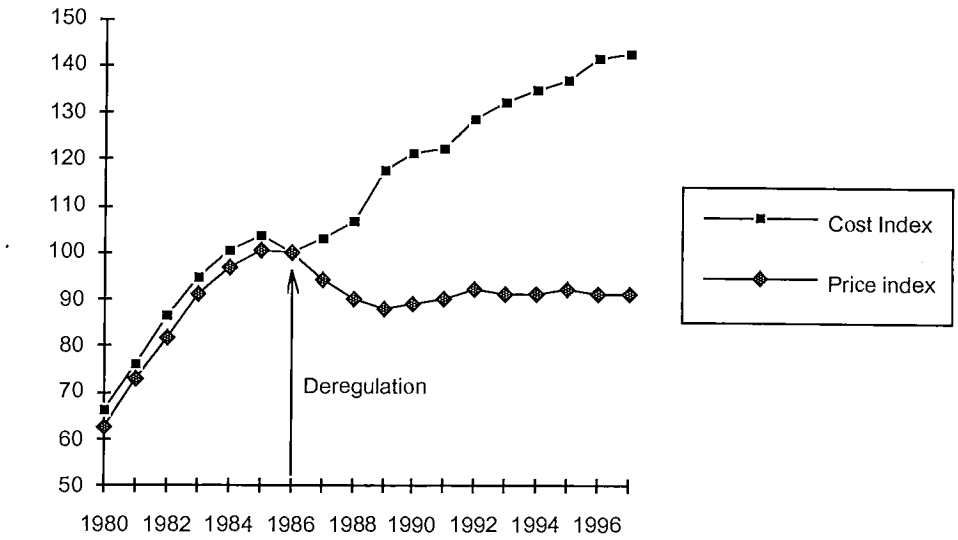


Note 1986 = 100
Source: SES

Price and Cost Indexes Compared

In the diagram below, we plotted the respective evolution of a price index for road haulage prices and a price index for the industry's inputs selected in the previous sections.

Figure 4 — Price and Cost Indexes Compared (current prices)



Source: our calculation
Note: 1986=100; 1997: Cost = 143, Price = 91

The break introduced by deregulation is striking. Where prior to 1986 both input and output prices followed the same evolution, after deregulation, costs went on climbing with general inflation, whereas prices slightly declined and then became stable, which means that, in real terms, they took a plunge.

From this diagram, we can infer that without deregulation, prices for long distance haulage would now be 56% higher than they actually are.

How could this be possible? In his research on productivity gains in the road haulage industry, Amar (1996) investigated the evolution of physical productivity ratios between 1986 and 1994. The table below is translated from his paper.

Table 1 — Sources of productivity gains in road haulage between 1986 and 1994

	in 1994	Evolution 94/86
Average truck (3 axles) speed on motor ways	87 km/h	+10%
Average truck (3 axles) speed		+9%
Average weekly driving time for a driver		+5%
Average monthly kilometrage for a driver		=+15%
Ration Driver/Truck	1.0	+10%
Average annual kilometrage for a truck	55,100 km	=+27%
Average pay load		+9%
Average annual capacity (t-km/truck)		=+38%
Load rate		+5%
Empty mileage		-5%
Average productivity of a truck (t-km/truck)		=+44%
Average time duration of truck usage		+16%

Source: Amar, Michel, "La productivité dans le transport routier de marchandises", ***Synthèse***, octobre 1996, SES, Ministère des Transports, Paris
Note: According to the author, these figures are only indicative.

The sample used by Amar is not specified. It most likely includes short distance haulage that was deregulated 7 years earlier. As a result, the average values calculated by Amar probably understate the productivity gains of long distance haulage. Some of the productivity gains presented here, such as those resulting from greater average speed on the road network and better fuel efficiency of

vehicles are exogenous. Most, such as better use of labor and higher load rate, result from better management spurred by more intense competition.

IMPACT ON RAIL TRANSPORT

Much lower prices for road haulage certainly affect the modal split of freight transport between rail and road, as measured in ton-km. The impact on rail freight prices very much depends on the railway companies pricing policy and on the availability of public subsidies.

In the case of the USA, Delaney, (1988, Exhibit 10) shows the dramatic effect of rate compression on railroad revenues after the 1981 deregulation.

	$/revenue Ton-Mile (1987 prices)
1967	0.041
1981	0.040
1988	0.026

Traffic

In the period after deregulation, the French National Railway Company experienced a significant drop in freight transport market share. Of course, road haulage deregulation was not the sole explanation for the drop. However, according to Favre and Moussalam (1992), quoted by Girault et al. (1994, p.94), although some of the decline in rail freight could be explained by the reduced demand by the economy for bulk commodities such as coal or iron ore, most of the shift from rail to road can be attributed to the widening competitive edge of road haulage since deregulation.

Prices

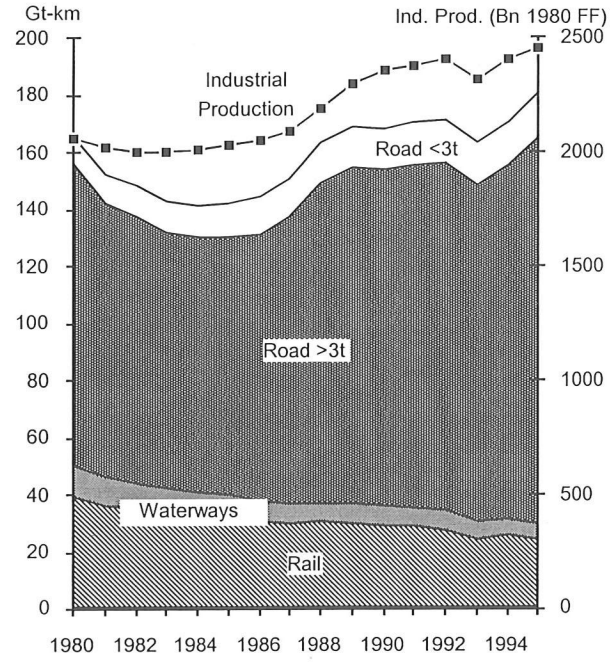
The shift from rail to road came about despite a drop in rail freight prices. Although railway prices are no longer published, some aggregate figures can be obtained from the National Transport Accounts (Daei/Ses-Insee, 1997). As Bernadet (1997, p.17-18) explains, it is not possible from this data to separate the impact of competition from road from the impact of a shift within rail transport itself from isolated wagon to whole train loads. According to Bernadet, railways prices were forced to follow road prices. We could add that this probably contributed to widen the already huge deficit of the national railway company.

IMPACT ON FREIGHT TRAFFIC

It is difficult to assess the impact of deregulation on the growth and on the modal split of freight traffic in France. One reason is that several breaks were introduced in the statistical series by changes in the scope of the surveys and in the aggregation of data. A second reason is that the French economy experienced a recession that ended approximately at the same time deregulation was implemented. It is thus difficult to separate the impact of economic recovery from the impact of deregulation.

The diagram below shows the evolution of the internal traffic by modes (in billion t-km) and the Industrial Product (in billion French Francs of 1980) between 1980 and 1995.

Figure 5 — Internal traffic by modes (in billion t-km) and Gross Domestic Product (in billion French Francs of 1980) 1980-95



Source: Our own calculations with data from Insee (GDP) and Daei/Ses-Insee, ***Les comptes des transports en 1995,*** 1997, p. 108

We have preferred Industrial Product as a reference instead of Gross Domestic Product since the latter includes the counter cycle effect of government spending and transfer payments. We also have restricted our scope to the internal traffic under national flag since these were the most coherent series, thus excluding foreign carriers and transit, both as regards rail and road.

This diagram highlights several facts: first that the impact of the 1980-86 recession was greater on traffic than on Industrial Production. This illustrates the fact we mentioned in the first section that short run elasticities are higher. Second, the recovery starting in 1986 only benefited road transport and did not stop the decline of freight traffic by either rail or waterways.

The 1986 deregulation only concerned long distance road haulage (which represents only 1/4 of the total traffic volume measured in t-km). The wide traffic fluctuations caused by the unstable economic situation certainly blurred the impact this deregulation might have had on total freight volumes. Measuring more precisely the impact would have required running regressions on longer time series which we were unable to obtain.

Looking more closely at more disaggregated data gives some interesting information. In the table below, we have reported the evolution of the traffic intensity of the Industrial Product (measured in t-km/FF) by modes for both periods before and after deregulation. To obtain these intensities we divided annual traffic volumes (in t-km) by the Industrial Product at constant 1980 prices, restricting our scope to internal traffic by national carriers for the reasons of coherence and continuity mentioned above.

All traffic intensities decline in the period 1980-86, at a greater spee for waterways and rail than for road. In the period 1986-95, global traffic intensity remained stable (zero growth), i.e., total traffic

grew at the same rate as the Industrial Product. This however is due to the fact that road is carrying the freight volumes that both rail and waterways go on losing.

What is more interesting is the evolution within the road freight sector itself. The growth of road freight does not come from 'own account' which goes on declining but from 'public haulage', and more specifically from long distance road haulage, the sector that was deregulated in 1986.

Table 2 — Internal freight traffic annual growth rates by modes divided by Industrial production growth at constant prices 1980-95 (t-km/FF)

Annual growth rates	1980-86	1986-95
Industrial production at constant prices	0.0%	1.8%
Total internal traffic (t-km/FF)	-2.1%	0.0%
Waterways	-6.9%	-3.7%
Rail	-3.8%	-4.4%
Road	-1.2%	1.1%
— Own account	-2.0%	-1.2%
— Public	-1.4%	2.9%
—— Short distance	n.a.	2.2%
—— Long distance	n.a.	3.7%

Sources: Our own calculations with data from sources mentioned in the figure above and for disaggregated data on road transport 1980-1986: Daei/Ses-Insee, ***Les comptes des transports en1990***, p. 122; 1990-1995: Daei/Ses-Insee, ***Les comptes des transports en 1995***, p.135
Note: Growth rates were calculated by log-regression.

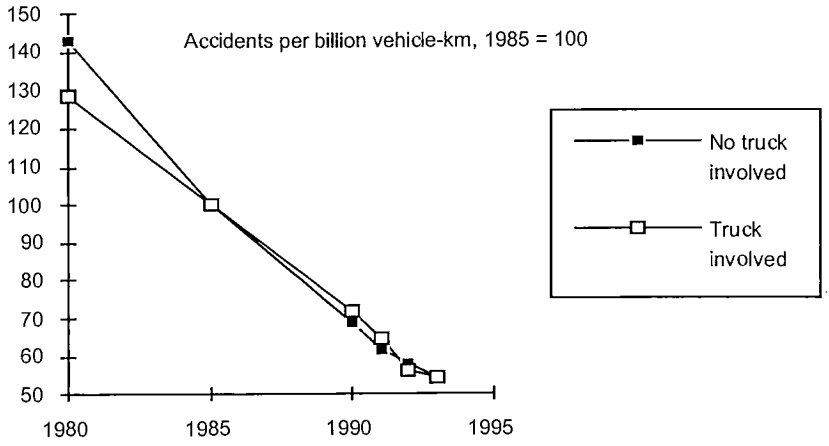
These figures suggest that deregulation might not have greatly increased total freight movement, but that it certainly induced a shift from transport for 'own account' to 'common haulage' and accelerated the shift from rail and waterways to road transport.

IMPACT ON SAFETY

It is often argued that by forcing carriers to reduce costs, deregulation is detrimental to safety as carriers hire cheaper unqualified drivers and make demands on them to drive faster and work overtime. Although several research works addressed the issue in the case of the USA, no one has proved the point. Uninfluenced by deregulation, the accident rate of trucks declined in the same line as car accidents.

In France, the experience is similar. In the diagram below, we have plotted the evolution of the number of accidents involving a truck (not necessarily its responsibility) per billion truck-km and the number of accidents not involving any truck per billion car-km.

Figure 6 — Accidents per billion vehicle-km with and without trucks involved, 1985 = 100



Sources: Accidents: CETE Lille, data communicated by M. Marcel Truffier. Traffic: Daei/Ses-Insee, 1997, p.101

Both indexes seem to follow the same fast reduction pattern unaffected by deregulation. If deregulation had any influence, this diagram would show that it has hastened the pace of accident reduction for trucks and put it in phase with that experienced by cars.

As a matter of fact, the accident rate seems to be much more sensitive to the effective enforcement of safety regulation than to any other policy. This has been documented by Jovanis (1988) and Schweitzer (1988) in the case of the USA. Unfortunately we could not find any analogous data for France where inspection data are not published.

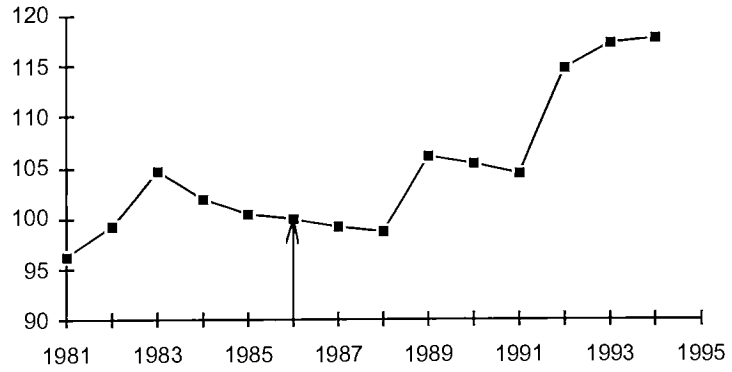
IMPACT ON LABOR CONDITIONS

Labor conditions in the trucking industry is a very touchy issue in France, remember the blockade in Lyons by truckers at the 1992 WCTR. When compared with rail transport, labor conditions are much harder in road transport and wages are lower. The question here is whether deregulation has changed, or as some would say worsened, the picture. Unfortunately, in France, when an issue is politically sensitive, information is scant and kept inside the ministries' departments directly involved. Outsiders, especially research institutions (even if they belong to the ministry) and academics are denied access.

Patrice Salini (1995, p.100), in his book on road freight transport, laments on the lack of serious information about labor conditions in the industry, and says that according to a survey carried out by Inrets, the national institute on transport research, no conclusion could be drawn about the possible deterioration of these conditions.

One important factor is the wage rate. As mentioned above, in the USA, deregulation has lowered the average wage rate of truck drivers. In the diagram below, for France, we have plotted an index of the unit cost of labor, after deflating it by the consumer price index. The index of the unit cost of labor is taken from the CNR surveys to calculate the cost index for the "Savoyarde" combination mentioned above in long distance haulage. If the CNR unit cost of labor index reflects the actual evolution of the wage rate, then, the purchasing power of the workers in long distance haulage has increased by 20% over the decade following deregulation. This is not very different from the evolution of wages for similar qualifications in the rest of the economy. In any case, it seems that the productivity gains in the industry were not achieved at the expense of its workers income. This is quite different from what happened in the USA (Rose, 1987).

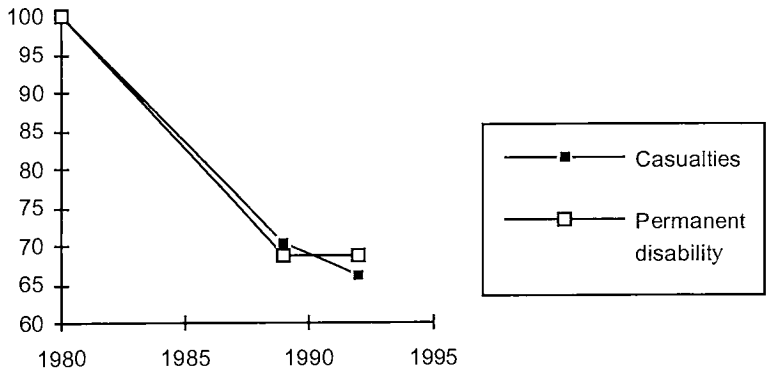
Figure 8 — Index of the unit cost of labor, deflated by the consumer price index. 1986 = 100



Sources: Consumer price index = Insee, Index of the unit cost of labor = CNR
Note: The unit cost of labor includes wage taxes and charges.

One other important indicator of labor conditions is the profession's accident-at-work rate. Unfortunately, in France, this information is not gathered specifically for road haulage. It is aggregated with other activities under "transport and handling of goods". However, road freight transport is by far the main component of this entry. The diagram below shows the evolution of the accident rate with casualties and with permanent disabilities since 1980.

Figure 9 — Index of labor accident rates (casualties and permanent disabilities per worker) 1980-92



Source: Daei/Ses-Insee, Les comptes des transports en 1995, juin 1996, p.80
Note: The data presented here is about "transport and handling of goods" which is mainly road freight transport

Together with the 'construction & public works' industry, 'transport & handling' of goods is still one of the most dangerous activities for its workers. However it is much safer now than it was two decades ago, and deregulation seems to have had no impact on this evolution.

CONCLUSION

Road freight transport in France was deregulated in two major steps, in 1979 for short distance haulage, in 1986 for long distance haulage. We have studied the impacts of the long distance deregulation. Its impact on prices is tremendous. Without deregulation, prices would probably be more than 50% higher now than they actually are.

Its impact on global freight traffic is harder to single out. Deregulation of long distance road haulage certainly hastened the decline of rail and waterways, it also reduced the share of transport on own account.

A very rough estimate would give a net benefit for French consumers of 50 billion Francs annually. If the deregulation of short distance haulage in 1979 had only half the same impact on traffic and on prices, this would add an other 20 billion Francs to the total benefit of road freight deregulation, i.e., over 1000 FF (≈$200) per French citizen annually.

Evidence shows that this gain was not obtained at the expense of safety and suggest it did not have adverse effects on labor conditions.

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APPENDIX: RULES AND REGULATIONS

The wave of deregulation was initiated almost simultaneously in the UK and in the USA. At that time, there was no French word to translate "deregulation". As we had two words to translate "regulation": (i) "réglementation", which means a set of rules, and (ii) "régulation", which means the act of maintaining a steady state, the choice was between "déréglementation" and "dérégulation". In their hurry to coin a word that would not sound too English, the French administration unfortunately preferred "déréglementation" i.e. getting rid of all rules.

English speaking economists know that to successfully deregulate, the public administration needs to produce a new set of rules to foster fair competition, ensure safety, and to strictly enforce them. The Chileans who engaged early in deregulation policies made it clear that "desregulacion" is the opposite of "desreglamentacion". And the World Bank, aware of the fact that most of its member countries might not share the English speaking tradition, clearly identified administered prices and entry restrictions as a subset of regulations under "economic regulation".

This unfortunate mistranslating might have contributed to the very poor enforcement of safety rules, traffic regulation and anti-dumping laws in the French trucking industry. It certainly explains most of the lack of popular support to deregulation policies.