



Impact study of mileage fraud with used cars

&

**Adaptability of the Car-Pass model in other EU-
countries**

Brussels, October 2010

Foreword

Mileage fraud, or clocking of cars as it is more commonly known, is a major problem that affects hundreds of thousands of Europeans each year. The UK Office of Fair Trading recently estimated that one in five consumers who purchase a second-hand car experience a problem. This comparative study is the first of its kind in that it attempts to capture some of the cross border economic effects of clocking as well as its impact on consumers and bona fide operators in the car industry, including manufacturers, dealerships, garages and leasing companies.

The results described in the present report are sobering.

Most consumers are not aware of mileage fraud as there is no obvious manifestation of 'clocking' for the untrained eye. Aside from odometer tampering being a fraudulent activity, people are placing themselves at potential safety risks if they are not familiar with the real mileage history of a car. The financial burden of 'clocking' is also staggering. Not only do consumers pay inflated prices for clocked cars, but they are also burdened with increased depreciation and extra maintenance and repair costs. This study makes the conservative estimate that in Germany, Luxembourg, France and the Netherlands combined, the total cost of mileage fraud is between 1,5 and 2,9 billion euro a year.

Much of this fraud and cost could be prevented. Initiatives in some countries have demonstrated that greater transparency - for example through a systematic recording of mileages every time a vehicle is serviced, repaired or inspected - goes a long way to eradicate clocking and protect consumers. This report makes a number of recommendations that would be easy to implement. The key to success, it appears, is to set up a simple but comprehensive system. But there is one more prerequisite to stamping out this type of fraud: an increasing number of second-hand cars are traded across Member States' borders, thus requiring cross-border exchange of vehicle information.

How can we help in the European Parliament? Although the enforcement of action against fraud remains first and foremost the responsibility of national governments, awareness-raising and cooperation at the European level has great potential to bring benefits to both consumers and professional traders. The figures in this report speak for themselves. I am sure the Parliament would welcome an initiative to promote increased transparency about a vehicle's service history and its mileage record in particular. Road safety is being jeopardised everyday by odometer tampering and the risks are unnecessary and unacceptable.

I hope that the findings and recommendations in the following pages will create the momentum required for change. Surely all decision makers as well as industry and consumers will support a move towards an undistorted and above all reliable single market in second hand vehicles.

A handwritten signature in blue ink, appearing to read 'M Grosch', with a long horizontal stroke extending to the right.

Mathieu Grosch, MEP - Member of the Transport and Tourism Committee

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1 Executive Summary

The straightforwardness and comprehensiveness of Car-Pass, combined with its low running costs, is impressive. It should be seen as a blueprint and practice-proven model for eradicating mileage fraud, setting the standard for other countries. The success of Car-Pass lies in its collaborative approach, incorporating both public and private organisations, increasing consumer protection and improving the image of the used car sector. It has been extremely effective in Belgium:

- Car-Pass has dramatically reduced odometer fraud: now only 0,2% of Belgian-registered cars have tampered odometers, down from 8,6% in 2006.
- Car-Pass is affordable for the consumer, with certificates priced at 6,35 euro, the sale of which covers the system's running costs.
- Car-Pass enables honest car dealers to operate on a level playing field for car trade within Belgium.

Our research also underlined the high value of the used car market, which accounts for more sales than the new car market, in Belgian and across Europe. More than 100.000 people are directly employed by the used car industry in France, Belgium, Luxembourg, Germany and the Netherlands, where the combined annual turnover is over 180,4 billion euro.

The annual cost to consumers in these countries is staggering. This study makes the conservative estimate that in Germany, Luxembourg, France and the Netherlands combined, the total cost of mileage fraud is between 1,5 and 2,9 billion euro a year.

One major concern remains. Second-hand cars are frequently sold across EU Member States, increasing the potential for fraud. As Car-Pass only applies to vehicles registered in Belgium, even Belgian customers remain unprotected from odometer tampering when purchasing cars that have been registered in other countries.

The history of used cars crossing national borders is currently almost impossible to trace and prosecution for mileage fraud is extremely rare. The consumer pays the price, facing accelerated depreciation on cars with tampered odometers in addition to higher maintenance and repair costs. Furthermore, odometer tampering means cars may not receive the servicing and maintenance they require, increasing safety risks to the consumer and upping the emissions cars produce.

Meanwhile, honest car dealers in Europe still face unfair price competition from those who engage in mileage fraud. Unless a pan-European approach is adopted, the Belgian used car market risks becoming isolated.

Market dynamics beyond the EU's borders also increases incentives for mileage fraud. In Central and Eastern European (CEE) countries demand for used cars is higher than demand for new cars but domestic supply is low. Given that many consumers in CEE countries favour high specification cars with low mileage, odometer manipulation on vehicles from the EU pays off. Mileage

manipulation is a major reason why the EU exports many more cars than it imports.

A survey in Belgium, Germany, France, Luxembourg, and the Netherlands found that consumers in these countries had low confidence in the accuracy of odometer readings in used cars more than four years old, and that an overall majority consider a central registration system (like Car-Pass) to be a helpful tool for verifying the mileage history of a car.

Car-Pass is a ready, cost-effective and proven solution to mileage fraud in Belgium and deserves serious consideration from governments and stakeholders looking to eradicate the practice of odometer tampering across Europe. Moreover, it is important that the success Car-Pass has achieved in Belgium is strengthened and broadened to tackle the mileage fraud that continues to be a source of ill-gained profits precisely because of the lack of reliable information in cross border transactions.

Recommendations:

- **Prevention is required, not just prosecution.** EU Legislation and the threat of prosecution is not enough to deter mileage fraud, prevention protects the customer and honest retailer.
- **Mileage readings must be registered.** A system like Car-Pass model is a low cost and highly effective method of minimizing mileage fraud.
- **Cross-border exchange of mileage information.** Better cross border cooperation is needed, decentralized mileage registrations and mileage readings exchange on request.
- **A public rather than private solution is preferable:**
 - A non-profit system like Car-Pass is cheaper
 - A public system would see all consumers gain access at the same cost
 - It should be comprehensive, requiring all consumers to take part
- **Data should be available upfront:**
 - To make purchasing used cars less risky, make sure that stakeholders can verify the mileage history of a car before purchase
 - Increase the frequency of registration
 - Closer cooperation between all stakeholders (leasing companies, fleetowners, retailers)
- **Expand the reach of the system to include other vehicles.** Why limit the benefits of Car-Pass to cars only? Motorcycles and trucks could also be included on the system.

2 Scope and approach of the impact study on mileage fraud

2.1 Introduction

Odometer tampering is a widespread problem in Europe. Surprisingly, this problem is not on the radar in many countries. In Belgium, odometer tampering and mileage fraud in particular, was also once a problem. Various automotive branch stakeholders created a solution to clampdown on odometer tampering and protect both consumers and honest retailers. The platform, a centralized database of up-to-date odometer readings, and the non-profit organization which runs it, were introduced in 2006. This organization, Car-Pass vzw, has reduced odometer tampering to only 0,2% of all domestic used car registrations (excluding imported used cars). Consumers and honest used car retailers recognize they benefit from the platform.

However, the Belgium automotive sector is not situated on an isolated island. Belgium is part of a pan-European used car market. Overall, cross-border transactions have become more frequent in the European used car market and certain trade flows may even be partly stimulated by the recourse to odometer tampering. Mileage manipulation, as we will see later in the study, is a distorting factor in the cross border trade in cars. Research samples of Car-Pass vzw in 2007 show that 10% of some imported brands had tampered odometers. Research in 2009 for Mercedes Benz, BMW, Volkswagen and Audi (200 cars from each brand) showed odometer tampering had taken place in 10,7% to 17,9% of the imported cars¹. Car-Pass vzw believes that this indicates more than just ad hoc odometer tampering. It looks like systematic mileage fraud. Fraud in which honest used car retailers and consumers are deliberately being misled, with subsequent higher maintenance and depreciation costs.

The Board of Car-Pass decided as a consequence to commission a five-country impact study on mileage fraud and its cost impact as well as the viability of the Car-Pass model in other markets of the European Union.

¹ Car-Pass annual report 2009

2.2 Deliverables defined

The objective of the study was to make an impact analysis of the Car-Pass model and Belgium legislation in the Netherlands, Germany, France and Luxembourg. To do this, the research was broken down into the following goals:

1. Quantify the number of imported and exported used cars to and from Belgium (passenger cars and light commercial vehicles). Provide insight into the economic importance of the used car sector, the number of companies involved, including employees, and overall revenue.
2. Analyse and quantify the economic damage caused by mileage fraud with used cars in relation to the international car trade to and from Belgium and in particular the damage experienced by the:
 - o consumer, overpaying for his or her used car,
 - o automotive sector because of unfair (price) competition and distortion of the used car market.
3. Evaluate the cost and benefit of the introduction of a model similar to Car-Pass, including an assessment of its feasibility and possible recommendations to improve the platform or increase its support across the European Union.
4. Execute a (small) consumer survey in the countries within the scope of the study to determine the perception of mileage fraud in general and the trust in odometer readings when buying a used car. The third subject of this survey is the acceptance of regulation to prevent mileage fraud.

2.3 The research team

The CRM used car management research team that carried out the impact study on mileage fraud has three members:

Mr. Kris Peeters, director for Belgium of CRM used car management.

As the son of a VW-Audi dealer, Peeters was exposed to all the aspects of the dealership, even as an undergraduate when he studied trade and corporate management. Upon graduating he worked in car sales as a general director of a brand dealership. In recent years, he has shared his knowledge and experience on both manufacture and car-importer levels as a senior consultant in the used car industry.

Mr. Michel van Roon, founder, director/owner of CRM used car management in Belgium, the Netherlands, and Germany. He combined a graduate study in corporate-economy, with specialization in Strategic Marketing Management, at the Erasmus University Rotterdam, with sales and management of the used car business owned by the family. In 1995, he started CRM used car management, which currently employs 20+ consultants & trainers. He is a regular contributor to Dutch and German automotive magazines for professionals in the field, on topics of the used car market, its development and strategic implications.

Mr. Rob M. Henneveld, Senior Associate Consultant of CRM used car management and project leader of this impact study. His activities cover a wide range within the downstream part of the automotive industry such as car leasing, rental, remarketing of used cars, and the after market. Past research and consultancy assignments cover a wide regional spread from the Netherlands to Romania, including Belgium, England, Israel, Italy, Germany, France, Spain, Russia and Poland.

2.4 Research method

The impact study can be split into two types of research: desk research and field research.

2.4.1 Desk research

The desk research covers the quantification of registration, import and export volumes of used cars, including the monetary value within and between the countries in the scope of the study. The subject of odometer tampering has rarely been researched. The lack of information forced us to gather a lot of information from the internet. To get some expert opinions during the study we also initiated "crowd sourcing" within the Remarketing Intelligence and Used Car Management NL newsgroups of LinkedIn.

Anonymised transaction data from auction houses and leasing companies have been analysed and compared with widely available and confidential information of well-known residual value experts.

2.4.2 Field research

If you want to know the impact of odometer tampering and mileage fraud in the countries of the scope, you have to interview experts on this issue.

Therefore, we interviewed experts working for leasing companies, leasing associations, used car auction houses, representatives from branch organisations, car manufacturers, (international) used car traders and suppliers to the used car sector, such as inspection services and data suppliers. In appendix 12.1, we listed all people and organizations who contributed and/or whom we interviewed for this study. This report summarizes the outcomes of every registered interview and quantitative analysis of available data. Where possible, we have checked the data with multiple sources.

2.5 Report structure

This study is sponsored by Car-Pass vzw. Its objectives are clear. Car-Pass wanted to eradicate mileage fraud in Belgium and was successful in doing so. Therefore, we first cover the Car-Pass model and its success in the Belgium used car market in chapter 3. In order to make a fair judgement upon the adaptability of the Car-Pass model in Europe, we have chosen to present the analysis of the used car market dynamics and its pricing mechanism first, in chapter 4 and 5.

In chapter 6, we analyse the value chain of used cars towards the consumer. These findings are the direct result of our desk- and field research. In chapter 7, we identify the moments within the life cycle of a car in which mileage fraud pays off and is most likely to happen. An analysis is based on the outcomes of our interviews, and with external data from residual value forecasting specialists, auction houses and leasing companies.

In chapter 8, we quantify the monetary value of mileage fraud. In chapter 9, we analyse the cost/benefits of a model such as Car-Pass and in chapter 10 we analyse the outcomes of a consumer survey upon mileage fraud perception and the trustworthiness of odometer reading.

Finally, we formulated the most important conclusions and recommendations to European decision makers in chapter 11.

3 Analysis of the Car-Pass business model

Before Car-Pass came into existence, the Belgium used car market had a negative reputation, frequently causing considerable disappointment to both consumers and the more honest used car dealers. Before analyzing the effects of odometer tampering and calculating the monetary value of mileage fraud, we need to analyse the Car-Pass business model and its achievement in Belgium for the used car market.

3.1 Brief history of Car-Pass and its objectives

During the early 1990s a few independent Belgium car retailers started to discuss a way to stop mileage fraud. Their objectives were honest and clear. They wanted to put a halt to the unfair price competition which mileage fraud created. They wanted to protect the used car sector and its customers against this fraud and improve the bad image mileage fraud was causing.

Officially founded in March 2006, Car-Pass vzw was authorized by Royal Decree to manage a central database for recording the mileage readings and Vehicle Identification Numbers (VIN) of cars and Light Commercial Vehicles (LVC's). Unlike other initiatives in the used car markets, Car-Pass is a non-profit organization.

Car-Pass mission

The original mission of Car-Pass vzw was clear and simple: facilitating the central registration of mileage readings during the lifetime of a vehicle as often as possible in the market. By issuing a Car-Pass certificate with the mileage reading history registered, Car-Pass vzw created a beacon of trust in the used car market for consumers. When buying a used car, consumers can trust Car-Pass.

Furthermore, the objective was also to create a long-lasting and viable solution to protect both the consumer and all honest stakeholders in the automotive sector. The prevention of customer damage and negative image for the automotive sector caused by mileage fraud has been part of the mission since the start.

To achieve the objective of “creating a long-lasting solution to stop odometer fraud”, several critical requirements were defined:

- The need for a sustainable business model when it comes to both organization and funding.
- A complete and comprehensive supportive legal framework.
- Acceptance within the automotive community.

Only by meeting the requirements above has the Car-Pass initiative been able to create a successful business model to fight mileage fraud. In the paragraphs below, we will explain the way Car-Pass has been able to meet these self-set requirements.

3.1.1 Sustainable Business model

With the objective to create an independent non-profit organization, one of the most crucial decisions was whether the Car-Pass organization should be privately owned and managed to act as a publicly controlled body. The result was a combination of both.

Several Belgian automotive branch organizations and representatives from federal government public offices were the initiators:

Private sector

- FEBIAC: Association of importers and constructors of vehicles, including its suppliers; mainly wholesale orientated
- Federauto: Association of car traders and repair workshops, including the related sectors, mainly retail orientated
- GOCA: Association of organizations involved with periodic car checks (MOT) and driving licenses

Public sector

- Federal Ministry of Economic Affairs, SME, Retail and Energy
- Federal Ministry of Mobility and Transport

To create an independent organization, without any commercial ties, the main funding source of Car-Pass is the mandatory issuing (sale) of the Car-Pass Certificate to consumers when registering a used car. The tariff of this

mileage certificate is based on a balance between a consumer-accepted price and the operational cost of Car-Pass.

3.1.2 Complete and comprehensive supportive legal framework

During the development stage of the Car-Pass model, one crucial requirement was explicitly set: the need for a supportive legal framework. Without this Car-Pass would have a long way to go to achieve its objectives and moreover, it would create a non-level playing field where honest traders were being hurt.

The most important regulation in the legal framework, on which the entire mileage fraud prevention is resting, is the law stipulating that it is “strictly forbidden to alter the mileage reading of a vehicle, and to falsify or prevent the registration of the correct mileage.” This law passed Belgian legislation on 11 June 2004.

Following this decisive moment, a set of Royal Decree was implemented to take care of the operational aspects of enforcing this law.

The following diagram summarizes Car-Pass milestones.

Royal Decree Milestones of Development

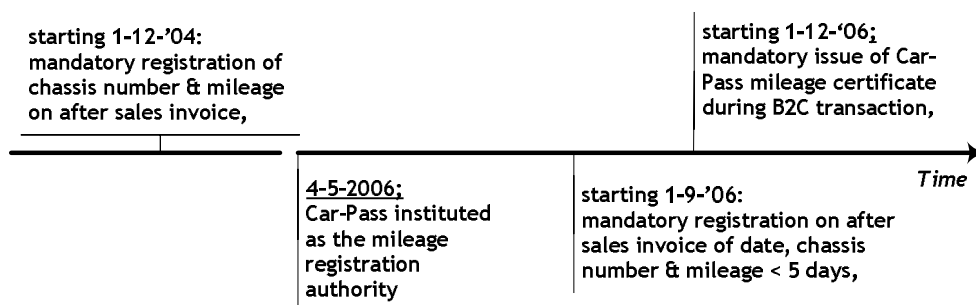


Figure 3-1: Car-Pass milestones

Royal Decree, 30 September 2004

This decree stipulates that for all professionals within the automotive sector, it is mandatory to register the Vehicle Identification Number (chassis number) and mileage reading on every invoice of the vehicle they have worked on. The starting date of this decree was the 1 December 2004.

Royal Decree, 4 May 2006

This decree authorised Car-Pass vzw to manage the registered mileage data. The authorization was based on the acceptance of the detailed description of the Car-Pass business model, including that it had been registered as a non-profit foundation. This description also included a comprehensive account of the organization's charter, its financial planning and the design of its mileage database that ensured the required security and confidentiality of its data. The Car-Pass charter consists of an article prohibiting the use of the mileage data for commercial purposes.

Royal Decree, 1 July 2006

This decree forces the seller of a used car and a used Light Commercial Vehicle (LCV) to provide the private buyer a valid Car-Pass mileage certificate on delivery. It also imposes the maximum sales price of the Car-Pass document. If the seller fails to produce this, the buyer can cancel the purchase. For B2B sales transactions the handover of the Car-Pass certificate is not a requirement. The same applies when the seller is a consumer who sells the car to a professional. Only Car-Pass vzw is allowed to provide a mileage certificate. Starting date of this decree was 1 December 2006.

Royal Decree, 26 August 2006

This Royal Decree stipulates that every professional car mechanic or workshop that has carried out work on a vehicle (passenger car or LCV) has to send in the VIN-number², mileage and the date of execution. With the exception for work carried-out of less than 125 euro to VAT exempted clients. This reporting has to be done within 5 working days. This decree also applies

² VIN-number: Vehicle Identification Number

to companies doing periodic inspections on the vehicle. Starting date of the decree was 1 September 2006.

3.1.3 Acceptance within the automotive community

Acceptance of the Car-Pass business model within the automotive community was achieved by working as closely as possible with all the different organizations, including consumer interest organizations such as VAB and Touring. The enduring acceptance by the automotive community is an integral part of the Car-Pass organizational structure.

Car-Pass organizational structure

To strike a balanced mix of organizations, representing the private and Public sector, the Car-Pass controlling body contains the following profiles:

- Founding Members
- Associated Members
- Observers

These members represent the Belgian automotive sector, consumer interests and governmental bodies.

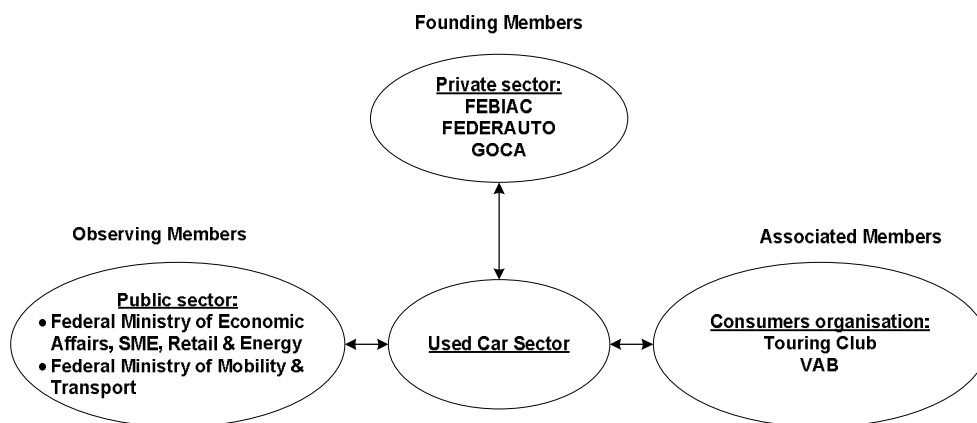


Figure 3-2: Overview Car-Pass organization

The following individual organisations are part of Car-Pass.

<u>Founding Members</u>	<u>Associated Members</u>
FEBIAC	Royal Belgium Touring Club
FEDERAUTO	VAB
AIBV nv*	
Automobiel-Controle & Techniek nv*	<u>Observing members</u>
Autoveiligheid nv*	Federal Ministry of Economical Affairs, SME, Retail and Energy
Bureau d'Inspection Automobile nv*	Federal Ministry of Mobility and Transport
Bureau voor Technische Controle nv*	
CTA nv*	
Keuringsbureau Motorvoertuigen nv*	
La Sécurité Automobile nv*	
Studiebureel voor Automobieltransport nv	
Autosécurité cva*	

Table 3-1: Individual organisations Car-Pass

3.2 The Car-Pass business implemented

Although the preparation and execution of the start of Car-Pass in Belgium had been carried out carefully, the steps made by all stakeholders still caused a substantial market change. Some elements of the implementation process deserve our attention since they contributed to the success of Car-Pass in Belgium.

3.3 Critical factors for a successful implementation

Some critical factors making the implementation of the Car-Pass business model successful were:

3.3.1 Collaborative effort by the automotive sector

One of the decisive success factors of Car-Pass is that all stakeholders of the automotive sector provide the required mileage data. This includes periodic mileage readings from multiple, independent sources, such as tyre-outlets, franchised and non-franchised dealers, breakdown services and damage repair shops. It also ensures the quality of the mileage data; it reduces the risk

* Represented in the Board by the GOCA

of mileage fraud and enhances the overall confidence, and trust of the consumer in the used car sector.

3.3.2 Minimizing the (perception) of administrative burden

The registration of mileage is a manual activity and is linked to a Vehicle Identification Number consisting of 17-digits (numbers and letters). Despite efforts to minimize the administrative burden, a number of stakeholders had the following problems with this registration process:

- The (small) enterprises that are not directly involved in the used car market but still have to register their mileage readings,
- employees of road assistance organizations (Touring/VBA).

Car-Pass responded by careful communication and intensive help to make rectification of odometer readings run as smoothly as possible. Typing errors are small human errors but can have a major influence on the quality of the database. Technically, a scanner is made available to read the barcode with the Vehicle Identification Number on the car's license-registration papers, reducing the administrative burden.

Slight adjustment of the mandatory mileage registration

During the implementation of Car-Pass, it was decided to make a slight change to mandatory mileage registration in the Car-Pass database. No mileage registration in the Car-Pass database is needed for work done on cars amounting to invoices lower than 125 euro (incl.VAT), to VAT exempted clients.

3.4 The operational model of Car-Pass

Theoretically, the Car-Pass model is clear and easy to understand. Operationally, the Car-Pass process has not been quick to implement. The operational process is carefully designed. To understand the quality of the Car-Pass model and its output, we will highlight the main aspects of the operations model of Car-Pass.

In the following diagram, we illustrate the overview of the operations model of Car-Pass.

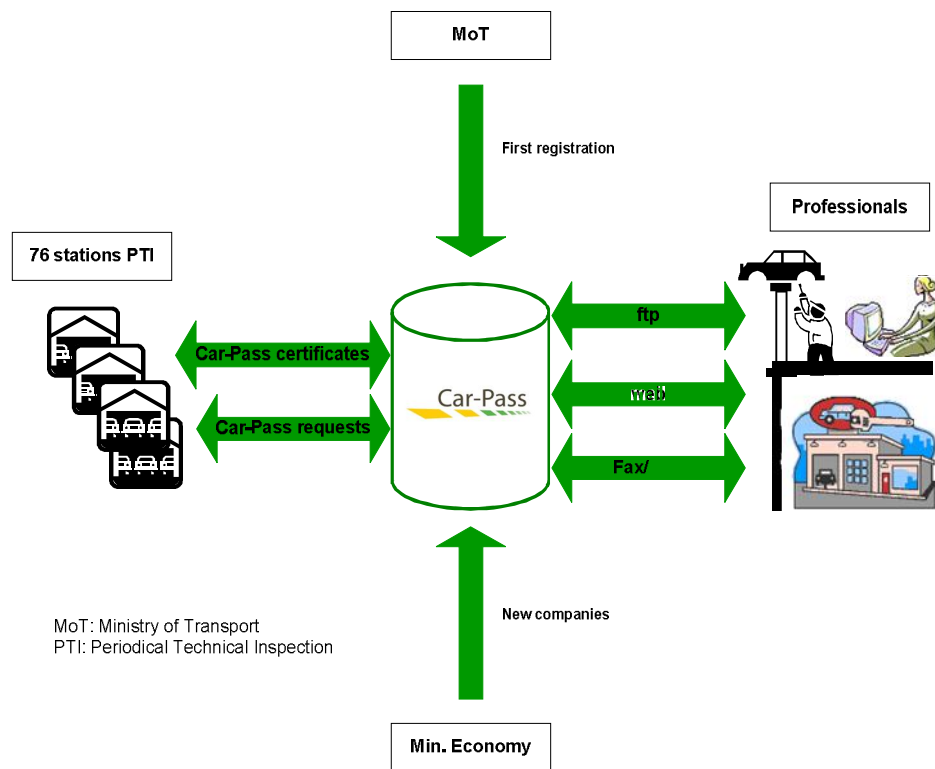


Figure 3-3: Overview operations model

3.4.1 Car-Pass data entry and -communication

The objective of Car-Pass is to process mileage data in the most efficient way. Automotive professionals are therefore able to record the mileage readings in a number of ways:

- Periodic transfer through FTP-server. Agreements with several software suppliers of dealer- and after sales programs have made uploading the required data an automated process without the professed administrative burden. Most workshops make use of this method.
- Manual input through the website of Car-Pass. Each organization uses its login code and password.
- Manual input on a Car-Pass form, which in turn is sent by surface mail or fax.

It is obvious that the Car-Pass objective is to stimulate all organizations to make use of the automated FTP-method. In the following table, the division of mileage registration methods is shown.

Methods of registration	2009		2008		Difference
Users of fax/land mail	1.615	14,2%	1.637	16,7%	-1,34%
Users of FTP	3.829	33,6%	3.667	33,9%	4,42%
Users of website	5.966	52,3%	4.998	49,4%	19,37%
Total	11.410	100,0%	10.302	100,0%	10,76%

Table 3-2: Methods of registration

3.4.2 Car-Pass IT-platform

The Car-Pass database is physically hosted in a data centre. They take care of the regular maintenance, access protocols, and security issues.

Upon receiving the mileage readings, Car-Pass has automated a verification process to check the data on:

- Correct format
- User (organization)
- Content of the information

Any information that is suspected of being false is directly communicated to the users. Received mileage readings from vehicles with unknown VIN-numbers are not processed. Typing errors of the VIN-number and mileage are the most common mistakes.

The Ministry of Mobility and Transport, supplies Car-Pass with VIN-numbers of newly registered vehicles on a daily basis. The database of Car-Pass contains all the VIN-numbers of cars registered in Belgium for the past 25 years. Currently this database contains more than 16,8 million cars.

The Ministry of Economic Affairs supplies the up-to-date information of all organizations involved in the automotive sector database.

3.4.3 Output of the Car-Pass mileage certificate

The Car-Pass mileage certificate is issued at the 76 registered Inspection stations throughout the country. In Belgium, it is mandatory to have a car inspection carried out prior to the registration of a used car. This applies to all B2C and C2C registrations. The Inspector of the vehicle registers the current mileage of the used car and requests the Car-Pass mileage certificate online. After processing the latest mileage, a Car-Pass certificate is processed and sent as a PDF-document. To minimize administrative burden and queues, the maximum lead-time for this process is five minutes. To illustrate the load of the database, during peak times the production volume of Car-Pass mileage certificates is more than ten requests per minute.

Automotive professionals also have access to the Car-Pass platform for examining the mileage history of a used car. After entering the VIN-Number and current mileage reading, they are able to evaluate the mileage history in real-time.

3.5 Car Pass funding- and cost model

Car-Pass does not receive any funding from the Government or from any other organization. Its yearly operational cost is solely funded by the sales of the Car-Pass mileage certificates (current price 6,35 euro incl. VAT). The issue of the certificates culminates in a turnover of approximately 3.000.000 euro per year. In the 2009 annual report, the following turnover versus cost structure was specified.

<u>Expense type</u>	<u>Ratio</u>	<u>euro</u>
Staff costs (7 Fte)	18%	540.000
IT-infrastructure	18%	540.000
Cost of issuing mileage certificates	16%	480.000
Communication & Marketing*	35%	1.050.000
Operational costs	13%	390.000
	100%	3.000.000

**to all stakeholders*

Table 3-3: Car-Pass 2009 turnover and cost structure

3.6 Car-Pass production and key-figures 2009

The following chart shows the number of issued Car-Pass mileage certificates per month during 2009. Also reported is the number of Car-Pass mileage certificates issued for free. If a Car-Pass mileage certificate shows fewer than 4 mileage readings, the issue of the certificate is free of charge.

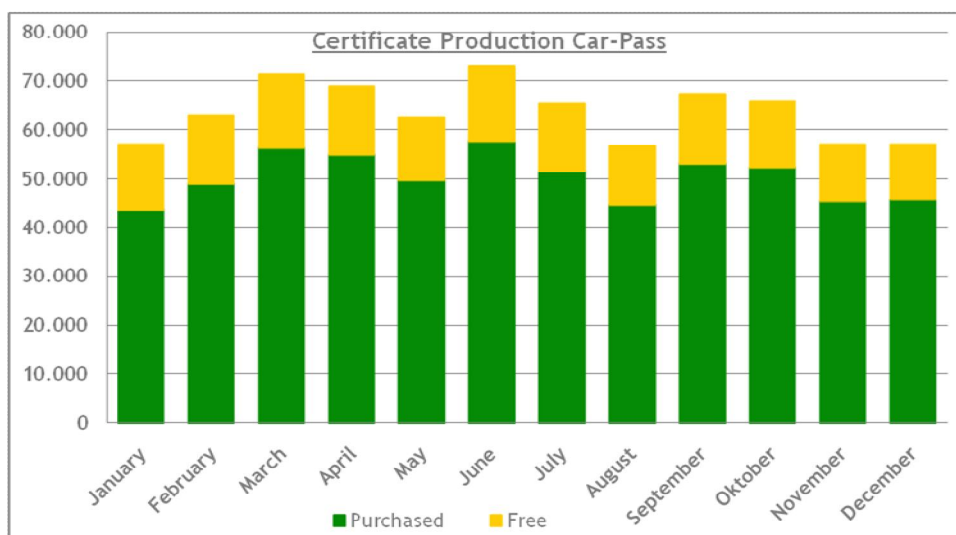


Table 3-4: Car-Pass production 2009

3.6.1 Car-Pass in key-figures 2009

Over 2009, the following key figures were reported:

<u>Vehicles</u>	<u>2009</u>	<u>2008</u>
Number of vehicles in the database	16.823.914	16.380.349
Number vehicles registered on 31-12-2009	5.785.745	5.693.310
Number vehicles with at least 1 mileage reading received in 2009	5.404.438	5.315.502
<u>Mileage readings</u>		
Number of mileage readings in de database on 31-12-2009	82.248.001	68.950.321
Number of mileage readings linked to registered vehicles	53.338.127	45.825.703
Number of mileage readings received during 2009	13.667.855	12.985.452
Number of mileage deflections	372.656	364.739
<u>Users</u>		
Number of users of the database on 31-12-2009	12.912	16.587
Number of users whom have contributed at least 1 mileage reading	11.410	10.302
<u>CAR-PASS certificates</u>		
Number of certificates delivered during 2009	763.190	730.616
Number of certificates delivered for import	58.603	51.741
Number of (most) likely cases of fraud	1.395	1.614
Average volume of the fraud (in km)	83.258	>80.000
Number of requests for correction	1.004	----
Share of certificates issued within 5 minutes lead-time	99,9%	----
Average mileage during delivery of the Car-Pass certificate	115.246	113.240
Average vehicle age during delivery of the Car-Pass certificate (year)	7,91	7,92

Table 3-5: Car-Pass 2009 reported key-figures

On 31 December 2009, the Car-Pass database contained 82,25 million mileage readings, of which 53,34 million (64,9%) were linked to cars actually registered in 2009. *During 2009, there was a significant increase in the utilization of FTP from dealer management and garage software. The decline of fax and/or surface mail steadily continues.*

3.7 Enforcement of the law

Belgian legislation was adopted on 11 June 2004 stipulating that it is forbidden to alter the mileage of a vehicle and explaining how this should be enforced. Authorized civil servants of the Ministry of Economic Affairs are as-

signed to oversee the rightful enforcement of this law. When it comes to the practical execution of the law, every year the authorised civil servants carry out a comprehensive inspection of approximately 250 companies. Furthermore, for pending filed court cases and following a request, Car-Pass will submit information on the mileage registration of cars.

3.8 Car-Pass branding

Since one of the objectives is to create a beacon of trust in the used car market, Car-Pass branding is important. Given the current funding of Car-Pass, only a modest budget is available. On a yearly basis, Car-Pass runs campaigns to strengthen its image, in 2009/2010 they were:

- TV-ads (3 weeks) and radio campaign (2 weeks, 1000 broadcasts)
- Participation in the European Motor Show Brussels (600.000 visitors, of which 10.000 participated in a Car-Pass/Koopjeskrant game).
- Bannering and advertising on relevant websites.

Car-Pass has evaluated, for the third successive year, its current brand awareness in Belgium.

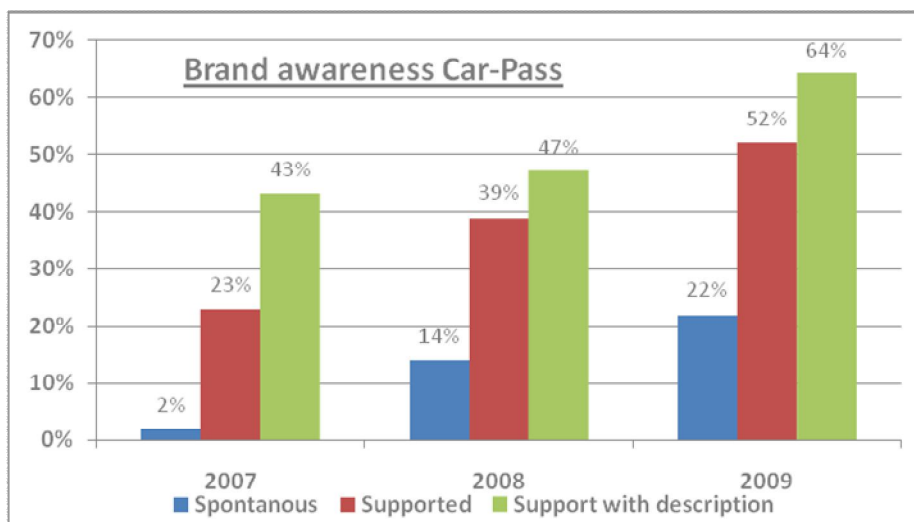


Figure 3-4: Brand awareness Car-Pass

3.9 Car-Pass and the used car sector's successful turnaround

Thanks to the uploaded historical data, and starting with a full year of production in 2007, a steady stream of valid Car-Pass certificates found their way to the consumers from the start. As a result, as shown in the following chart, there has been a steady increase in the number of paid mileage cer-

tificates. The share of purchased certificates has risen from 72% in 2007 to over 78% in 2009.

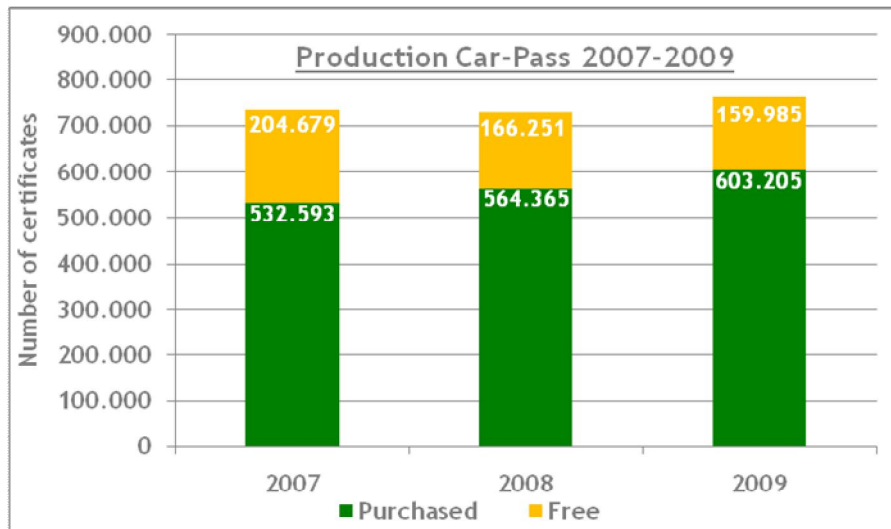


Figure 3-5: Issued mileage certificate development

This means that each paid-for issued mileage certificate has more than four valid mileage readings, with at least a two month interval between each mileage reading.

An important factor in the success of the Car-Pass model was ensuring a quick-win situation so that immediately after the initiative was launched, Car-Pass could demonstrate tangible proof of its usefulness to both consumers and the sector by way of a certificate.

It is also proof that the business model, with the simple method of transferring a massive volume of data to a single-page certificate, paid for by the consumer, was an effective way to halt mileage fraud. The following chart, sourced from the 2005-2006 figures from GOCA;³ shows how quickly mileage fraud with used cars was virtually eliminated from the Belgian market (imported cars excluded).

³ From 2000 on the GOCA -responsible for collecting mileage during their periodic technical inspections (MOT) - conducted for the period of 2003-2006 analyses on mileage frauded cars. They came to an average 60.000 cars/year, exclusive imported cars, which had a notable mileage deviation. This, converted to the same method as defined in Car-Pass 2009 annual report figures, represent 8,6% of mileage frauded cars.

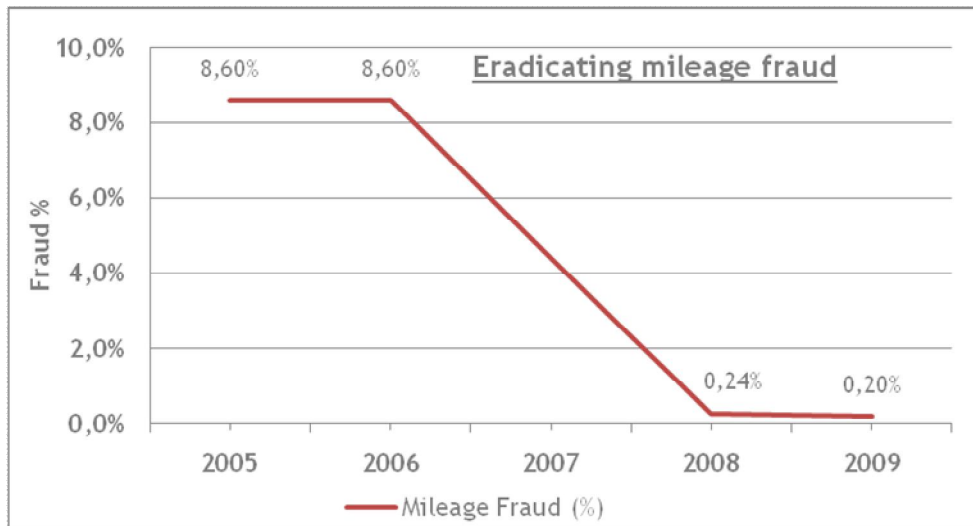


Figure 3-6: Belgian mileage fraud eradication

As a result, presently only 0,2% of all domestic (Belgian) registrations show a tampered odometer, a factor 43 less than in 2006. Furthermore, Car-Pass managed from the beginning to synchronise the knowledge of consumers and car retailers alike about the mileage history of a car.

By applying the Belgian Car-Pass model to any domestic automotive sector, with a history of mileage fraud, there is a good chance that within a short period of time a used car market will become clean.

As for the import of used cars, here Car-Pass conducted some internal analyses⁴ and came to the staggering conclusion of cases of fraud with imported cars from neighbouring countries between 10-18%, with an average mileage difference of 60.000-80.000 km. With imported cars from the Netherlands, it was reported that of the 400 used cars analyzed, 10,9% had a tampered odometer. Here the average change to an odometer reading was 89.109 kilometres.

⁴ Research was conducted, during 2008, together with the Belgian Ministry Mobility and Transport, and in the Netherlands with both the Rijksdienst voor het Wegverkeer (RDW) and the Stichting Nationale AutoPas (NAP).

3.10 Results & conclusions on the Car-Pass model

The uniqueness of Car-Pass is its solid and stable position within the Belgian automotive sector. The simplicity of the Car-Pass model and its comprehensiveness, in combination with its limited costs, is encouraging.

By now, it could be seen as a blueprint, and also as a “practice-proven” model, that enables a country’s used car sector to eradicate mileage fraud once and for all.

Collecting multiple mileage readings creates a unique transparency about the actual driven mileage of the used car. No consumer accidentally buys a used car with a tampered odometer anymore in a domestic transaction in Belgium. Considering the financial risk and damage for the consumer purchasing a used car, the marginal cost of the Car-Pass mileage certificate (6,35 euro) is no barrier during the car purchase process.

One of the critical factors for success has been the collaborative effort and long-term engagement and commitment of all Belgian stakeholders in the automotive sector. The support of governmental organizations and comprehensive federal legislation that forces every stakeholder to cooperate closed the gap between voluntary participation and possible free rider behaviour. This collaborative approach is also anchored in the organization of Car-Pass.

In addition, the objective of raising the awareness among Belgian consumers created both a demand for cars with an honest mileage and improved the image of the used car sector.

Both the Car-Pass model and its actual operation have set a standard for other countries, with 0,2% mileage fraud compared to the total of registrations, coming down from 8,6% (excluding imported cars). By doing so, it has heavily reduced the risk of unexpected costs for consumers as a result of mileage fraud.

Automotive professionals are also satisfied with the results of Car-Pass. Every honest used car retailer currently faces a level playing field to compete in, whereas in the past, dishonest retailers were able to influence the used car market in a negative way.

One concern remains. Imported cars do contaminate Belgium's car market and create unfair competition in the European used car market. This is the motivation for Car-Pass' initiative to seek a pan-European approach in eradicating mileage fraud. At the European level, honest used car retailers still face unfair price competition from traders and retailers that manipulate odometers.

Worse, if Belgium's neighbours do not engage in a sufficiently strong and effective effort to eradicate mileage fraud from the used car market altogether, Belgium will become very isolated. If no efforts are made to eradicate mileage fraud, Europe will not have a level playing field for its substantial used car market and its citizens will frequently fall victim to the financial repercussions of mileage fraud.

4 The used car market and its dynamics relevant to mileage fraud

"The existence of mileage fraud must be seen in the historical perspective of horse trading practices. In the old days, horse traders would do almost everything to get the highest price for their horses. Even when that meant plain cheating in deceiving the prospective buyers. Since most of the first used car traders were former horse traders, they applied the same devious practices to their used car deals. I come from a family-line of horse traders. In fact, I am a third generation used car trader. But, like many other colleagues in the used car business, we want to clear out these bad practises, and turn the used car trade into a clean and respectable sector." Johan Meure, used car trader in the Netherlands

The European used car market might look like a market without trade barriers and therefore seem potentially perfect. In reality, the market is very untransparent and in fact still relatively small. It's very difficult to trace the history of a car imported from another member state and therefore evaluate precisely the real value of that car. The high cost of searching for information, hinders the development of a truly pan-European used car market. Not only do consumers face this lack of information, but automotive professionals do as well.

The European used car market is characterized by a high level of information asymmetry. This situation creates opportunities for profitable mileage fraud.

This chapter aims to highlight the used car markets in Belgium, Luxemburg, Germany, France and the Netherlands. To understand the phenomenon of mileage fraud, we will analyse the market dynamics relevant to mileage fraud.

4.1 New car sales, the source of used cars

From the very moment a new car is sold, it becomes a used car. To fully understand the dynamics of the used car sector, the used car supply deserves attention.

New cars are indispensable for a used car market. Without new cars sales, there are no used cars in the future. Every new car customer is a used car source in the future.

In the new car market, a number of customers buy cars:

- Private consumers
- (Small) Business users
- Leasing companies
- Rental companies

Every new car segment supplies different used cars. Private consumers normally drive lower mileage. Small business users may buy the more luxurious cars, whereas leasing companies supply the more “bread and butter cars” to the used car market. Rental companies supply a separate segment of used cars, the nearly new ones. In many cases, rental cars are returned to the manufacturer or dealer after only a short period of use (average 9 months), on so-called buy-back agreements.

For consumers and corporate business users, purchasing a used car normally involves a down payment for a new (used) car.

When looking closer at the rental companies, the cars they put into operation and return to manufacturers are frequently seen as an oversupply of relatively new used cars, putting used car prices under pressure. Their numbers are relatively high and they warrant the manufacturers a high(er) production capacity utilisation. In the used car markets, these ex-rental cars directly compete with younger used cars of consumers or even new cars. Their volumes are able to put used car prices under more pressure in already saturated used car markets.

Leasing companies have been founded by car manufacturers and retailers to stimulate the sales of new cars and after sales. The leasing sector is divided by the so-called “captive” lease company, a subsidiary from and owned by the car manufacturer, and the “non-captive” leasing company, which is in the hands of banks and private ownership. The capital intensity has led to a high involvement of financial institutions in this segment. Leasing companies optimize the costs of depreciation, insurance, maintenance and repairs based on a given mileage per year; in most cases, they are also the risk-bearer of these costs. Leasing companies have become big suppliers of the used car markets, both on a national and international level.

In the following figure, we have illustrated how the supply of used cars is structured.

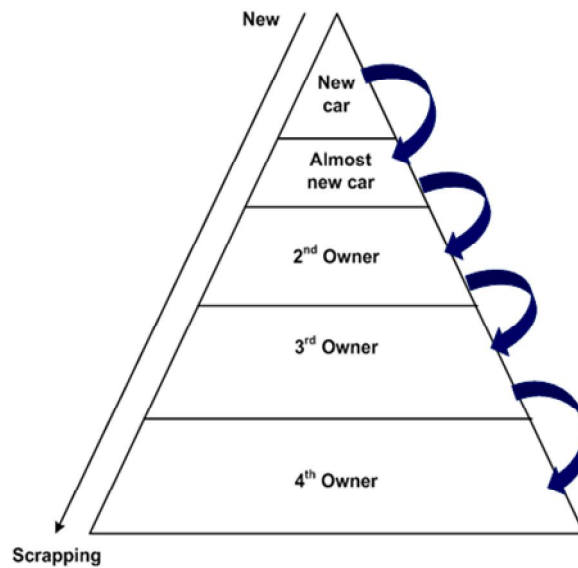


Figure 4-1: New cars as the source for used cars

4.2 Used car sales - the second source of used cars

As shown in the above figure, the new car sales are not the only future source of used cars. If you currently drive a used car, you may trade it in for a younger used car. The current owner of the used car is not only the buyer of another car, but also a source of a used car.

4.3 The growing importance of the used car market

Quantified volumes communicate more clearly than words. For many years, the volume of new cars sold was considered the most important parameter of the automotive sector. Sales figures of new cars are generally considered the most important barometer to express “the state” of the automotive sector. A segment of the automotive industry that is frequently forgotten is the market for used cars. This automotive market segment has been given more attention recently and there are several important reasons for this growing attention from the boardrooms of both car manufacturers and banks:

- New car sales are less profitable than expected, due to heavy competition.
- The quality of new cars is steadily rising. The number of repairs and their monetary value is decreasing. Manufacturers achieve high margins on sold parts to retailers and see this segment shrinking.

- The maintenance intervals of new cars are growing steadily as well. Less maintenance means less revenue on replacement parts, resulting in a negative impact for profit.
- Residual values become more important for the sales of new cars. The sales of medium size and executive cars are the main profit makers for manufacturers. These cars, and many others, are mainly sold through a leasing contract by the leaser. Both financial and operational leasing has shown a steady growth over a long term period. The depreciation cost, based on the (future) residual value of the lease car, is a large part of the monthly leasing rate. The depreciation of a car highly determines the cost of ownership of a car during its first 3 to 4 years of operation. Furthermore, it has become a decisive factor for future repeat sales to the leasing sector. Residual values are determined in the used car market and therefore have become an increasing important factor in the automotive sector.
- Used car markets are in transaction volumes larger than new car markets. The biggest profits are made in the after sales or service segment of the automotive industry. Therefore, every part manufacturer aims to reach used car consumers, who all drive cars that have a higher repair and maintenance cost profile.

In order to have a clear view of the size of the used car market we have gathered information that clearly shows that the used car market not only represents higher sales volumes than new car sales, but also represents a market segment of high economic value.

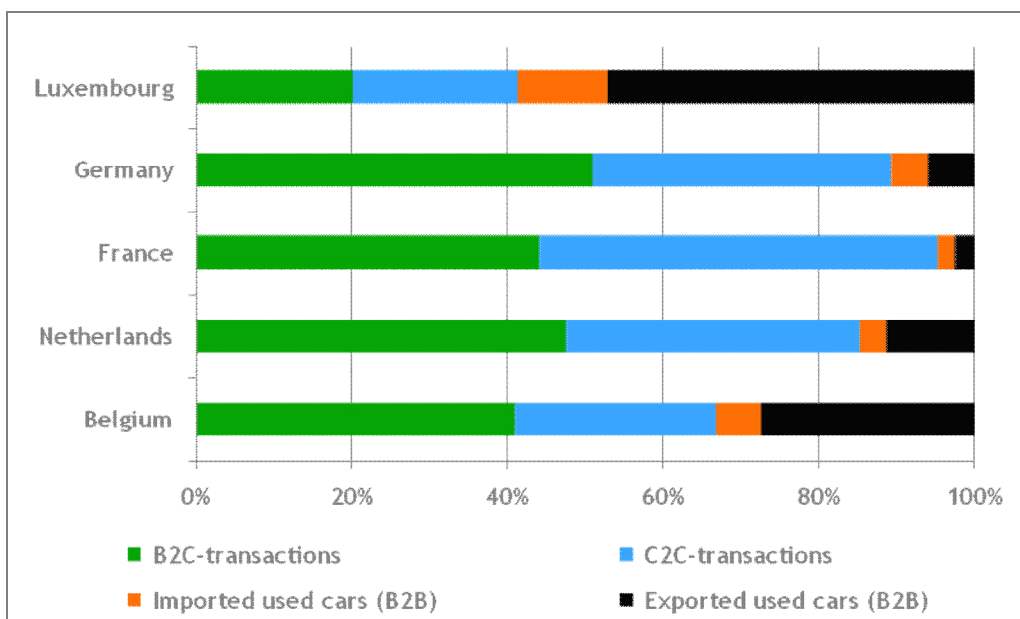
Surprisingly though, the markets within the scope of this survey are highly self-sufficient in sourcing their used car to answer domestic consumer demand. At first sight more cross border trade would be expected in sourcing cars.

The countries within the scope of the study are important sourcing countries to answer demand for used cars in other countries.

In the following table and chart, we illustrate the different volumes per country, based on 2009 market data.

	Belgium	Netherlands	France	Germany	Luxembourg
B2C-transactions	416.071	962.694	2.336.515	3.293.560	19.076
C2C-transactions	260.211	760.000	2.700.000	2.470.000	19.978
Imported used cars (B2B)	58.603	70.215	113.485	311.340	10.924
Exported used cars (B2B)	276.773	229.340	139.245	389.000	44.223
Total	1.011.658	2.022.249	5.289.245	6.463.900	94.201

Table and chart 4-1: Domestic transaction vs. import and export (2009)



4.3.1 Used car markets bigger than new car markets

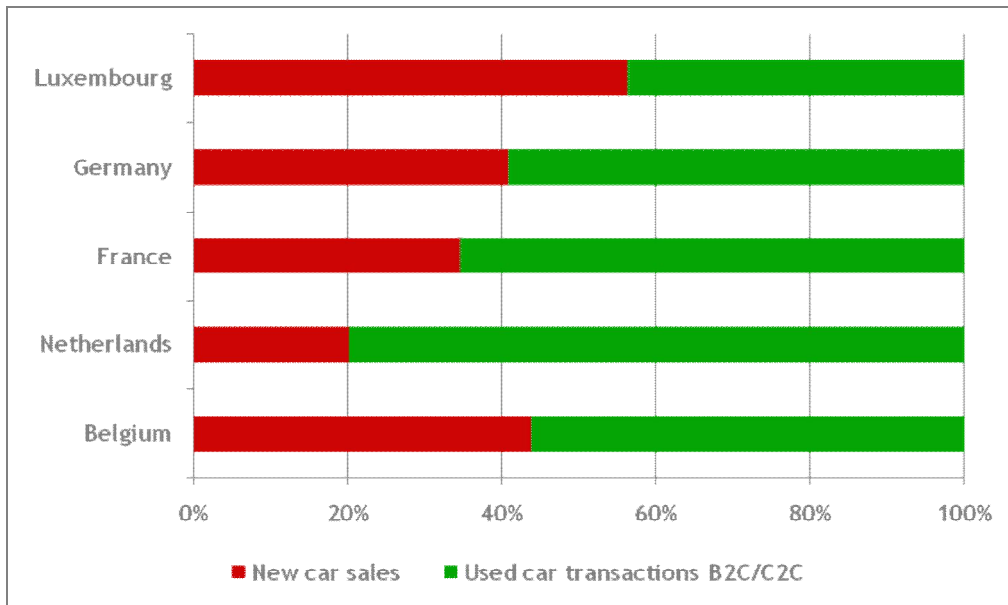
Our research study clearly shows that across the different countries in Europe, actual transactions of used cars outnumber new car sales, with the exception of Luxembourg.

This in an average ratio that varies from 1 to 1,4 (Belgium) to 1 to 4,1 (the Netherlands).

In the following table and chart, we have illustrated this of the countries within the scope of this survey.⁵

	Belgium	Netherlands	France	Germany	Luxembourg
New car sales	529.814	438.985	2.674.988	3.977.242	50.328
Used car transactions B2C/C2C	676.282	1.722.694	5.036.515	5.763.560	39.054
Ratio New & Used	1,3	3,9	1,9	1,4	0,8

Table and chart 4-2: New car sales vs. used car transactions



⁵ Based on 2009-figures

4.4 The used car market and its economical impact

In general, the impact of the automotive industry is measured by the number of new car sales, the economic value of new car production and the spin-off turnover of its suppliers. Although the production of new cars is important, the used car markets (B2B, B2C, C2C, import and export) of Germany, Belgium, the Netherlands, France and Luxembourg generate a combined turnover of just over 180,4 billion euro.

Some other key figures, from across the markets of the study, illustrate the economic impact of the used car sector:

- The number of used car transactions per year, is close to 21,4 million (B2B, B2C, C2C, import & export)⁶.
- The indirect turnover for used cars, due to preparation for a sale, by the service departments of car retailers represents just over 3,0 billion euro annually.
- In total, around 120.000 companies are directly involved in the sales of used cars.
- Close to 101.500 people (FTE)⁷ are involved in the buying, selling and sales preparation of used cars across the different countries.

In attachment § 12.5, we specified in more detail, the economic value of the used car market to the national economy per country.

To understand the used car market and its dynamics, we have taken a closer look at the cross border transactions that take place from and within the countries of the scope of the study.

⁶ During 2009, without trade-in volumes

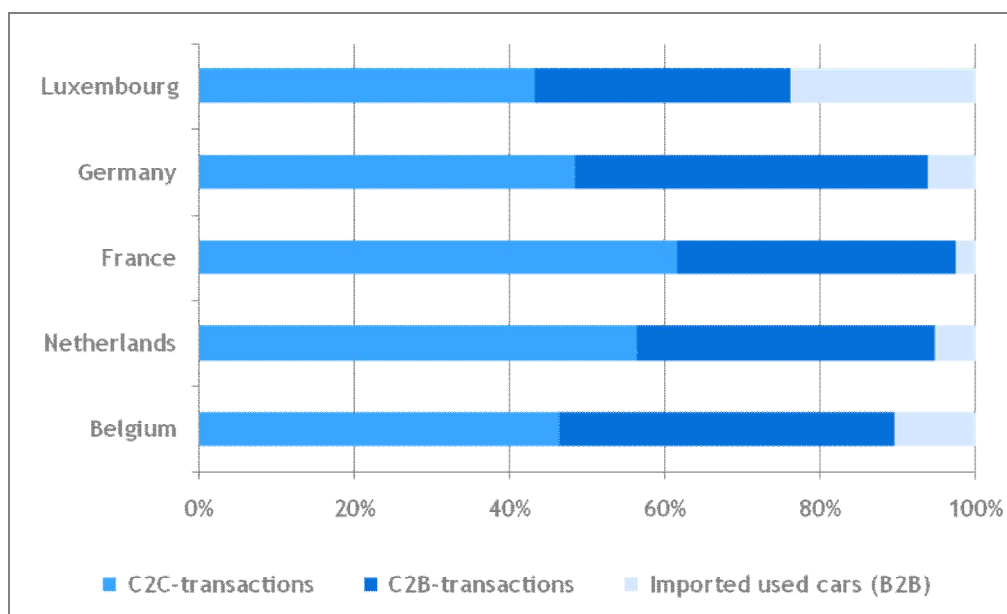
⁷ FTE: Full Time Employee

4.5 Cross border transactions

When analysing the used car transactions in the different countries, we observed that the import of used cars to these markets is relatively small.

	Belgium	Netherlands	France	Germany	Luxembourg
C2C-transactions	260.211	760.000	2.700.000	2.470.000	19.978
C2B-transactions	241.624	515.211	1.560.858	2.307.290	15.193
Imported used cars (B2B)	58.603	70.215	113.485	311.340	10.924
Total	560.438	1.345.426	4.374.343	5.088.630	46.095

Table & figure 4-1: Imported used cars vs. domestic sales



The different countries we examined are important sources for used cars for both Western European and Central European countries.

These findings require further explanation.

4.5.1 Supply and demand inequalities

The relative low share of imported used cars needs further explanation. Many of the automotive professionals we interviewed agree that demand and supply in western used car markets are hardly ever in equilibrium. Simply stated, the average western consumer is looking for a 3 to 5 year old, well equipped used car, with a maximum mileage of 100.000 - 120.000 kilometres . The supply of these cars is relatively limited.

Private consumers tend to drive longer with their newly bought cars. The supply of used cars to the market is relatively limited. Corporate cars, including those from leasing companies, produce used cars with higher mileage and these cars are not always equipped with the right engine types (petrol vs. diesel) in demand at the moment of sale.

In addition to these inequalities, used car markets are influenced heavily by existing price pressure in the market for new cars. As soon as car manufacturers lower their prices, used car prices have to move downwards as well, eventually. Especially nearly new cars are only appealing to consumers if the price difference between the new and used car is large enough.

However, when a year-old car is under price pressure, automatically the value of a 2-year-old used car will decrease as well.

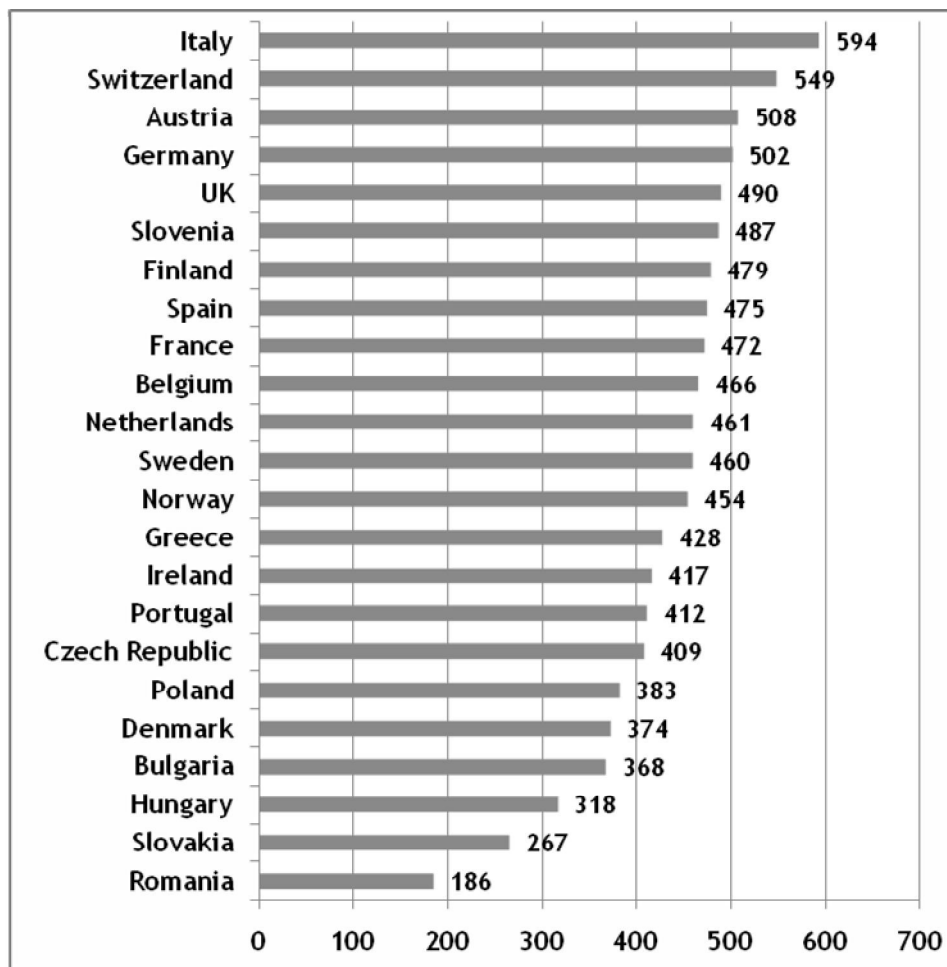
Based on these experienced fundamental inequalities in supply and demand, we would have expected more import transactions to balance the quantitative and qualitative demand on the supply-side. For example, we expected a higher import volume of medium mileage used cars (average mileage 120.000 kilometres after 3-4 years) in some countries because of the low local supply of this kind of used car. But these imports were rare. Our interlocutors all point to possible mileage fraud as a major trading barrier between countries to solve this quantitative and qualitative imbalance by importing used cars from abroad.

"With the Belgium Car-Pass in full operation, we scaled down the international, and more risky transactions, and focus more on domestic transactions." Steven Lismont, director/owner Stellimo, Belgium

4.5.2 Saturated- versus growing markets

Another used car market dynamic is the difference in car density within the different EU countries. This market saturation is a key driver for cross border used car transactions. If we take a closer look at the market figures, we can consider all CEE-countries as being "low density" and non-saturated markets.

In the following figure, we illustrate the car density of many EU countries.



Source: ACEA-report, 2008

Figure 4-2: Overview car density throughout Europe

Car-density is an important factor that explains the way consumers purchase a (used) car. In countries with a low density, many consumers need to fulfil their basic need for transportation. Due to improving economic conditions and a growing need for more mobility, these customers are also increasing their needs for comfortable, luxurious transportation.

In the automotive industry, CEE-countries are considered growing markets for both the new and used cars. Since the average citizen in the CEE-countries has a lower available income than those in western countries, used car demand is considerably higher than the demand for a new car.

However, these countries lack a natural supply of used cars. Their economic development started much later than in the Western European countries. Consequently, the current car pool is smaller and the possibility to source

used cars from the national supply is low. The import of used cars is a logical step to balance supply and demand. Many people want to experience the western lifestyle, which includes owning a relatively new car. The ideal used car in upcoming markets has the same characteristics as those that consumers desire in Western European countries (low mileage, high specification).

International used car traders fulfil the demand for these cars. Since there is no control on mileage in the EU, odometer manipulation pays off. Many of the interviewed stakeholders working in the countries of the scope and the Czech and Romanian market confirm that odometer manipulation creates flows of used cars towards CEE countries. We have a strong belief that the hot demand for used cars lowers the barriers to buy used cars with a questionable history. It is said that there is very low awareness of mileage fraud in CEE countries, which gives the practice a chance.

4.6 Conclusions

The used car market represents a high volume and turnover segment in the automotive industry. Its economic impact is of great importance and more than 100.000 people are directly employed to supply the consumers in France, Belgium, Luxembourg, Germany and the Netherlands.

The used car market itself is not balanced. The natural supply of used cars is not always the supply demanded by the domestic consumers. In such cases, you would expect a considerable volume of cross border transactions. However, these volumes are relatively low. During our survey, we learned that uncertainties about car history and odometer readings really hinder a true European used car market. Professional and honest used car traders focus on the domestic supply to source their used cars. Mileage manipulation is mentioned as a significant factor affecting trade.

If we look at the export volumes of the countries studied, we notice a much higher proportion of used cars being exported. Many of these go to CEE countries.

These upcoming markets have a high used car demand but cannot source cars from their own supply. The lack of mileage verification is a key driver for mileage manipulation before export to these countries. Customers want

used cars and seem to lower their expectations to fulfil their transportation needs.

Mileage manipulation is a key factor in explaining the lack of significant import volumes and the relatively high export volumes.

“The approach to create opportunities to verify the historical mileage, and service history, of a used car is a positive step forwards. It will strengthen future residual values. We believe that also car dealers from Eastern European countries are becoming increasingly critical of what kind of car they buy. For instance, nowadays, in order to buy an trustworthy car, some of them even use electronic devices to measure the depth of the car’s paint, to avoid buying a heavily damaged and repaired car. The same will happen to the mileage fraud and service history”. Joop Geelen, R&D, Business Development, FleetSelect, the Netherlands

5 Used car pricing mechanism and its impact on mileage fraud

Chapter 4 demonstrated that none of the used car markets that has been analysed is closed. Import and export are daily business and may even be triggered or hindered by mileage fraud. To understand mileage fraud better we need to know why cars are traded between countries. Apart from differences in domestic supply and demand, we believe that the pricing mechanism is a significant factor that contributes to mileage fraud across Europe.

5.1 Used cars are a non commodity

Every used car is a unique car; identical used cars simple do not exist. Used cars are comparable to some extent, e.g. when it comes to brand, model and engine types. Nevertheless, on a micro-level, a used car's uniqueness is found in its usage history, general condition, interior and exterior, specifications and mileage. Therefore, prices paid for used cars from the same brand, model, engine type and year of building vary from car to car.

In consumer markets there are few examples of used durable goods that are still worth several thousands of euro. There are hardly any used products that represent a value that can be higher than a comparable or competing new product. This makes a used car a non-commodity and a non-comparable good.

5.2 Major drivers of the used car values

If we look at the pricing mechanism of used cars, we have to keep in mind that car prices are influenced by a multitude of factors besides the product qualities. If any product is subject to government influences, new and used cars are. However, there are more drivers of used car values.

In the next table, we have summarized the main drivers of used car values considered by leasing companies, business fleet owners and residual value forecasting specialists.

	<u>Internal</u>	<u>External</u>
Direct	<ul style="list-style-type: none"> • Age and mileage • Transparency and information of the car's past • Actual and perceived running cost • Used car supply in the market(s) • Perceived product concept, design and specifications • Perception of maximum mileage (may vary per country) 	<ul style="list-style-type: none"> • New car pricing & sold volumes • Lifecycle maturity of comparable new car models • Planning of model replacement • Government regulations, incentives, taxation or scrapping schemes, purchase premiums, etc. • Competitor activities and availability of alternatives • Disruptive technology changes (gadgets) • Infrastructure
Indirect	<ul style="list-style-type: none"> • Model/brand image • Historical and perceived car quality • Value performance, past en present • Franchised dealer network strength 	<ul style="list-style-type: none"> • Trends and predictability of fuel prices • Consumer and economic trends • Environmental consciousness & other social trends • Consumer acceptance of mileage- and car history risks (real and perceived) • Exchange rate fluctuations between countries of the non-euro zone • Shortening supply-chain, wholesaler adds retail, and retail adds wholesale • B2C transaction shift towards C2C

Table 5-1: Overview of major drivers used car values

5.3 Trading & calculation principles of the used car market

Professional used car retailers buy used cars daily from consumers and professional colleagues. The purchase price of a used car by an automotive professional is indirectly influenced by the expected selling price to the consumer.

5.3.1 The expected sales price

This expected selling price is the result of demand versus supply. If demand is high, the expected selling price tends to go up. If demand is low, the expected selling price goes down. When it comes to sale price setting, the used car market is no different from other markets.

To determine the maximum purchase price by the used car dealer, a number of factors are taken into account, for which a balance needs to be made between the maximum purchase- and sales price versus the cost items.

The diagram below summarizes the factors in price calculation :

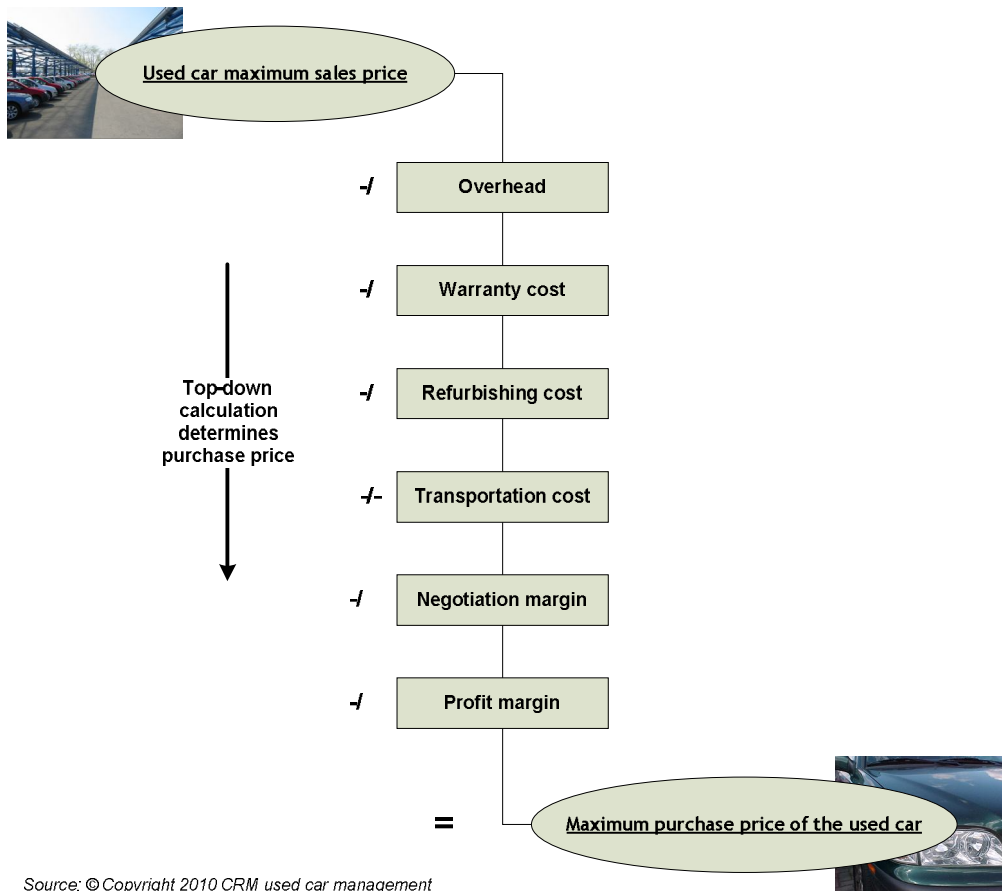


Table 5-2: Determining the maximum purchase price

These factors further explained:

- **Refurbishing costs.** These costs have to be made to recondition the car to a level that convinces the customer to buy the car. Refurbishing costs can be body and paintwork, but also maintenance and repair activities.
- **Warranty costs.** Every retailer has to grant a warranty to the buying consumer (B2C sale) with a minimum period of six months. As a car is a mechanical product, there is always a chance of technical malfunction. When calculating the maximum buying price of a used car, a certain amount of warranty costs is taken into account.
- **Overhead costs.** Every organization has costs to keep its operation running. These cover labour but also marketing expenses as well as housing and IT costs and have to be covered by the margin between the expected selling and buying price.
- **Negotiation margin.** It has become normal to negotiate a discount when buying a used car. In order to adjust to this consumer habit,

the entrepreneurs buying used cars to sell to consumers take a certain amount of negotiation margin into account.

- **Profit margin.** In the end, every entrepreneur wants to make money. Therefore, a certain profit margin is calculated when determining the maximum buying price of a used car.
- **Transportation cost.** When buying a used car from an automotive professional, the car normally has to travel from the seller to the buyer. The cost of transportation is taken into account when determining the maximum buying price. This does not apply to consumers selling their cars to a retailer (trade-in). In C2B transactions, the retailer rarely picks up the car at the consumers house. The consumers bring it to the car retailer.

5.4 EU used car price differences, their impact on mileage fraud

Since Europe is becoming a uniform market place, used cars are also traded across borders. Due to regional differences, prices may differ across Europe. Shrewd used car traders profit from these market imbalances. On top of the calculated costs and profits, they may be able to make market arbitrage profits that are added to the already calculated profit margins.

The following chart gives an overview of the price differences across Europe, the situation in early 2009. (*Index 100 = average value across all countries and fuel types*)

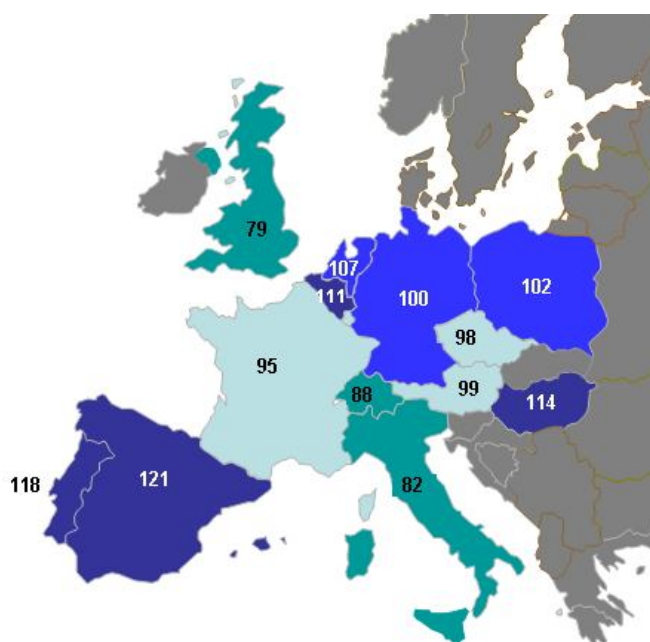


Figure 5-1: Residual value index Western Europe

Source: Eurotax Residual Value Tracker

Looking at the price index differences you would predict export and import volumes from one country to the other. Some examples of used car flows that follow an unexpected route:

- Theoretically, you would expect high import volumes from Italy to the Netherlands. That is not the case; the main volume comes from Germany.
- Importing used cars from Italy to Germany seems attractive. If we look at the residual value index of Italy, we would expect export volumes going from Italy to Germany. Surprisingly we discovered that Italian traders were significant used car buyers in Germany.

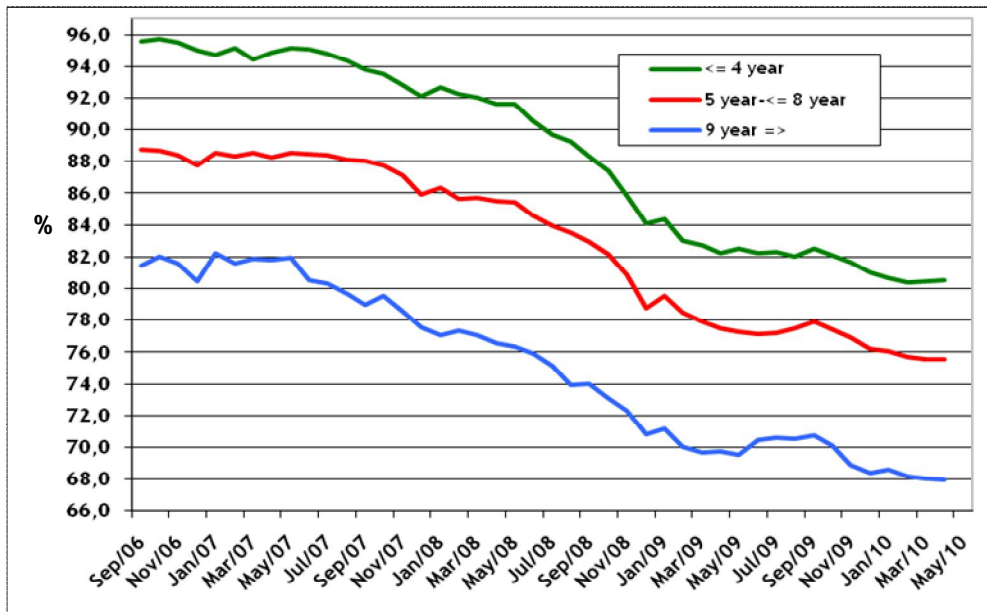
"Mileage fraud is a serious barrier for international used car trading and is preventing us from doing business on the scale we would like." Steven Lis-mont, director/owner of Stellimo, Belgium

Since these differences in pricing levels are very dynamic, trade volumes of used cars vary from time to time and from country to country. Adjustments of the used car values are made continuously by the professional used car traders. During our research we were told that on average, it takes 2-3 weeks, within Europe, before a new (domestic) pricing level sets-in across the various professional car traders. This also indicates how fast they need to turn their stock of used cars to ensure their expected profits. Of course, the Internet plays a very important role in the continuous renewal of price levels of used cars.

Within a country and on the micro level, these permanent changes of used car values determine the speed of used car trading. With the growing importance of used car import and export, domestic markets are more and more subject to international price changes. This effect has grown significantly in the last years. High stock ages of used cars have become increasingly dangerous.

The following figure shows the depreciation of used cars in the Netherlands between September 2006 and May 2010. End of 2007 the rapid decrease of car values caused high losses for used car traders and retailers. Since then the market for used cars has become less predictable and more volatile than ever before.

In the following figure, the change of used car values in the Netherlands is displayed. In the first quarter of 1997 the index had a value of 100%.



Source: Autodata, the Netherlands

Figure 5-2: Car value changes in %

The European price differences are caused by a number of factors. Some of these factors may have a direct and significant effect on mileage fraud.

- Differences in cultural demand
- Exchange rate influences.

5.4.1 Cultural demand differences

The value of a used car is not predominantly determined by its age and mileage, but also by the perception of an acceptable maximum mileage. This maximum acceptable mileage differs from country to country.

This is best illustrated between the Netherlands and France. In the Netherlands, a maximum mileage of 120.000-180.000 for diesel cars is generally accepted among consumers, but the Dutch consumer would rather not drive a used diesel car. Therefore, the used car prices of diesel cars with 120.000 - 180.000 kilometres are very low.

Contrary to the Netherlands, French consumers prefer used cars with diesel engines. The average Dutch diesel mileages are too high for the French consumers. The consumer prefers used diesels with a maximum of 100.000 kilo-

metres. Supply of these cars is relatively low so there is enough room for imported used cars with diesel engines.

5.4.2 Odometer tampering, a clearing instrument

The discrepancy between the used car supply in the Netherlands and the consumer needs in France can be easily 'solved' by odometer tampering. The oversupply in the Netherlands, consumer demand in France and lacking odometer registration, makes mileage fraud easy and difficult to discover. Which French consumer will try to find out the history of a Dutch used car? Even if the language barrier is relatively low, odometer tampering is used as a clearing instrument.

The problems with used cars exported from Belgium to France is very similar. The French DGCCRF⁸ compared the mileage of 1.126 vehicles imported from Belgium with the latest mileage readings in the Car-Pass database. It showed 487 odometers were manipulated (43,3%) with an average mileage decrease of 91.000 kilometres.

Besides the language barrier, the French consumer pays in terms of time and effort in finding out the history of imported used cars. By 'customizing' the mileage of a used car in one country, the used car trader that tampers the odometer creates a very interesting used car proposition in another country, while fraud is hardly traceable.

Because of this situation, there is a demand for high mileage diesel cars from France, of which the odometers are turned back either before or after crossing the border.

⁸ DGCCRF -Direction générale de la concurrence, de la consommation et de la répression des fraudes

5.4.3 Exchange rate influences

Within the dynamics of the pan-European used car market, exchange rates between euro and non-euro countries highly influence the flow of used cars and their subsequent price levels and this might trigger mileage fraud in specific cases.

There are a number of non-Euro-zone-countries that have been growing rapidly in recent years, and the local currency represented a fair value against the euro. However, since 2008, these countries have been suffering from the economic downturn and their currency has lost value against the euro. This depreciation of the local currency has a number of effects:

- EU companies that manufacture in EU countries face relatively low prices (in local currency) against their production costs (mostly in euro). The battle for market share is intense. To maintain market share, the price increases of new cars are less than the depreciation of the local currency.
- Since these countries and their consumers still have a growing demand for car mobility, their need for imported used cars still exists. EU-used cars have become more expensive because of the increased value of the euro measured in the local currency. Importing used cars from EU countries is under pressure if no other market clearing options exist.

To understand the situation completely it must be borne in mind that used car prices fluctuate in almost "fixed brackets" in relation to new car prices. When new car prices are adjusted because of exchange rate fluctuations, used car prices follow.

In case of relatively low new car prices measured in euro, domestic used car prices follow suit.

This automatic adjustment of used car prices is summarized in the following diagram.

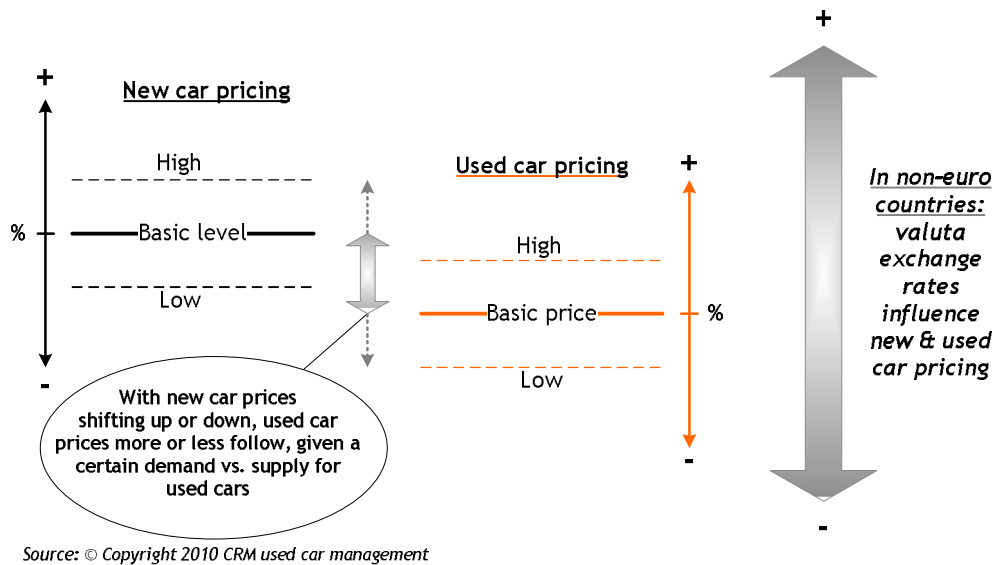


Figure 5-3: Relationship new car and used car pricing

Since the demand for car mobility is still high and domestic supply of used cars is limited, entrepreneurs benefit from this situation, legally or illegally.

The legal way of to solve this inequality between supply and demand is searching for those used cars that are still attractive to import. Nevertheless, with exchange rate fluctuations of the last two years, it is hard to find cheap cars that fulfil the market requirements.

An illegal way of solving the exchange rate problem when importing used cars is odometer manipulation. A car with a higher mileage can be bought for less than a comparable car with a lower mileage. By 'customizing' the odometer, the domestic demand can be met and the possibility of making a profit on imported used cars is maintained.

5.5 Conclusions

Used car prices are based on the expected retail price to the consumers. Theoretically, in a closed used car market, supply and demand would be adjusted to each other with the price as the factor that brings supply and demand into balance.

The European used car market has become more and more open for used cars. Balancing supply and demand domestically is history. There are big differences between realized residual values between countries. Still, used car flows do not automatically go from low residual value countries to high residual value countries to restore a certain price balance. Contrary to the expected used car flows, we observe flows of cars in the opposite direction. We may conclude that there is no European used car consumer. The market needs are different in every country. So is supply. Although we have a European used car market, there is still an oversupply of certain cars and an over demand of others. Odometer tampering is a clearing instrument that can 'optically' customize supply to the existing needs of consumers.

On top of the domestic differences between supply and demand, currency fluctuations also influence cross border sales of used cars. With the euro becoming a stronger currency in comparison to the currency of Central European countries, odometer tampering again is a clearing instrument used by used car traders to keep up their used car trading volumes and sustain profitability.

"The international trade of used cars cannot be profitable without the tampering of the car's mileage". Martin Emes, director stock and pricing at AAA Auto in Prague, Czech Republic

'Customizing' odometer readings has inadvertently become a clearing instrument for used cars that were difficult to sell to consumers because of the perceived risk regarding mileage and car history.

6 The distribution channel and value chain of used cars

Knowing that supply and demand are not balanced throughout Europe makes the used car market an imperfect market. This implies that the current used car prices do not balance the market. An undesirable instrument like odometer tampering, partly balances used car supply and demand, but hurts the consumer. If we want to get a grip on the phenomenon of mileage fraud, we need to analyse the value chain of used cars as well. Without knowing the stakeholders in the value chain, it is impossible to identify where odometer tampering pays off most and who may be involved in this reprehensible practice.

6.1 Key-players in the used car market

The key players in the used car value chain are consumers (end users), wholesalers and retailers. In the following figure, we illustrate the possible transactions between the key players in the used car market.

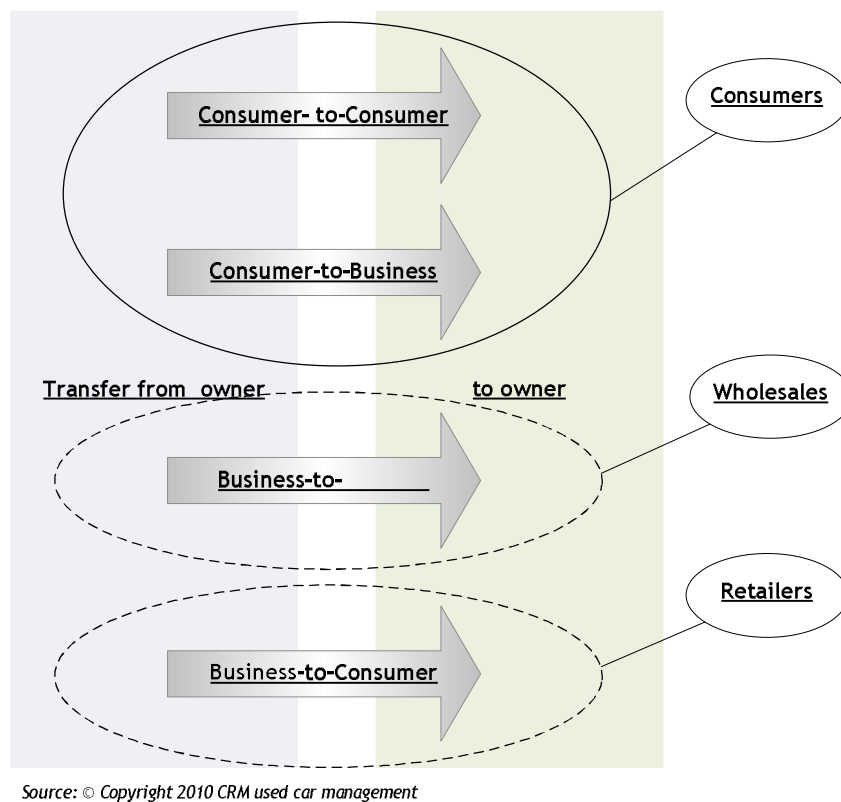


Figure 6-1: Transactions & key-players used car market

6.2 Business partners in the distribution channel of cars

We already explained in chapter 4 that the one and only initial source of used cars is manufacturers. New cars are sold through official and non-official/parallel distribution channels. The official distribution channel consists of franchised dealers that represent the manufacturer in a certain geographical area for sales.

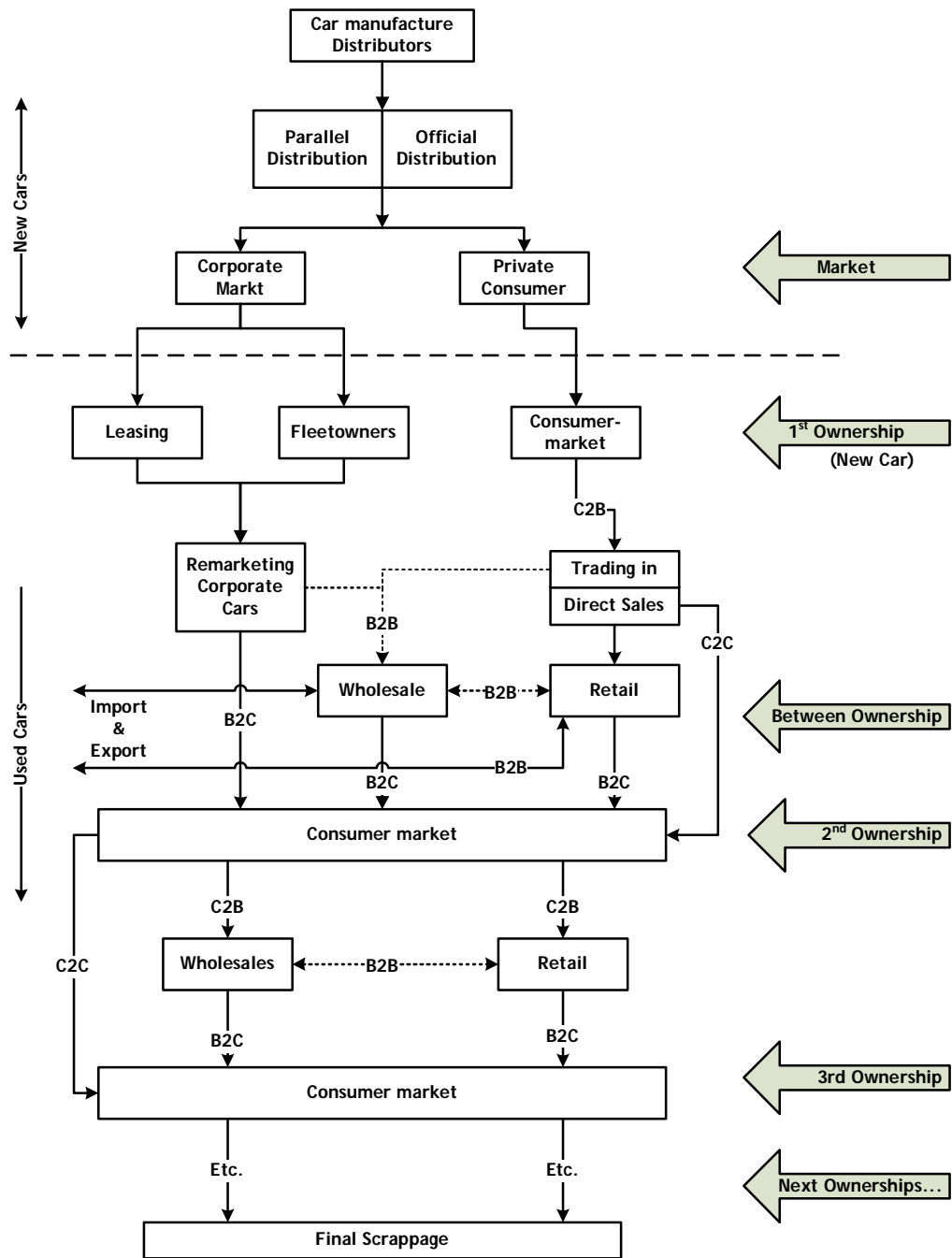
These retailers sell their cars to private and business consumers. Business consumers either buy the new cars themselves or enter a leasing contract in which the leasing company buys the new car and leases it to the business user. Both private consumers and the leasing companies alike are the first owner of the car.

After a number of years, both leasing companies and private consumers may want to sell their car. Private consumers may choose to sell the car to other consumers or sell the car to a car retailer (mostly as a trade-in). Leasing companies and business consumers sell their corporate cars as well. They have 're-branded' this selling process as remarketing.

Independent of the remarketing channel, every used car will be sold to another end user. After some time, this second user will also try to sell his car because he or she wants a newer, better or different car.

This process continues until the moment of scrappage. In Figure 6-2 summarizes this process⁹.

⁹ A stakeholder we did not explicitly include in the distribution channel of new and used cars is the "private-hobby-trader". We consider this trader as a crossover between a consumer and a semi-professional car retailer. Usually, his activities are carried-out on the sidewalk of streets in cities all over Europe, wheeling and dealing used cars of 8-10 years and older.



Source: © Copyright 2010 CRM used car management

Figure 6-2: Overview supply chain used cars

Used car transaction interventions are to be defined in the following way:

- B2B = Business to Business
- C2B = Consumer to Business
- C2C = Consumer to Consumer
- B2C = Business to Consumer

Within the distribution channel, mileage fraud may take place at moments of ownership change. Theoretically, there is no difference between the business and the private consumer segment.

To understand the working of the distribution channel for used corporate cars, we need to take a closer look at the remarketing of these cars.

6.3 Remarketing of corporate cars

Corporate cars that are taken out of operation are remarketed through diverse remarketing channels. The small business owner normally behaves like a private consumer. He or she usually trades in the used car to buy another car. Bigger business owners, often called fleet owners apply a remarketing strategy in which the purchase of a new car is separated from the sales process of the car that has been taken out of operation. Leasing companies have also separated the sales process of their ex-leasing cars from the buying process. Corporate cars are remarketed. Remarketing is the process of realizing the maximum used car value.

Corporate cars are remarketed through several remarketing channels:

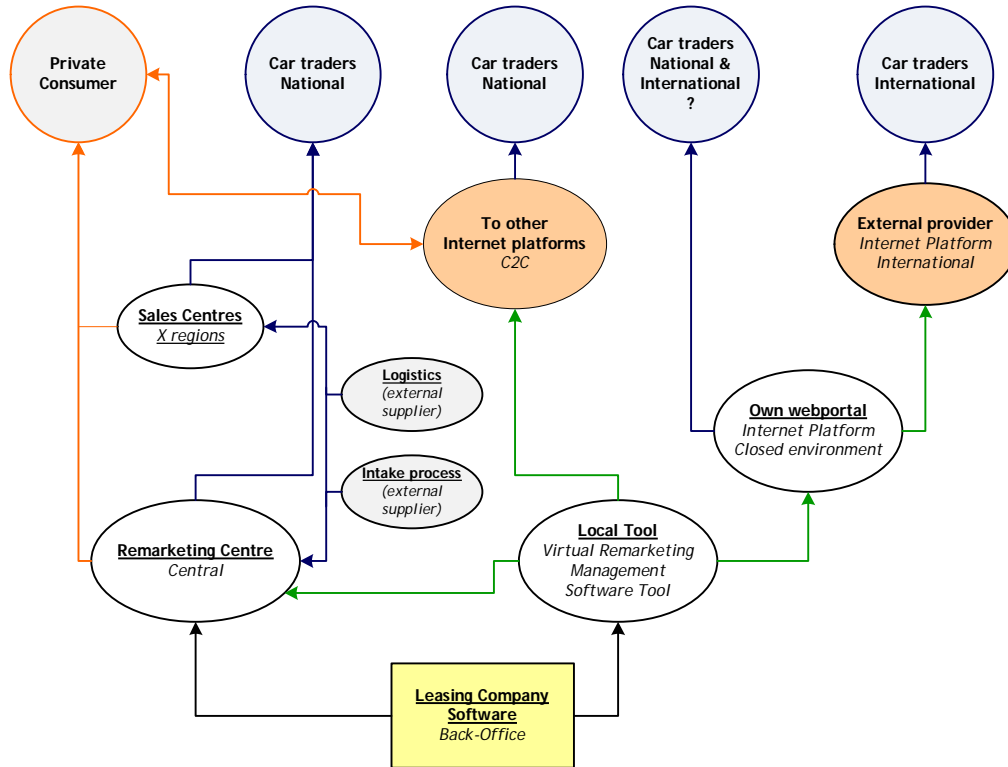
- **Auction houses.** Auction houses like BCA (www.bca-europe.com), Cars on the Web (www.carsontheweb.com), FleetSelect (www.fleetselect.nl) and Manheim (www.manheim.com) sell the cars to professional used car traders and retailers to achieve the highest used car value through online bidding.
- **Wholesale.** The volume of many corporate car operators can be relatively high. Wholesale is an attractive remarketing channel because of the low complexity. Cars are often sold in lots and paid directly by the wholesalers.
- **Direct sales.** More and more leasing companies start selling to private consumers through sales outlets (for example LeasePlan through its CarNext outlets, www.carnext.be).

The complete remarketing process includes logistics to a central storage and remarketing location, end of contract inspection, rebilling damages and the final sale to a professional or private buyer.

More and more leasing companies are following a multi-channel remarketing strategy. Each different sales channel requires a different "method of sales." The main objective of this multi-channel remarketing approach is to

achieve better revenue on their cars. It is also a proven strategy to spread the risk of dependency on a single-remarketing channel.

In the following figure, we have summarized this process graphically.



Source: © Copyright 2010 CRM used car management

Figure 6-3: Overview Remarketing approach lease company

Finally, the remarketing process enables a retailer to present the car to the potential used car buyers.

6.4 Price pressure in the remarketing channel

With used car supply at a high level and with a high price transparency due to state of art internet used car locators available to consumers and professionals, the maximum selling price for retailers is steadily under pressure. This pressure is also felt by all stakeholders of the remarketing process.

Traditionally, wholesalers would buy the corporate cars from the fleet owners and leasing companies. They knew which retailers needed the supply they bought. The organization within the distribution channel of used cars was simple:

- A wholesaler would only buy from leasing companies, fleetowners, other car dealers and sell to retailers. The main function of this wholesaler has always been absorbing and distributing used cars among (smaller) used car retailers, both independent and franchised dealers. Sometimes these wholesalers act as private-banks, distributing cars in consignment by the retailer.
- A retailer only sold to consumers.
- Consumers would trade-in, the retailer sell his car to another consumer.

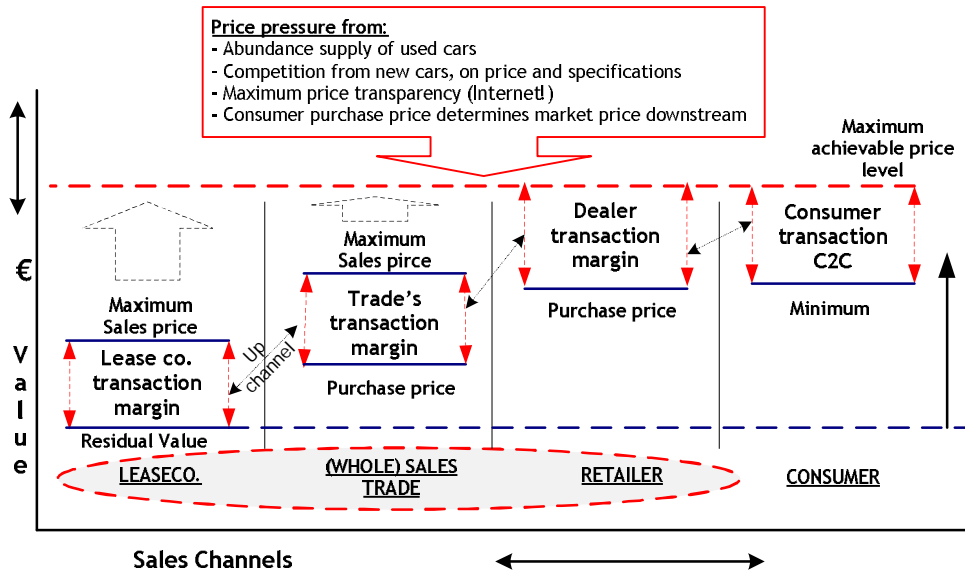
With selling prices under pressure, all stakeholders try to integrate with the link before or after them in the remarketing channel. Some examples of what currently happens:

- Traditional used car suppliers to the wholesale channels, such as leasing companies, sell directly to the consumer. This is a way to realize a higher selling price.
- Wholesalers are transforming into retailers, directly buying from leasing companies and fleetowners and selling to the consumer. By retailing the cars instead of wholesaling, wholesalers become retailers as well.

This decrease of the traditional "up channel sales" leads to less price differentiation between the different remarketing channels.

*"Unfortunately, mileage fraud is a continuous concern. We learned to live with it and we always ask for a written confirmation of the mileage."
Gregor Cibis, AVAG Holding AG, Germany*

In the following figure, we have summarized this situation graphically.



Source: © Copyright 2010 CRM used car management

Figure 6-4: Price pressure integrates links in the distribution chain of used cars.

The strategy of forward or backward integration is a possibility for restore profitability but sets the wholesale link under severe pressure. In domestic markets, the function of wholesale is decreasing; internationally their function within the supply chain might still be relevant.

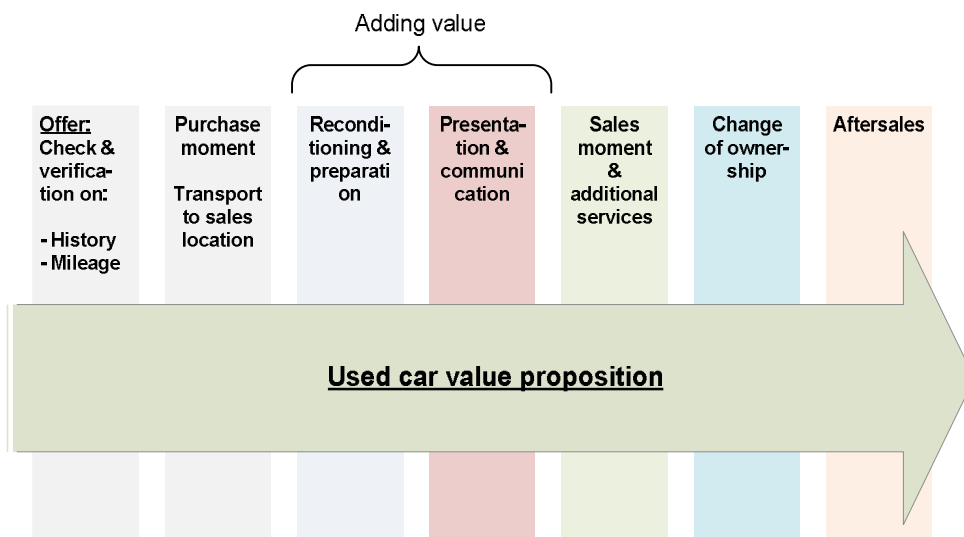
6.5 Added value of used car retailers in the distribution channel

Used car retailers are the link to the consumer. Where the wholesaler bridges time and money between the original source of the used car and the retailer, retailers add value to the used car:

- Prior to the purchase of the used car, the retailer qualifies the product. What is the exact specification of the car (year of first registration, model, type, options) and in which quality can the car be obtained. When it comes to the quality of the car, its maintenance and repair history as well as the mileage of the car is important. If the car passes the internal qualification process, it can be purchased.
- Purchase and transportation of the used car is an added value in itself. By purchasing the car, no added value is created. However, the transport to the retailer's premises may be an added value to domestic customers.

- Usually retailers recondition a car before offering the used car to the consumer. Reconditioning can be optical and technical. Every retailer determines his own product and quality offer.
- The presentation of used cars may add value to the car. Presenting the car in a showroom or in a non-paved field makes a big difference for many consumers. The same applies to the optical state of the car. The same principle applies to the communication strategy of a retailer.
- During the sale of the used car, retailers are able to add value to the car and its mobility offer. Many retailers offer extended warranty, finance and insurance solutions as well as car accessories or car protection solutions.

In the figure below, we have summarized the used car value proposition.



Source: © Copyright 2010 CRM used car management

Figure 6-5: Used car value proposition

Practice proven and developed activities within the value chain to add value to a used car are:

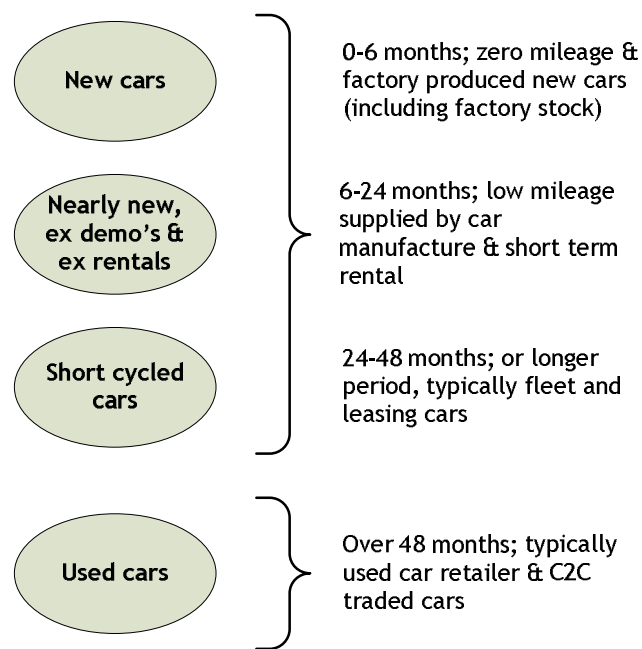
- Creating more (verifiable) transparency about the used car, when it comes to documented history of maintenance, damages and mileage.
- Used car branding. Offering branded used cars such as BMW Premium Selection or Peugeot Occasion du Lion. These brands usually offer:
 - extended warranty,
 - certified preparation standards as well as,
 - additional services, including the communication of the brand.

The true added value of a used car retailer is building trust in a used product. As mentioned before the market of used cars is characterized by asymmetric information. The potential buyer of the used car usually has little knowledge about cars. Buying a used car is a matter of trust. Used car brands build on this basic feeling of uncertainty. Odometer tampering is one of the reasons creating such uncertainties.

6.6 Segmentation of used car retailers

The used car market appears to be a market with homogeneous products. However, due to the large variety of used cars this is not the case. During the car's life span, its position in the used car market gradually changes.

The used car market can be divided in several product segments. Each segment is served by another type of used car retailer. As illustrated in the figure below.

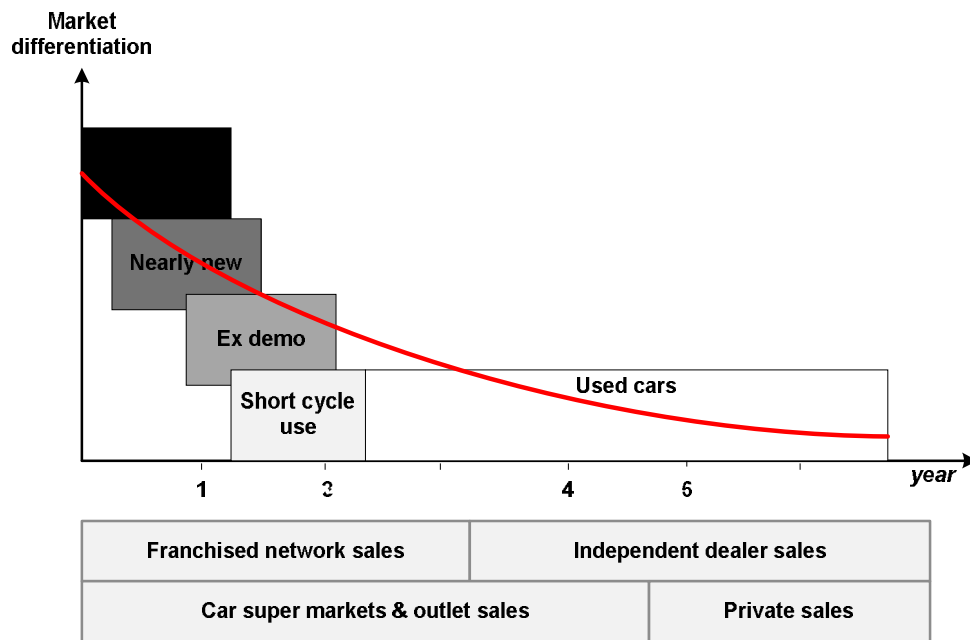


Source: © Copyright 2010 CRM used car management

Figure 6-6: Car segment and type of car retailer

In general, it is very difficult to define the cut-of-point between these different segments.

It is not only depending on car age, it is always a combination of mileage, age and whether the car is considered a volume or from a high premium segment.



Source: © Copyright 2010 ICDP/CRM used car management

Figure 6-7: Segmentation of used car retailers

6.7 Conclusions

Mileage fraud and its effect on the value chain, may take place in every car segment. During our interviews, we noticed that mileage and history checks have become a standard routine for professional traders when buying used cars. However, none of the interviewed retailers realized how much time and money it takes to check the cars and their history.

Honest retailers also face a situation of asymmetric information. Only by applying history checks can they reduce their risks of buying tampered cars. One additional strategy to minimize the risk of buying tampered cars is supplier selection and qualification. In other words: Creating self-imposed trading obstacles.

Many also realize that mileage fraud limits their used car business. Used car offers from unknown suppliers are not evaluated properly. The costs of possible mileage fraud in the value chain of used cars are search costs and loss of potential revenue due to a lack of supply to offer the consumer. Although the prospect of trading used cars with a diminished risk of manipulated odometers seems almost unreal, it is generally seen as a cost saving and profit increasing scenario.

7 Mileage fraud, its effect on the used car distribution channel

Past chapters analysed the used car industry as a distribution channel and market place. The main conclusions drawn are as follows:

- There is an imbalance between demand and supply in both Western and Central European countries. Supply coming from the new car market often does not meet the demand of consumers. The type of engine (Diesel vs. Petrol) and the mileages of used cars (higher mileages on returned/traded in new cars vs. need for low mileage cars) are among the main mismatches between supply and demand. Odometer tampering “solves” this problem. However, the consumer is the victim.
- In developing markets in Central Europe, there is a strong demand for mobility, but the natural supply of used cars coming from the new car market is limited. To fulfil this demand, cars are imported from Western European countries. The absence of any control of cars’ real mileages give traders the chance to make high profits by tampering odometers and offer manipulated cars to the consumer who will be faced with the higher depreciation and maintenance and repair costs.
- The used car pricing mechanism is quite simple. Consumer demand and willingness to pay for a certain used car is the starting point of an explicit or emotional top-down calculation. To calculate the maximum purchasing price of a used car, the used car professional trader deducts his expected costs, risk and profit margins from the expected selling price. The expected selling prices differ from country to country because of regional differences in used car needs.
- Surprisingly, we saw used cars flow from high residual value countries to low residual value countries. By applying the top-down calculation cars bought in the high residual value countries could never bring any profit in the low residual value country because of the low expected selling price in the country of destination. But the flow existed. This used car flow can only be explained by supply differences in combination with mileage fraud.
- By manipulating the odometer (decreasing the mileage reading), you can manipulate the selling price in an upward direction. The higher selling price makes buying the used car and importing it in a low residual value country a profitable business again - something that would not occur without mileage fraud.
- Currency depreciations have put used car prices under severe pressure. Used cars purchased in euro have become more or too expensive. To solve this problem traders manipulate the odometer. The cars become affordable again but consumers pay the bill in the end.
- General price pressure on the used car distribution channel:

- Used car prices have generally been under pressure since the wide acceptance of internet as an information medium. Internet transparency limits the selling price and heavy competition enhances the battle to be the cheapest.
- Leasing companies want to achieve a maximum residual value to maintain attractive leasing rates. In order to realize these higher residual values, they try to skip links in the distribution chain of used cars, e.g. by selling their used cars directly to the consumer.

One way to escape from this price pressure on used cars is lifting the sales price by manipulating the characteristics of the car. Manipulating the odometer is by far the easiest way to create extra value. It is, however, a fake value and the consumer gets cheated.

During this study, we have already established that mileage fraud only pays off if the criminal who tampers the odometer of a used car makes a substantial profit and is not legally punished for it by the government or any other authority. Therefore, the probability of mileage fraud in the distribution channel of used cars depends on three main factors, the:

- Link(s) in the distribution channel where mileage fraud might pay off.
- Chance of legal prosecution after tampering the odometer of a used car.
- Benefits of odometer tampering in relation to its costs.

*A simple trick of mileage deception we learned:
The used car has the odometer mileage displayed in kilometres. On some cars, this can be displayed into miles too. (A factor 1,6 less than kilometres.) The fraudulent seller changes the kilometres into miles, mostly an easy to perform operation -sometimes even the service manual of the car describes the instruction to change the kilometres into miles. He then photographs the instrument display and places the photograph on the Internet. The prospective buyer inspects the car, but does not notice the kilometre-kilometre/miles displayed deception (usually only a small icon). After buying the car and a more thorough inspection, he discovers the deception, but unfortunately it is too late!*

7.1 Distribution channel link(s) where mileage fraud pays off

When you want to make an illegal profit by tampering odometers, you need a moment where this odometer tampering pays off. As a result, from our interviews, we learned that odometer tampering only pays off at a transaction moment. In the figure below, we have highlighted the transaction moments where used cars change ownership.

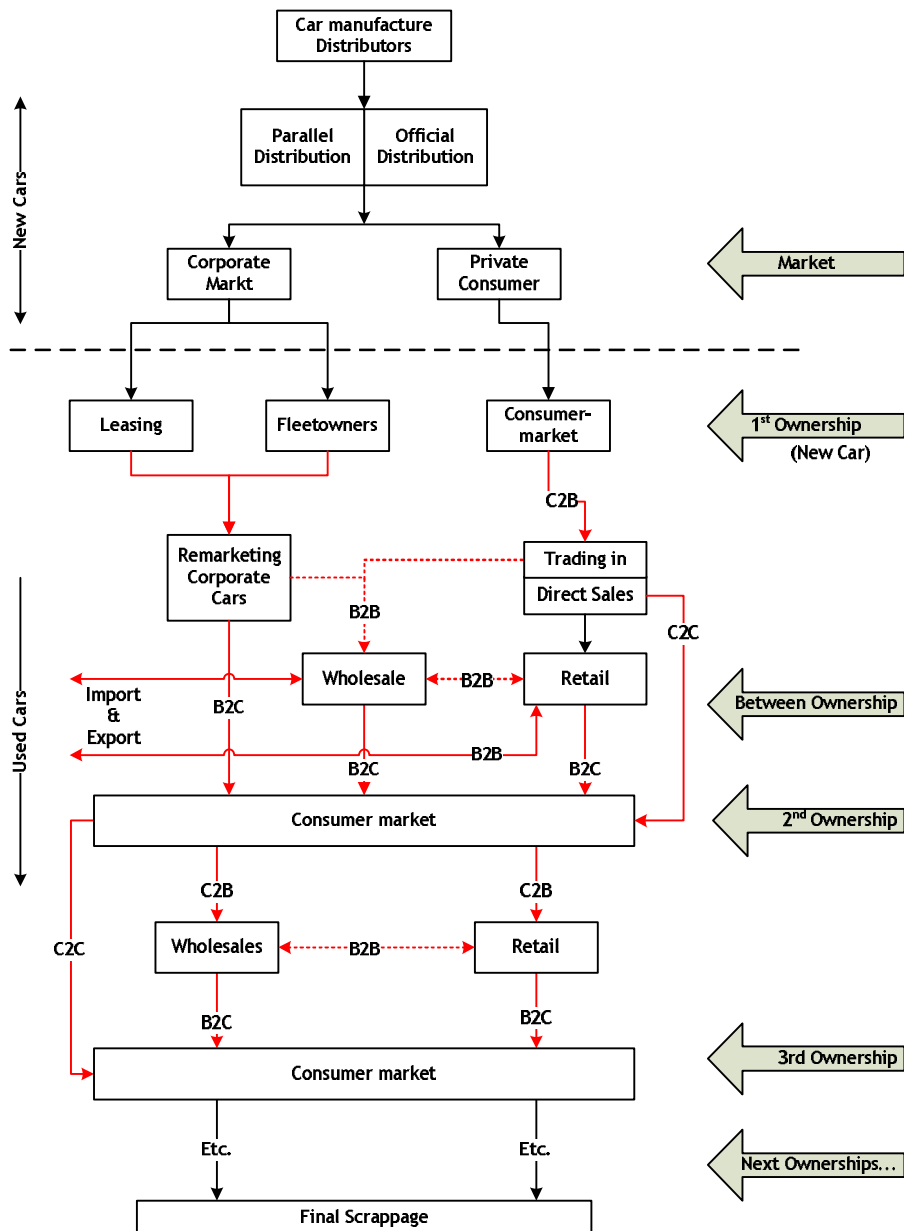


Figure 7-1: Distribution channel and opportunities for mileage fraud

We have identified the following group of ownership changes where mileage fraud may pay off, during a sale from:

- consumer to consumer or automotive professional,
- leasing company/fleet owner to consumers or automotive professionals,
- automotive professionals to other automotive professionals,
- automotive professionals to consumers.

7.1.1 Sale from consumer to consumer or automotive professional

If we think about mileage fraud, we normally think about dishonest used car retailers trying to make an extra profit by manipulation of the odometer in order to increase the used car selling value.

During our interviews, we learned that many professional used car traders refuse trade-ins or purchases of which they cannot trace its history. Consumers are becoming less loyal to the franchised dealers and many service their cars at universal garages. Both franchised dealers and universal garages are not always very accurate in filling out maintenance booklets. This makes verification of mileages more difficult.

Example:

A special example worth mentioning is the financial leasing contracts that are common across Europe - these have a residual value guarantee at the end of a contract. During the contract, the leaser/owner of the car has little to no control over the car's mileage history. At the end of the contract, the client can choose to buy the car or return it to the leasing company. Imagine a driver that has driven far more kilometres than agreed in the contract. This client has to compensate the leasing company for the extra depreciation of the car. The client also knows that the leasing company has little to no insight to the car mileage history. Instead of paying the extra charge of multiple thousands of euro, a quick odometer manipulation saves a lot of money.

If a consumer wants to trade-in his car, or sell it to another consumer, he or she has the option of increasing the car's value by tampering the odometer. The consumer is able to benefit from the existing situation of asymmetric information where the consumer has total knowledge of the used car. A situation that might be abused for personal purposes. Given the reactions of

the interviewed used car wholesalers and branch specialists, consumers do act fraudulently.

"We are extra careful, when a new consumer trades in his or her used car, and when we do not know the history of the car ourselves, we almost always verify with colleagues dealers." Gregor Cibis, AVAG Holding AG

Highly indicative proof of these registered quotes from automotive professionals can be found on the internet. If you compare advertisements on the internet by consumers, their input is far from complete in comparison to the offers put in by professionals. It is significant enough to mention that 67,7% of the used car advertisements, placed by the consumer, are incomplete and wrong, versus 20,2% of the professional car dealers. The deviation is too big to ignore this fact.

	Total		Consumer		Car dealer	
Total # Adds	1.015.911	100%	88.961	100%	926.950	100%
No year of build	23.904	2,4%	6.882	7,7%	17.022	1,8%
2x same adds on same website	70.024	6,9%	4.987	5,6%	65.037	7,0%
No price	29.812	2,9%	13.571	15,3%	16.241	1,8%
No fuel type	43.821	4,3%	7.343	8,3%	36.478	3,9%
No telephone number	23.079	2,3%	20.502	23,0%	2.577	0,3%
No photograph	56.884	5,6%	6.980	7,8%	49.904	5,4%
Total incomplete adds	247.524	24,4%	60.265	67,7%	187.259	20,2%
Total complete adds	768.387	75,6%	28.696	32,3%	739.691	79,8%

Source: Autobiz/Aumacon, the Netherlands 2010

Table 7-1: Incomplete internet advertisements by consumers

7.1.2 Sale from leasing company & fleet owner

When its driver returns a car to the owner of the car and the car has to be sold, there is a moment where odometer tampering pays off. Again, information asymmetry makes odometer tampering an interesting way to increase the selling value of the used car. Fleet owners and leasing companies are, to a high degree, in control of the used car's history, giving them the theoretical option of mileage fraud.

"With a noticeable increase of the end-mileage of lease cars, the problem of mileage fraud increases." Johan Meyssen, CEO, CarsOnTheWeb Europe

7.1.3 Sale between automotive professionals

The wholesale channel is under pressure. Its added value, absorbing and distributing used cars to retailers, is shrinking. Internet auctions and trading places make the wholesale obsolete, but it still exists and still realizes considerable volumes.

Again, a wholesaler theoretically has the option of manipulating odometers to increase the value of a used car. The situation of asymmetric information also exists in this transaction. The wholesaler has a knowledge surplus over the professional used car buyer. The wholesaler knows the former owner of the used car and is able to verify its history. Manipulating its history is only a small step to take before selling the car to the next automotive professional. With rising quality of automobiles in general, noticing mileage manipulation becomes more difficult, even for automotive professionals.

7.1.4 Sale from automotive professionals to the consumer

The most frequently mentioned case of mileage fraud is the automotive professional that deliberately sells a clocked used car to the unknowing used car buyer. The situation of asymmetric information is most clear. A used car professional has the knowledge to buy a high mileage used car, manipulate it professionally and sell it to a consumer that has little to no knowledge to verify the history of the used car.

7.2 Chance of legal prosecution after tampering the odometer

Many ownership changes are suitable for odometer tampering. However, having the chance to profit from a situation of asymmetric information is different from really committing the crime of mileage fraud. If someone is considering committing a small or big crime, he or she will make an estimate of the chance of legal prosecution. During our interviews, we found out that there are some basic process rules applicable to mileage manipulation:

- Does the car have a traceable mileage history?
- Is it a domestic (national) or cross border transaction?
- Is it a high or relatively low adjustment of the odometer reading?

7.2.1 Easy traceable history

If a car in the Netherlands or Belgium is sold, every consumer or automotive professional is able to trace the mileage history. The same thing applies to cars from a reliable source.

- Cars purchased at highly respected companies like LeasePlan, Athlon, ING, KBC Lease and BNP Paribas Lease Group have a reliable history. These companies have codes of conduct everybody has to follow. Manipulating used car odometers is against this conduct.
- Consumers buying from other consumers may know their counterparts or carryout vehicle verification. Consumers offering used cars often mention a verifiable maintenance and repair history.

When the history of a car is easy to verify, the chance of odometer tampering is relatively low. However, when the history of a car is difficult to verify because of lacking maintenance and repair history, people may try to manipulate odometers to benefit from the rising value of the used car with lower mileages. An illustration of this phenomenon:

- The high traceability of the history of a car also applies to operational leasing contracts, but to a much lesser extent. The full operational lease registers almost all repairs and maintenance. You can imagine that the chance of discovery of mileage fraud with operational leasing contracts is much higher because of its numerous registered service interventions. But at the end of the contract, the customer may 'virtually stop' the car, to avoid extra payment at the end of the contract. A mileage manipulation of only 30.000 kilometres (one service interval) is difficult to discover and hardly traceable, but can sometimes save € 1.500,- to € 2.500,-.

When mileage fraud is difficult to discover and the history of a car is difficult to trace, many people find it tempting to manipulate their odometers for financial benefit. This phenomenon is unfortunately not limited to used car traders. Currently, consumers also have the possibility to tamper their odometers, which may lead to unforeseeable costs for other consumers or automotive professionals.

"We were pleased with the introduction of the 6-digit odometer display a few years ago; it lessened the risk for mileage fraud. However, the 5-digit odometer displays in older cars, especially in our country, still pose a considerable risk." Used car trader, Romania

In the following table, we summarized the most common items to determine the used car's history and additional information.

#	Issue	Question from the buyer
1.	Actual mileage	Can I trust and verify the mileage?
2.	Historical maintenance and repair	What kind of cost, what has been repaired and why?
3.	Past service records	Are they available for any future reference and warranty on the work carried out?
4.	Maintenance booklet	Available and authentic?
5.	Historical body repair	Was there any body damage?
6.	Profile of previous owner(s)	Business or private use, if business use, what kind of used (city trips vs. highway trips).
7.	Remaining warranty of the car	Still valid and transferable to the next owner?
8.	General condition of the car, internal & external	Any reconditioning cost to be expected.
9.	Radio and entertainment systems	Is the instruction of the car's entertainment equipment available and does it support my language?
10.	Navigation system	Does the system operate in my country? Can I change the voice's language?

Table 7-2: Transaction barriers between buyer and seller

7.2.2 Domestic (national) or cross border transactions

When used cars are exported to other countries, geographical and language barriers limit the possibilities of consumers or used car retailers to verify the mileage, maintenance or repair history of a used car.

The limited possibility of verifying a used car's history increases the search costs for consumers and automotive professionals. Instead of hard evidence, people have to trust their counterparts. Consumers in particular lack the technical knowledge to estimate the chance of buying a tampered used car. This situation creates 'arbitrage' possibilities of used car traders that are willing to risk legal prosecution and do not care about the unexpected extra costs for the consumer. These traders are able to buy used cars with a less attractive proposition (high mileages) to supply customers that have a demand for lower mileage cars for example. The price difference is the direct profit the trader is able to make.

In discussing the topic of mileage fraud with a group of stakeholders in the countries of the scope, we learned the well-organized premeditated approach to mileage fraud.

To support the mileage fraud on an individual car, a market for original, or counterfeited, stamps from official dealers has developed.

Together with the supply and demand of original, sometimes used, maintenance booklets, the perfect mileage fraud is easier to execute than we predicted upfront. Odometers are simply adjusted to the mileage of the used, or altered, maintenance booklets.

Volkswagen onderhoudsboekje kwijt of beschadigt?

Prijs: € 25,00
Bekeken: 0 keer sinds 11-08-10, 19:43



[Meer foto's](#)

Beschrijving

Beetle (Kever), Bora, Corrado, Eos, Fox, Golf, GolfPlus, Jetta, Lupo, Passat, Phaeton, Polo, Sharan, Scirocco, Tiguan, Touareg, Touran, Transporter, Vento, Overige modellen

- **Oplage Onderhoudsboekjes origineel en blanco (leeg) van Volkswagen. Voor invulling km standen, grote/kleine beurten, reparaties en enz enz. Indien dealer stempel erop (bewijs van servicebeurten of dergelijke) betaald u hier 5 euro per stempel**

[lexa](#) [Vrijgezel in 5271?](#)

Note the last phrase in Dutch (free translation):

When you need a dealer stamp (proof of maintenance or equivalent) you pay € 5,- per stamp)

The open European market and the cross border used car transactions, combined with supply and demand imbalances, create a market place where odometer tampering becomes a “clearing instrument” for used cars.

When cars remain within the domestic (national) market, the possibilities for verifying the car's history increases significantly. Usually there is no language barrier and the search costs for the consumer or automotive professional are modest. Odometer tampering within a domestic market is limited to the last officially registered mileage reading. If we take average maintenance as a benchmark, odometer tampering will theoretically be limited to one stretched maintenance interval, given a well-registered maintenance booklet and regular factory prescribed maintenance.

On Croatia:

"Consumers are aware that used cars with an incorrect mileage are sometimes offered on the market. It will take time to get them used to cars with an honest mileage." Gregor Cibis, AVAG Holding AG, Germany

7.2.3 High or relatively low adjustment of odometer reading

The benefit of odometer tampering usually rises with the number of kilometres that are corrected. The lower the adjustment, the higher the probability that this manipulation will not be discovered, and the higher the chance that people may contemplate this act. The lower the adjustment is, the lower the benefit will also be. The actual benefit depends on the complexity of the manipulation of the odometer by a technical specialist.

If the adjustment is high, the benefits consequently rise. The chances on legal prosecution rise as well. The traceability of the car's history plays an important role in triggering people to manipulate the odometer for personal gain.

7.3 The costs and complexity of mileage manipulation

Odometer tampering used to be a cumbersome activity of dismantling the complete dashboard and the (mechanical) 5-digit mileage counter. Nowadays it is a matter of plug-and-play. Connecting a laptop to the On Board Diagnostic system is all that it takes. Handling the software to change the mileage is as simple as sending an email. Although this seems to be a weakness in the systems of a manufacturer, we must also recognize that changing the mileage of an odometer is sometimes legitimate and therefore needs facilitation by the car manufacturer.

7.3.1 Mileage fraud: a low cost and widely available activity

The attractiveness of odometer tampering is the combination of a low cost activity and a considerable financial gain, versus the very chances on legal prosecution. The costs of odometer tampering start at 50 euro and would raise a used car value by at least 1.000 euro (ADAC.de).



Research on the Internet shows that mileage correction on request has become a 24/7 service industry. Suppliers of odometer tampering, target both the used car professionals and consumers. Furthermore, the odometer tampering industry seems to be quite a competitive line of business for specialists. The website appearance of these service providers is professional with intelligent Google ad word campaigns guiding website traffic to their websites. The published service rates start at around 40 euro. Contact details are usually limited to only a mobile telephone number and a fax number.

Testimony of how deep odometer tampering has penetrated the used car market is a search command with Google, using the key words per language and counting the number of results.

<u>Search key-words</u>	<u>Country</u>	<u># Google results</u>
Tacho manipulation	Germany	10.800
Kilometre correctie	Netherlands/Belgium	35.100
Trafiqer le kilometrage	France/Belgium	585.000

Table 7-3: Google key-words and results

7.3.2 Odometer tampering: a low complex activity

Odometer tampering seems to be a simple activity. Advertisements to sell equipment for changing the odometer's mileage make starting up an odometer tampering business easy. The device displayed, is offered for 650 euro and includes a set of cables and instructions. The cables are to connect the Onboard Diagnostic system (OBD) of the car with this device or with the laptop.



Odometer tampering has become a straightforward activity. In a certain sense it has even be facilitated by EU legislation which mandates manufacturers to share their technical information.

Since the Block Exemption Regulation (BER) 1400/2002 came into force and was replaced in June 2010 with BER 330/2010, the universal aftermarket has been lobbying for more and better access to the car manufacturers' detailed specifications to repair and maintain cars.

We openly question the aftermarket stakeholders and branch organizations, if their well intended persistence from car manufacturers for easier access to information- has not accidentally given the odometer correction service providers too much opportunity, and access, to facilitate mileage fraud within the car's OBD.

Unfortunately, this knowledge of how to make mileage corrections has made odometer tampering a low complex, widely available, and cheap to execute activity for everyone wishing to adjust or correct his odometer for honest or insincere reasons.

As we learned from a used car expert, simply removing a specific fuse from the fuse box of a certain high premium segment SUV, will stop the odometer from adding more mileage. For as long as you want.....!

7.4 Cars most eligible for odometer tampering

To tamper an odometer you need a car. However, which cars are most eligible for odometer tampering? The answer to this question is simple. All cars that drive or have driven significantly more kilometres than the average consumer yearly mileage (between 10.000 km and 15.000 km in Europe) are eligible for odometer tampering. Without being complete, we have listed some cars that are eligible for odometer tampering:

- Corporate cars
- Private cars with high mileages
- Taxi's and Express Vans
- Short and long-term rental vehicles

If and to what extent these car's odometers are getting tampered is explored in Chapter 8.

7.5 Effects of odometer tampering on the distribution channel

It has become clear that the presence of odometer tampering has its effect on all stakeholders in the distribution channel of used cars. Governmental authorities and the car insurance industry are all hurt by the phenomenon. Its effects are financial and organizational in a direct and indirect way.

"When mileage fraud would all of a sudden disappear, a lot of money is going to evaporate from the used car market." Used car trader, the Netherlands

7.5.1 Effects on the buying consumer

Whatever effect you see, we believe that the consumer is the final and main victim of odometer tampering. The consumer is most vulnerable. His budgets are limited and the financial impact of buying a tampered used car is much higher than for professionals in the automotive industry. We do realize that consumers may also tamper odometers when financial gain is to be expected. One way or the other, in the end, a (private) used car buyer is financially hurt. The financial damage of odometer tampering to the consumer is twofold:

- He or she pays too much for his or her used car.
- On top of this higher purchase price, the consumer will be faced with higher than expected maintenance and repair costs because of normal wear and tear (during the life cycle of a car, the number of defects and associated costs rise).

7.5.2 Effects on the manufacturer of new cars

Car manufacturers are in the frontline when it comes to facing a misled consumer. If the odometer has been tampered, consumers often do not notice this directly. They are faced with unexpected high maintenance and repair costs. The first primary reaction of consumers is blaming the car manufacturer for producing cars that do not meet their quality standards in preventing mileage fraud for being possible. Fortunately, many manufacturers have started gathering mileage histories related to service intervals and warranty services performed by dealers and paid by the manufacturer. Odometer tampering has an effect on several automotive related areas:

- **Brand image damage.** When a car does not meet the quality standards you might expect based on the odometer mileage, the consumer blames the manufacturer. When the odometer is tampered, and discovered, the manufacturer loses (a part of) his carefully built-up brand image in both the new car and used car market.
- **Residual value.** When it comes to odometer tampering the manufacturer experiences two kinds of effects on its residual value.

Firstly, cars that have manipulated odometers achieve higher transaction values than cars that are not manipulated. These higher transaction values are mistakenly interpreted as the correct residual values, and incorporated in the future residual value predictions of manufacturers. This affects the sales of corporate cars, which are increasingly leased. Higher residual value decrease the monthly leasing rate for the fleet owner. Odometer tampering therefore has a short term positive effect on manufacturers selling new cars.

Secondly, as mentioned before, if too many used cars have been manipulated, brand image and consumer trust is hurt. Odometer tampering contributes in the long run to a lower residual value in the used car market. If customers do not trust used cars, they will not buy them. Without demand, residual values drop.

During our research, we were not able to quantify the long-term net effect of odometer tempering on residual values. However, by understanding the dynamics in the used car market, our observations confirm that the used car market is not a perfect market in which every stakeholder has the same information to act upon and thereby makes mileage fraud a possibility.

- **Operational cost.** Every warranty claim is initiated by the franchised dealer and has to be handled in the end of the process by the warranty department of a car manufacturer after it has passed the domestic car distributor. This processing on the car manufacturer's level includes validating the claim, checking the historical mileages, if known, and communication of the outcome. Each claim needs to be processed. A claim that is not approved because of a tampered odometer still adds internal operational costs to the car manufacturers warranty department. We were told that rejected claims because of odometer tampering, were often cars that had been exported from one country to another. Unfortunately, no car manufacturer was able to quantify the number of rejected warranty claims because of odometer tampering.
- **Wrongly granted warranty claims.** The mileage history available to the manufacturer is not always complete. Therefore warranty claims may be wrongly granted. The costs of these granted warranty claims are difficult to estimate or calculate, but may be significant.

- **Used car programs.** To protect its brand image, almost every car manufacturer has a used car program that reassures the customer. These programs often included warranties on the quality of the car and its history. Since a car manufacturer does not trade-in used cars himself, implementing and operating a used car program also adds costs to the manufacturer's organization. Costs that would be less if the customer could trust the quality and history of a used car.
- **Unfair competition.** Every used car that has a manipulated odometer poses a threat to the official dealer network. Where the official dealer-network normally sells correct and honest used cars, it may have to compete with retailers that sell manipulated used cars. This unfair competition threatens the return on investment of the official dealer networks and its long term continuity.

7.5.3 Effects on an operational leasing company

Leasing companies involved in full operational lease (or service lease) are the main suppliers of used corporate cars in the used car distribution channel. Odometer tampering affects their business in many ways. We have listed the most mentioned effects:

"With our high mileage cars of the same age, we have to compete against clocked domestic or imported cars, of the same age but with a lower mileage; we can never win." Tomáš Nedbal, Remarketing, Business Lease Czech Republic

- **Odometer tampering by the (lease car) driver.** Since odometer-tampering services have become a commodity that is available at prices below € 100,-, lease car drivers can easily save money. The most mentioned moments of possible odometer tampering hurting the leasing companies are odometer tampering prior to the decommissioning of the leasing car, odometer tampering before holidays to prevent extra employer charges for exceeding maximal private mileage. One way or another, odometer tampering hinders leasing companies in charging excess mileages to the fleet owner (lessee).

A typical Dutch reason for odometer tampering is to avoid paying extra income tax. Not exceeding the maximum threshold of 500 privately driven kilometres, a person can drive his lease car without being privately taxed for using a corporate car. This is a great incentive for odometer tampering. A corporate car is privately taxed for 14% to 25% on the consumer catalogue price, depending on the environmental friendliness of the car. With an average new car price tag of € 25.000,-, odometer tampering could save on income taxation somewhere between €292,- and €521,- per month, a substantial amount of money.

- **Biased residual values.** It is common practice by leasing firms to use past transaction revenues of their sold ex-leasing cars to forecast future residual values. Cars purchased by dealers from leasing companies with odometer tampering in mind, are usually bought for higher prices to ensure enough supply. Since odometer tampering has a hidden effect on residual value, its increased transaction values mix unmarked in the database from which analyses are made to determine future residual values. If these increased, residual values are not isolated in the database - when transaction analyses take place- they will represent a false reality and could bring potentially financial harm to the leasing company in the future.
- **Unfair competition.** When an ex-leasing car is purchased in one country, the odometer manipulated and sold in another country in which other leasing companies are active as well, the imported and manipulated ex-leasing car competes directly with the domestic supply of ex-leasing cars. This is causing unfair competition for the complete leasing sector in that country. Imagine an international leasing company working in different countries. The transaction value of their domestically sold ex-leasing cars, to which these tampered cars have been exported to, come under increased pressure. However, their sister company in another country benefits directly from the increased transaction value. This would never have existed when odometer readings would be registered and verifiable across countries. Nevertheless, many international operating leasing companies follow a code of conduct - internal compliance rules, that stipulate honest and fair-trading. This above described mechanism exists when odometer tampering is used as a transaction-value-increasing and market clearing instrument. The only way out of solving this problem is, when you face false competition of odometer tampered used cars, to search for new export markets. Where a domestic supply of used cars can be sold, manipulated or not, with no means of verification possible. In the end, no one wins anything. Worse, domestic car parks become increasingly contaminated with odometer tampered used cars.
- **Sales and Leaseback purchases.** Especially in growing leasing markets, leasing companies provide extra financial liquidity for fleet owners by purchasing their running car park and leasing it back to them. If the purchase prices are based on the car's historical maintenance and mileage, a leasing company will be very cautious to enter a sale and leaseback agreement, especially growing companies that conduct an honest way of operation could be hurt. As a result, they will not be able to free liquidity to finance their growth, and a leasing company misses an opportunity to acquire a new customer.

7.5.4 Effects on a financial leasing company

The core-business of a financial leasing company is the financing of a new or used car during a pre-agreed period. Financial leasing companies can also be normal banks financing cars. There are many kinds of financial leasing contracts. The two contracts we have taken into consideration are the normal financing contract, where the customer amortizes his or her car over the agreed period, and the financing contract where the financial leasing company has included a residual value guarantee at the end of the contract. Usually, the customer is able to purchase the car at the end of the financing contract at an agreed price. The customer also has the possibility to return the car to the leasing company. Usually the excess mileages are charged to the consumer. The effects of odometer tampering on a financial leasing company are many. We have listed here the most mentioned effects:

- **Overvalued financed objects**. When the financial leasing company finances a used car of which the odometer has been tampered, there is a risk of an overvalued financed object.
- **Consumers reducing their excess mileages**. At the end of a financial leasing agreement, consumers may manipulate their odometer to prevent the additional cost of excess mileage charges. Since the costs of odometer tampering are at such a low level, the break-even point of tampering against the extra charges amount is very low. Since the financial leasing company has little to no history files of this car, the chance of detection and of legal prosecution is low as well. Lacking odometer-reading registration is increasing the risks for financial leasing companies and therefore an increase of their risk premiums of leasing contracts.
- **Tampered odometers of repossessed cars**. From one of the interviewed international used car dealers we learned that approximately 40% of the cars, which were repossessed by the captive leasing company from the lessee, had a tampered odometer. Again, these risks are calculated in the prices of honest consumers that pay a premium. A problem these leasing companies face is the difficulty of capturing the vehicles mileage history. Without this history, it is difficult to hold the lessee responsible for his or her odometer tampering actions.

7.5.5 Effects on taxation

Governmental organizations, federal and domestic, are directly involved in the used car distribution channel. Their taxation revenues are directly and indirectly influenced by odometer tampering. We have listed some effects:

- **Import taxes.** Cars being imported are often subject to import taxes. Odometer tampering makes it possible to change the odometer readings in every possible direction to lower import taxes as much as possible. Normally we think about lowering mileages. We learned that by increasing the odometer reading, it could sometimes help to reduce paying the first registration duties. For instance for the Netherlands we have the following situation. The car's first registration taxation duty in the Netherlands (BPM) is based on the estimated and generally accepted trade value of the vehicle (as given by specialized car data companies such as Autotelex or X-Ray¹⁰). This value heavily depends on the car's general condition and mileage. Although the Netherlands has an almost similar Car-Pass model (called NAP), an odometer reading is not registered during the import procedures of the car.¹¹ Therefore, it pays off when car traders, or private individuals, increase the mileage prior to the inspection that determines the first registration taxation duty and turn the odometer back again preceding to the selling the used car. This practice was confirmed to us during our crowd sourcing activities¹². It is obvious that mileage plays an important role. The higher the mileage, the lower the trade value of the car and subsequently the lower the taxation level. Every country has its own taxation rules. Knowing that odometer tampering has become so easy and cheaply available, we are sure that the phenomenon is actively used to lower import taxes.
- **Income tax evasion and lower income out of Value Added Taxes (VAT).** During the course of the study, we found that VAT collection could be influenced by odometer tampering. The scheme works as follows. The seller of the used car agrees with the buyer on the sales price, they also agree to raise the actual mileage of the car's odometer and collect proof by making a photograph of it. The "adjusted value" of the car is registered on the invoice that bears a lower purchase price than

¹⁰ Autotelex and X-Ray are leading car valuation guides comparable with Eurotax-Glass car valuation guides

¹¹ New legislation is waiting for passing Dutch parliament in 2011, which calls for mandatory odometer registration in the mileage database of NAP during the import of a used car from another country.

¹² Discussion on odometer tampering on LinkedIn.com, in the discussion group "used car management NL", may 2010, started by Michel van Roon

agreed, with subsequently a lower VAT-amount. The difference between the original agreed sales price and the official invoiced sales price is usually paid in cash. This cash money is of course 'black money' paid-out from 'under-the-table'. In this way creating an amount of black money. Unfortunately, we were not able to quantify this practice.

- **Personal income taxes.** When extra personal income taxes have to be paid for driving private mileages with a company car, odometer tampering helps you to fit the odometer readings to the formal mileage registration. A pure form of income tax evasion.

7.5.6 Effects on the professional used car retailer

For the professional and honest used car retailer, odometer tampering limits the used car business severely. When you want to build a good reputation in the used car business, the cars you offer have to be honest. The phenomenon of odometer tampering forces honest used car retailers to implement a risk reducing strategy. Risk reducing means a self-imposed trade restriction. The general strategy to ensure oneself of honest and non-tampered used cars in all countries within the scope is to source used cars from a restricted number of reliable trading partners, mostly from a smaller geographic area.

A second, but rising, strategy is refusing trade-ins from (unknown) consumers or offering low, as if tampered, used car trade-in prices. Honest used car wholesalers and retailers sometimes do not trust the consumer anymore.

Used car offers (B2B) via internet portals are not always taken seriously, because information is not verifiable. Cross border purchases over the internet are not even considered. The search costs, attached to the used car trade and odometer tampering, are highly underestimated. Verifying the mileage and maintenance history of a used car is very time consuming.

A third, but odd way to cope with odometer tampering is creating a "special niche offering" of used cars, of which the odometer reading cannot be guaranteed to the next owner. A method motivated by the need for self-preservation. These cars could be found in a special area of the sales area, separated from cars where the mileage history could be granted (to a high extent).



“Bez Garance Km” meaning, “No Guaranteed Mileage”

Source: AAA Auto in Prague

“The import and export moment of a used car provides an opportunity for “legalising” a car’s new, but tampered, mileage.” Several car traders across the five countries

7.6 Conclusions

Whenever odometer tampering takes place, it only pays off at the moment of ownership change (including returning to the leasing company). It must be noted, all honest stakeholders that act with integrity are hurt by a group of people that deliberately manipulate odometers for their personal benefit.

Which link in the distribution channel of used cars is causing the problem is irrelevant to the consumer. The customer is insufficiently protected against mileage fraud and the costs of mileage fraud. The consumer has to trust his counterpart in the transaction, instead of trusting written proof.

When the used car trade is not made more transparent, we expect that a growing flow of used cars between European countries will cause many problems when it comes to odometer tampering. The history of used cars crossing national borders is more difficult to trace, enabling dishonest used car traders to benefit from it because chances of discovery of odometer tampering are low. Legal prosecution for mileage fraud is not likely to happen and this encourages mileage fraud to a high extent.

Unfortunately, it is the consumer paying the price. He faces accelerated depreciation (the car’s economic life ends earlier than expected) and higher maintenance and repair costs. Quantification of this damage and estimated odometer tampering is the subject of research and modelling in the next chapter.

8 Cost of odometer tampering

Odometer tampering becomes mileage fraud when the manipulation of the odometer is discovered. The buyer of the used car that has been tampered is the victim. Even if the consumer never realizes that the odometer of his or her car has been tampered, financial damage is quantifiable.

8.1 Odometer tampering is always mileage fraud

Fraud is only fraud when it is discovered, many say. That has been the reason, so far, that we have always spoken about odometer tampering. However, odometer tampering is not the right definition of manipulating odometer readings. Therefore, we will change the definition from odometer tampering into mileage fraud.

The main reason for this decision is the fact that odometer tampering always has a negative financial consequence for the consumer. Since there is always a financial damage to the consumer, mileage fraud is a better definition. Mileage fraud better describes odometer tampering as an act where someone benefits to the detriment of someone else.

Given the objectives of Car-Pass vzw, we quantify mileage fraud in the countries within this study's scope in terms of damage the consumer suffers from odometer tampering.

8.2 Mileage fraud defined & quantified

"Even after the start of Car-Pass, small criminal car dealers became wealthy from tampering on exclusive imported used cars, by simply doing the tampering in another country and importing the car. Despite strict legislation, bad car dealers keep finding ways to deceive consumers." Sebastien Gathon, Soco, Belgium

Mileage fraud can be quantified in many ways. So many stakeholders within the used car distribution channel suffer from direct or indirect damage. For this report, we limit our calculation to the most important figures that directly quantify the damage to the consumer and these are:

- Estimation of the number of cars manipulated per year
- Calculation of increased depreciation of the manipulated used car

- Calculation of increased maintenance and repair costs of the manipulated used car.

Although mileage fraud seems to be a widespread problem in many countries, hardly any country has quantified the number of cars being manipulated per year.

8.3 Estimation of the number of cars manipulated per year

The number of cars being manipulated per year is based on the available figures of the countries within the scope. To balance these figures we also use available figures from another country outside the scope. Finally, we also include the estimates of the automotive professionals interviewed.

8.3.1 Available data from Car-Pass vzw (Belgium)

In 2008, two years after implementing the Car-Pass model, the number of irregular odometer readings in Belgium (excluding odometer readings of imported cars) dropped from 8,6% to 0,24%. Odometers of imported used cars are manipulated in between 10% and 18% of all cases¹³. In the case of exports, a sample of 1.126 exported used cars from Belgium to France showed a mileage fraud percentage of 43,3% with an average mileage reduction of 91.000 kilometres¹⁴.

It is worth noting that 85% of all imported cars in Belgium come from France, Germany, The Netherlands and Luxembourg (countries of the study's scope).

¹³ Car-Pass annual report 2009

¹⁴ Car-Pass annual report 2008

8.3.2 Available data from Nationale Autopas (Netherlands)

In the Netherlands Nationale Autopas is a platform that registers odometer readings on a voluntary basis. Nationale Autopas has quantified the number of manipulated odometers on 5% of the total fleet on the road¹⁵. The number of suspected odometers is around 12% of the Dutch fleet on the road. These figures are a big step forward since the start of Nationale Autopas in 1991, when the estimate of manipulated odometers was over 20% of the Dutch fleet on the road¹⁶. When calculated on a yearly basis, new mileage fraud is discovered in approximately 1,5% of all used car registrations, B2C and C2C. In attachment § 12.4 we added the calculation. An interesting figure in the Nationale Autopas documents is the estimate of mileage fraud with imported used cars. Nationale Autopas and the RDW¹⁷ estimate that 30% of all imported cars are manipulated.

8.3.3 Available data from ADAC (Germany)

The ADAC (Allgemeiner Deutscher Automobil-Club) is fighting mileage fraud in Germany. Their efforts led to a prohibition on mileage fraud in August 2007. This stipulates that odometer adjusting is legal only when a technical reason exists. In 2004 when ADAC started their lobby for the prohibition of mileage fraud, ADAC together with Dekra estimated that up to 30% of the German used cars registered could have tampered odometers. Although this estimate was not backed-up by quantitative data like in the Netherlands, there was neither protest from any of the stakeholders in the distribution channel of used cars, nor from government or consumer organizations. If we recalculate this figure to a yearly percentage of manipulated used car sales, 22,3% of the yearly registrations (B2C & C2C) are manipulated. In attachment § 12.4 we added the calculation.

¹⁵ Advice to the minister of traffic and transport on making odometer registering mandatory, 9 July 2007

¹⁶ Presentation Nationale Autopas, April 2007, E. Uildriks, Director NAP

¹⁷ Rijksdienst Wegverkeer Nederland

8.3.4 Available data from OFT (United Kingdom)

The OFT, Office of Fair Trading, carried out a study of the second-hand car market in the UK and published its report in March 2010¹⁸. In 2009, Consumer Direct, a government-funded telephone and online service offering information and advice on consumer issues, received over 65.000 complaints about second-hand cars bought from retailers. The OFT estimates that one in five consumers, who purchase a second-hand car, experience a problem. The report refers to findings of HPI, a vehicle-checking specialist, that between 5 % and 12,5% of the vehicles being checked by HPI, have a mileage discrepancy. The OFT uses this lower 5% as the basis of their calculations.

8.3.5 Estimates from consumer survey

During the period of our research study, a consumer survey was conducted in the five countries of the scope. The answer to the question: "Have you ever bought a used car with a clocked mileage?", is 5%. In other words, 5% of the interviewed individuals had bought a car, -and afterwards found out, mostly because of unexpected technical problems, that it was sold to them with an incorrect mileage.

8.3.6 Estimates from automotive professionals

The magnitude of mileage fraud coming from domestic transactions (excluding imported and exported cars), is difficult to estimate by the interviewed automotive professionals. When it comes to mileage fraud with imported cars, the opinions are almost equal. Most automotive professionals estimate that around 30% to 40% of all imported cars have had their odometer manipulated.

¹⁸ The second-hand car market, An OFT market Study, March 2010

8.3.7 Domestic- vs. import transactions

Without a doubt, there is a big difference between mileage fraud with domestically traded used cars and used cars imported from abroad. Following the consensus of the used car professionals, we estimate that at least 30% of all imported used cars from abroad have manipulated odometers.

8.3.8 Summary

Given the different numbers in the different countries, we have decided to work with two scenarios and two kinds of transactions. To quantify the monetary value of mileage fraud we use a low and a high fraud scenario.

Low and high mileage fraud scenarios:

- In the low mileage fraud scenario, we expect 5% of all used car transactions (B2C and C2C) to be transactions where the odometer is manipulated (confirmed by the consumer survey).
- In the high mileage fraud scenario, we expect 12% of all used car transactions to be fraudulent.

In the following table, we have summarized the total volume of used car transactions in each country and the calculated number of expected fraudulent transactions in the low and high mileage fraud scenarios.

Total number of used car transactions			Low mileage fraud scenario			High mileage fraud scenario		
Countries	Domestic C2C + B2C	Imported cars	Domestic	Import	Total	Domestic	Import	Total
Belgium*	676.282	58.603	1.235	17.581	18.816	1.235	17.581	18.816
Netherlands	1.722.694	70.215	82.624	21.065	103.688	198.297	21.065	219.362
France	5.036.515	113.485	246.151	34.046	280.197	590.764	34.046	624.809
Germany	5.763.560	311.340	272.611	93.402	366.013	654.266	93.402	747.668
Luxembourg	39.054	10.924	1.407	3.277	4.684	3.376	3.277	6.653
Total	13.238.105	564.567	604.028	169.370	773.398	1.447.938	169.370	1.617.309

Table 8-1: Estimated volumes of mileage fraud within low and high scenarios

Note: Since Belgium is considered a 'clean market', we calculated the Belgian local transactions with Car-Pass 2009 reported domestic mileage fraud figure of 0,2%.¹⁹

¹⁹ Car-Pass annual report 2009

8.4 Estimated 'clocked' miles through odometer tampering

There are hardly any statistical data available to calculate the total of kilometres that "disappear" off used cars' odometers as a result of this type of fraud. If mileage fraud is discovered and legal prosecution takes place, the number of kilometres that are found to have been taken off is usually very high. But quite obviously the figures only show the tip of the iceberg.

8.4.1 OFT

The average number of miles clocked 67.612 miles that is mentioned in the OFT market study²⁰ is based on a review of TSS²¹ criminal enforcement actions for 'clocking' offences between January 2008 and December 2009. We do not believe that this sample is representative for quantifying the level of mileage fraud for volume brands and models. Therefore, we believe that the actual average of miles disappearing through tampering is [lower].

8.4.2 ADAC

If we take the sample experiments, executed by ADAC in 2005, as a rough indication of what is happening in the used car market, we can expect an average mileage reduction of about 33.000 kilometres.

8.4.3 Car-Pass vzw

Car-Pass has quantified the average manipulation of tampered used cars within the Belgian used car market. It is interesting to see is that the average mileage fraud of imported cars based on around 800-used cars examined

²⁰ The second-hand car market, Office of fair trading (UK), march 2010

²¹ The Trading Standards Institute is a not-for-profit professional body formed in 1881. With members in the public and private sectors in the UK and abroad. The Trading Standards Institute encourages honest enterprise and business and helps safeguard the economic, environmental, health and social well-being of consumers.

(Audi, BMW, Mercedes-Benz and Volkswagen) is 68.605 kilometres²². The already mentioned sample of 1.126 exported used cars from Belgium to France alone showed a mileage fraud percentage of 43.3% with an average mileage reduction of 91.000 kilometres²³. In the Car-Pass annual report of 2009, the average domestic mileage manipulation is found to be 83.258 kilometres (in the very small number of cases that have still).

8.4.4 Domestic vs. imported used cars

In line with the estimates of the number of tampered used cars, we see a difference between used cars that are manipulated in and will be sold in the domestic used car market and those cars that are imported.

Mileage fraud with used cars purchased and offered to the domestic market is easier to discover than mileage fraud with used cars purchased abroad and then resold on the domestic market. As we have seen in chapter 7, domestically purchased used cars have a history that is much easier to track than cars from abroad.

8.4.5 Conclusions

We estimate mileage fraud with used cars both purchased and sold on in the domestic market to be rather moderate. Knowing that the average used car has a maintenance record of approximately every 30.000 kilometres, we expect that mileage manipulation within a domestic market will be a reduction of approximately 30.000 kilometres. Given the likely objectives of mileage fraud in a domestic (national) market, namely financial trading benefits, tax evasion and avoiding penalty payments for excess mileages with a corporate car, we strongly believe that 30.000 kilometres is a realistic and perhaps even slightly conservative figure to quantify mileage fraud with no cross-border element.

²² Car-Pass annual report 2009

²³ Car-Pass annual report 2008. 2009

The calculation of mileage fraud in the case of imported used cars is based on the samples taken by Car-Pass vzw and the outcomes of our interviews. For the calculation of the monetary value of mileage fraud with imported used cars, we use a mileage reduction of 60.000 kilometres. We strongly believe that 60.000 kilometres is a realistic although perhaps slightly conservative figure to work with.

8.5 Calculation of increased depreciation

Quantifying the monetary value of mileage fraud means quantifying the financial damage a customer suffers when he or she purchases this tampered used car. One of the most important hidden costs for the consumer when buying a clocked used car, is the increased depreciation during the remaining economic life of this car.

We have already concluded that the objective of mileage fraud is to increase the sales value of a used car. By tampering the odometer, it is possible to create an illegal financial benefit for the fraudster. Mileage fraud has far more repercussions for the next owner of the car. From the moment he or she purchases the car, the next owner(s) will face a much steeper depreciation than expected.

In the following figure, we visualized this increased depreciation due to mileage fraud for a sample car that has been tampered for 60.000 kilometres after 3 years.

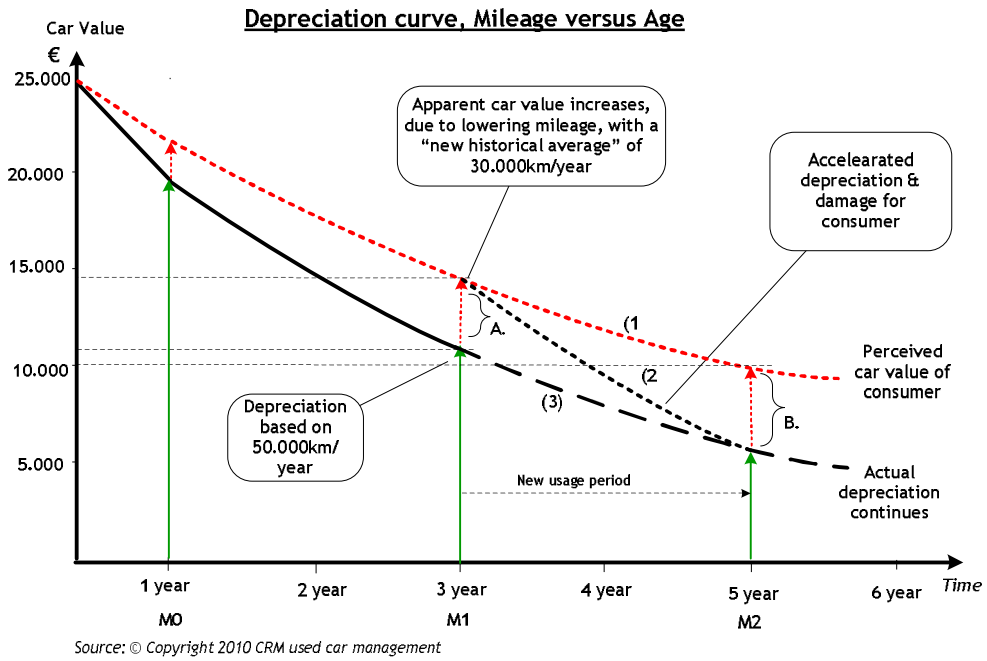


Figure 8-1: Mileage fraud implication on increased depreciation

8.5.1 Depreciation curves clarified

Every car follows, according to its age and mileage during the period of operation, a pattern of depreciation. In this figure, the black line represents the car's depreciation over time.

When a customer trades in his car after 3 years and 150.000 kilometres at moment M1, the value of the car is a little bit more than € 10.000,-. The average mileage of 50.000 kilometres per year is higher than the average in the market.

By turning back the odometer, to 90.000 km (as in our sample), the value of the car increases (A). As a result, the buyer would pay more than the actual value of the car, given the car's real mileage and wear and tear.

The new owner expects his future depreciation to follow the red dotted line (1). However, if the customer trades in his or her used car at moment M2 and the mileage fraud is discovered, the real depreciation curve has been much steeper and follows the black dotted line (2).

During this same second period of ownership from M1 to M2, the car's actual depreciation is the black dotted curve (3). The difference between line 1 and line 2 is the accelerated depreciation of the tampered car. These are real costs for the second owner or the subsequent owners.

Even if the discovery of the mileage fraud does not take place, the car's economic life ends much earlier than expected. Therefore, the accelerated depreciation will always take place.

We have calculated the effects of accelerated depreciation for three segments, small cars, medium sized cars and executive cars (the figures below represent an average sales price for new cars):

- Small cars of around € 15.000,-
- Medium sized cars of around € 30.000,-
- Executive cars of around € 60.000,-

Each segment has its own depreciation curves, which we checked with leasing companies and professionals and obtained residual value curves from EurotaxGlass.

We have split up the total used car volume (B2C and C2C):²⁴

- Small car segment: 45.1% of total registrations
- Medium sized cars: 44.7% of total registrations
- Executive cars: 10.2% of total registrations

8.5.2 Costs of increased depreciation per selected car segment

For every car segment taken into consideration, we have calculated the cost of increased depreciation for the consumer. We distinguish cars between domestically (national) traded, 30.000 km manipulation, and cars that have been imported, 60.000 km manipulation.

The average costs for the consumer, per different car segment, are outlined in the following table:

Extra depreciation due to mileage fraud		
Segment	Domestic traded used cars	Imported used cars
Small (€ 15.000,-)	€ 800,- (2,7 ct/km)	€ 1.220,- (2,0 ct/km)
Medium (€ 30.000,-)	€ 1.233,- (4,1 ct/km)	€ 2.500,- (4,2 ct/km)
Executive (€ 60.000,-)	€ 1.800,- (6,0 ct/km)	€ 4.800,- (8,0 ct/km)

Table 8-2: Increased depreciation per car segment

These costs have been calculated with general accepted costs per kilometre. We have sourced and cross verified and checked the figures above with costs used by EurotaxGlass, different leasing companies and other professionals.

8.6 Higher repair and maintenance cost

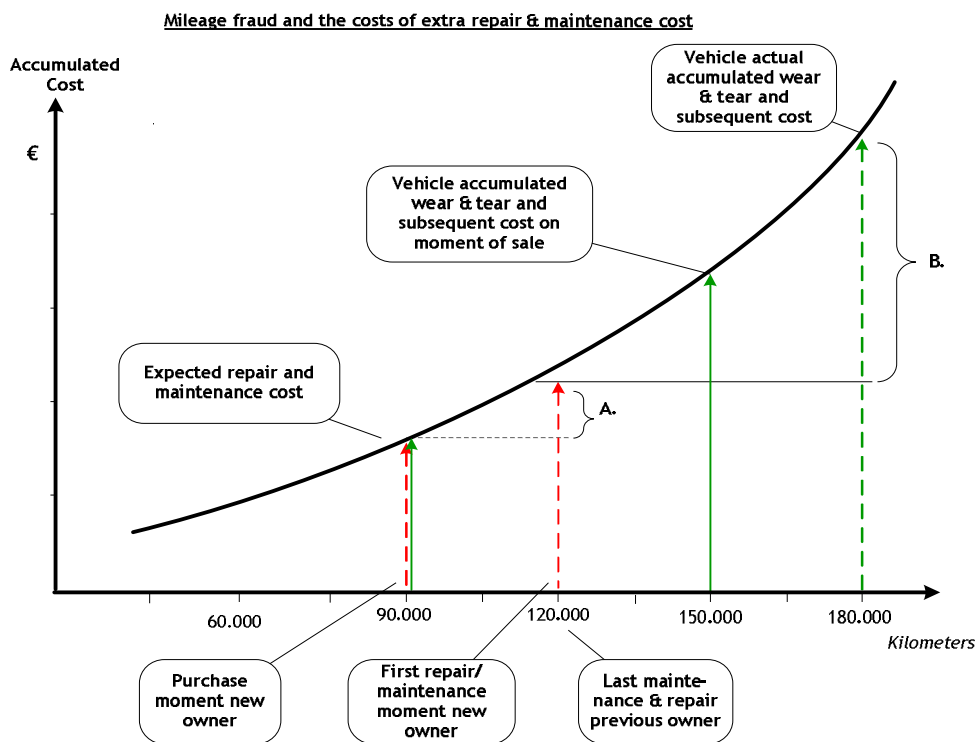
The second effect of mileage fraud is higher repair and maintenance costs.

During the car's lifespan, repair and maintenance cost are accumulated and the car is subject to wear and tear of its mechanical components. To overcome and extend the car's life, regular maintenance is required. Moreover, sometimes parts need to be replaced to prevent damage to components that otherwise would require much higher costs to be replaced.

²⁴ Based on ACEA 2009 report, sales of new cars segment split

When purchasing a used car, with a tampered odometer and unknown maintenance history, the new owner cannot be sure when the latest repair and maintenance has taken place and which parts have been changed.

To illustrate this effect we take the same used car as in paragraph 8.5. Imagine a consumer buying a car with a tampered odometer by 60.000 kilometres (from 150.000 km back to 90.000 km). We assume that the last owner carried out his last maintenance at 125.000 km. In the chart below, we illustrated the effect this has on the next, unknowing, owner.



Source: © Copyright 2010 CRM used car management

Figure 8-2: Mileage fraud and the costs of extra repair & maintenance cost

The black rising line is the accumulated repair and maintenance costs of a car. This curve becomes steeper during the economic life of the car. With the age and increasing wear and tear of the car, the maintenance and repair costs rise.

In this case, the next owner expects to have maintenance and repair costs in the first 30.000 km of equivalent A. His actual repair and maintenance costs may be an equivalent of B. The difference between A and B can be quite significant.

8.6.1 Costs of increased maintenance and repair per car segment

For every car segment taken into consideration, we have calculated the costs of increased maintenance and repair costs for the consumer. As specified earlier, we distinguish cars between domestically (national) traded, 30.000 km manipulation, and cars that have been imported, 60.000 km manipulation.

The average cost for the consumer, per different car segment, is outlined in the following table:

Extra maintenance and repair costs		
Segment	Domestic traded used cars	Imported used cars
Small (€ 15.000,-)	€ 300,- (1,0 ct/km)	€ 375,- (0,6 ct/km)
Medium (€ 30.000,-)	€ 750,- (2,5 ct/km)	€ 1.050,- (1,8 ct/km)
Executive (€ 60.000,-)	€ 900,- (3,0 ct/km)	€ 1.350,- (2,3 ct/km)

Table 8-3: Average calculated consumer extra maintenance and repair cost

These costs have been calculated on the basis of generally accepted costs per kilometre.

We have sourced, verified and cross-checked the figures above with costs used by different leasing companies and other professionals.

8.7 Total cost of mileage fraud

The monetary value of mileage fraud in the Netherlands, Luxembourg, Germany and France is calculated with the figures defined and specified in the previous paragraphs.

The formula we use:

Total volume of used car registrations (B2C+C2C) and imported used cars
X
Probability of mileage fraud (low scenario & high scenario)
X
Costs of increased depreciation + costs of increased maintenance & repair costs
=
Monetary value of mileage fraud in a country

By applying the formula above and allowing for a higher impact of fraud (i.e. higher number of kilometer being turned back) in the case of imported cars, we have calculated the minimum economic impact, per year, of mileage fraud in Germany, France, Luxembourg and the Netherlands.

8.7.1 Germany

In the table below, we have summarized the monetary value of mileage fraud (extra costs for the German consumer due to mileage fraud).

Germany		Increased Depreciation			
		Low scenario		High Scenario	
Segment	Split	(#)		(#)	
Small	45,1%	165.072	€149.749.697	337.198	€287.450.966
Medium	44,7%	163.608	€254.626.560	334.208	€464.976.316
Exec.	10,2%	37.150	€95.311.484	75.888	€165.039.926
Total	100,0%	365.830	€499.687.742	747.295	€917.467.207
Increased maintenance & repair costs					
Small	45,1%	165.072	€52.680.882	337.198	€104.318.857
Medium	44,7%	163.608	€135.231.066	334.208	€263.181.039
Exec.	10,2%	37.150	€37.701.424	75.888	€72.565.645
Total	100,0%	365.830	€225.613.372	747.295	€440.065.541
Total		€725.301.114		€1.357.532.748	

The German consumer is overpaying considerable amount: between 725 million and 1,36 billion euro per year in the low rate of fraud and high rate of fraud scenarios respectively.

8.7.2 France

In the table below, we have summarized the monetary value of mileage fraud (extra costs for the French consumer due to mileage fraud).

France		Increased Depreciation			
		Low scenario		High Scenario	
Segment	Split	(#)		(#)	
Small	45,1%	126.369	€107.543.978	281.789	€231.880.023
Medium	44,7%	125.248	€154.430.859	279.290	€344.364.161
Exec.	10,2%	28.440	€61.558.849	63.418	€124.519.479
Total	100,0%	280.057	€323.533.686	624.497	€700.763.663
Increased maintenance & repair costs					
Small	45,1%	126.369	€39.062.244	281.789	€85.688.261
Medium	44,7%	125.248	€98.501.548	279.290	€214.032.753
Exec.	10,2%	28.440	€27.151.025	63.418	€58.631.340
Total	100,0%	280.057	€164.714.816	624.497	€358.352.354
Total		€488.248.502		€1.059.116.017	

In both the low and high fraud incidence scenarios, the French consumer is overpaying considerable amounts in increased depreciation as well as maintenance and repair costs: between 488 million and 1,06 billion euro per year.

8.7.3 Luxembourg

In the following table, we have summarized the monetary value of mileage fraud (extra costs for the consumer in Luxembourg due to mileage fraud).

Luxembourg		Increased Depreciation			
		Low scenario		High Scenario	
Segment	Split	(#)		(#)	
Small	45,1%	2.112	€2.310.646	3.000	€3.021.097
Medium	44,7%	2.094	€4.437.465	2.974	€5.522.736
Exec.	10,2%	475	€1.853.619	675	€2.213.374
Total	100,0%	4.681	€8.601.730	6.649	€10.757.208
Increased maintenance & repair costs					
Small	45,1%	2.112	€744.556	3.000	€1.010.975
Medium	44,7%	2.094	€2.009.683	2.974	€2.669.824
Exec.	10,2%	475	€577.542	675	€757.419
Total	100,0%	4.681	€3.331.781	6.649	€4.438.218
Total		€11.933.511		€15.195.426	

When mileage fraud is assumed to affect 5% of all used cars (low incidence scenario) the consumer in Luxembourg is overpaying 11,9 million euro per

year. If fraud levels are assumed to be 12% (high incidence scenario), then the resulting economic damage for Luxembourg's consumers would be 15,2 million euro per year

8.7.4 Netherlands

In the table below, we have summarized the monetary value of mileage fraud (extra costs for the Dutch consumer due to mileage fraud).

Netherlands		Increased Depreciation			
Segment	Split	Low scenario		High Scenario	
		(#)		(#)	
Small	45,1%	46.763	€41.400.830	98.932	€83.135.840
Medium	44,7%	46.349	€69.077.851	98.055	€132.831.433
Exec.	10,2%	10.524	€25.358.020	22.265	€46.491.574
Total	100,0%	103.637	€135.836.702	219.252	€262.458.847
Increased maintenance & repair costs					
Small	45,1%	46.763	€14.741.554	98.932	€30.392.183
Medium	44,7%	46.349	€37.586.302	98.055	€76.365.853
Exec.	10,2%	10.524	€10.434.061	22.265	€21.000.838
Total	100,0%	103.637	€62.761.917	219.252	€127.758.874
Total			€198.598.619		€390.217.721

For the Netherlands, we have to add a comment.

As mentioned before, the Netherlands implemented a mileage verification and registration platform as well, although on a voluntary basis and thus much less comprehensive than in Belgium. The estimate in the high fraud incidence scenario may therefore be excessive. Nationale Autopas estimates that 5% of the Dutch car park has a tampered odometer (5% also being the rate assumed in our low incidence of fraud scenario). If this estimate is true, then the lower total would be more realistic. Even so, Dutch consumers would still overpay nearly 200 million euro per year.

8.7.5 Mileage fraud within a European context (EU25)

The five countries of the study represent combined almost 95 million car registrations (cars & light commercial vehicles), which is 35,5% of the total registrations in the EU25 as mentioned by the ACEA ²⁵⁺²⁶. Figures for Cyprus and Malta are not included in the ACEA data. However, Cyprus and in particular Malta are rather small markets; their exclusion therefore is unlikely to significantly impact the figures below.

If we extrapolate to the EU25 the same calculations as used for the five countries being looked at by this study, the figures increase dramatically.

Europe (EU25)		Increased Depreciation			
		Low scenario		High Scenario	
Segment	Split	(#)		(#)	
Small	45,1%	1.201.520	€1.141.801.495	2.281.698	€2.005.943.811
Medium	44,7%	1.190.864	€2.008.268.869	2.261.461	€3.328.315.714
Exec.	10,2%	270.409	€777.033.342	513.509	€1.214.613.167
Total	100,0%	2.662.793	€3.927.103.706	5.056.668	€6.548.872.692
Increased maintenance & repair costs					
Small	45,1%	1.201.520	€392.703.470	2.281.698	€716.756.838
Medium	44,7%	1.190.864	€1.020.993.302	2.261.461	€1.823.941.504
Exec.	10,2%	270.409	€286.912.475	513.509	€505.702.388
Total	100,0%	2.662.793	€1.700.609.247	5.056.668	€3.046.400.730
Total			€5.627.712.953		€9.595.273.422

These totals - more than 5,6 billion euro per year of economic damage to European consumers in the scenario of low incidence of fraud, rising to more than 9,5 billion euro if the assumption of fraud is put higher - must obviously be considered with some caution. They are an extrapolation, as the authors of the present study have not examined the used car market across the entire EU but looked closely at the five countries within the study's scope only. Still, these figures provide a hint as to the order of magnitude of the economic damage resulting from mileage fraud.

²⁵ Source vehicle registrations: ACEA

²⁶ EU25: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

Here it could also be pointed out that the only other known attempt to quantify the economic impact of mileage fraud, i.e. the study by the OFT in the United Kingdom (referred to in this report), comes to a figure of 590 million £, that is approximately 675 million euro at current exchange rate, for the UK market alone (based on an assumed incidence of fraud of 5%).

8.8 Summary

It needs no discussion to see that mileage fraud has a high impact on the costs of mobility of the used car buyers. In the low risk scenario, the total monetary value of mileage fraud is just over 1,48 billion euro per year for the five countries examined.

Taking the high risk scenario, the total cost of mileage fraud is almost 2,87 billion euro. With a growing internationalisation of the used car market these figures will be more likely to rise than to drop.

When we apply the dramatic reduction in fraud levels and correlated reduction in consumer harm achieved in Belgium as a result of the introduction of the Car-Pass to the surrounding countries, costs for the consumer could be much lower and save them 1,43 billion euro per year in the low risk scenario and close to 2,83 billion euro in the high risk scenario. In attachment § 12.2 we have included the calculations per country.

By applying the success of the Car-Pass model to total Europe (EU25), the impact for European consumers could be dramatic: In the low risk scenario, savings could be up to almost 5,50 billion euro per year. Applied to the high risk scenario, savings could be almost 9,6 billion euro. In attachment § 12.2 we have included the EU25 calculation.

9 Cost/Benefit analysis of the Car-Pass model

Compared to the high costs of mileage fraud, Car-Pass vzw operates with a relatively small budget. Its operational costs per year are 3.000.000 euro. This includes the cost for financing the necessary start up investment of about 1 million euro. The yearly investment of 3.000.000 euro in the platform resulted in the sharp decline of mileage fraud in Belgium (see Figure 3-6).

The indirect costs of the system are absorbed by the used car trading companies active in the automotive sector. For every car in the Belgian car park, 2,36 kilometre readings on average are currently registered. With a car park of approximately 5,736 million cars, a total of 13,5 million kilometre readings are processed yearly.

The processing of these data is highly automated, with 90% of all registrations gathered automatically by means of an interface (DMS); 10% of the kilometre readings are gathered by fax or via the Car-Pass online web application. Car-Pass estimates that every kilometre reading may cost 30 seconds to process. To process 1,35 million kilometre readings, approximately 11.300 man hours are needed. At an hourly rate of 25,- euro, the additional costs of manually processing kilometre readings for the purpose of the Car-Pass system are 282.000,- euro.

Given the mileage fraud savings of at least 100 million euro per year, the Car-Pass system has a cost/benefit ratio of only 0,028 (in the low incidence of fraud scenario)!

9.1 Car-Pass cost/benefit ratio applied to other countries

When we apply this ratio to a country such as Germany, the Car-Pass system could save German consumers up to 705 million euro (low scenario) to 1,34 billion (high scenario). This saving could be realized by spending 15,7 million euro per year to operate an equivalent to the Car-Pass system. Moreover, the system could be entirely self-financing, with the cost for individual users being very moderate. It is recalled that in Belgium a Car-Pass must be obtained only when a car is being sold and that the price of such a certificate is a mere 6,35 euro.

	België	Netherlands	France	Germany	Luxembourg
Low scenario cost/benefit ratio	0,028	0,019	0,023	0,022	0,013
High scenario cost/benefit ratio	0,017	0,010	0,011	0,012	0,010

Table 9-1: Cost/benefit ratio other countries

In attachment § 12.6, the table with the calculation of all the countries is shown in detail.

9.2 Conclusion

Given the strength of the Car-Pass system, its operating costs are low. To eradicate mileage fraud in the EU, the Car-Pass system provides a cheap and proven solution with a sound cost/benefit ratio.

10 Consumer awareness of mileage fraud

Integral part of this study is a consumer survey that highlights the customer side of odometer tampering and mileage fraud. This customer survey has been carried out by "Dedicated Research" in the countries within the scope of this study.

Title:

Study of buyers' trust in used cars' purchasing and measure of the value of a system such as Car-Pass²⁷.

Objectives:

- Determining the reasons for not buying used cars (anymore).
- Identifying the sales channels of used cars usage relevant to consumers.
- Categorizing the criteria of importance when buying used cars.
- Measuring the confidence in the accuracy of the odometer reading
- Gauging the interest in a model like Car-Pass.

In total, 4.823 respondents participated in the Computer Assisted Web Interviewing. The survey was conducted in strict compliance with EMRQS quality standards (EFAMRO Market Research Quality Standards), standards according to which Dedicated Research is certified, as well as ESOMAR Code of Conduct.

During the survey Dedicated Research cooperated with partners in different countries, bordering Belgium, to recruit respondents:

- the Netherlands: Autotrader.nl
- France: Automarché.fr
- Belgium: , VAB, Touring, Vlan.be & Concentra
- Luxembourg: SNCT

²⁷ Details on the followed methodology, sample description and analyses criteria, you find in paragraph 12.7

On top of that, Dedicated Research worked with a panel provider to increase the sample and made the analyzed sample more representative of car drivers' profile. (note that for Luxembourg, there is no panel for Internet studies. As such, results collected in this country only represent information from respondents of the internet survey on the website of SNCT.²⁸)

10.1 Key findings of the consumer survey

10.1.1 Car buyers segmented

Car buyers are normally seen as one group of consumers. Within the group of car buyers, the new car buyers are a different segment than the used car buyers, 45% of all car buyers are real used car buyers. Only 20% of the car buyers contemplate changing segment, with 55% of all respondents planning to buy a used car in the future. Only the latter group of respondents are taken into account for the rest of the survey.

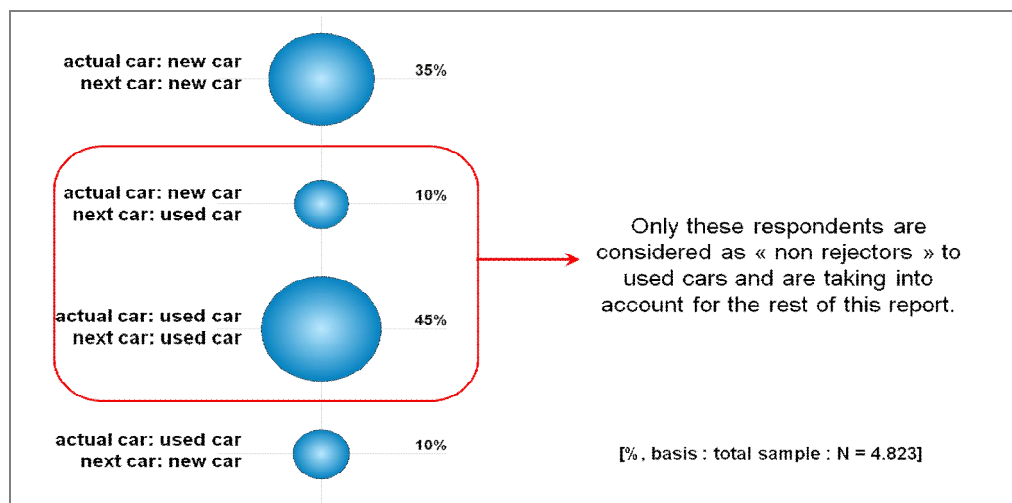


Figure 10-1: Group of respondents to the consumer survey

The main reason for new car buyers to buy new cars is the possibility to customize the car with their own desired features. 11% of the new car buyers had a bad experience with a used car and only 3% of the new car buyers do

²⁸ SNCT: Société Nationale de Contrôle Technique

not buy a used car because of the bad reputation of used cars. These findings underline the conclusion that used car buyers and new car buyers are a different kind of consumer in their buying behavior.

10.1.2 Buying a used car

The majority of used car consumers purchase their vehicles at the official franchised dealers (38%). The independent car trader and the unknown private individuals are sources for used cars as well, 21% of the used car buyers bought from an individual, 20% bought from an independent car trader.

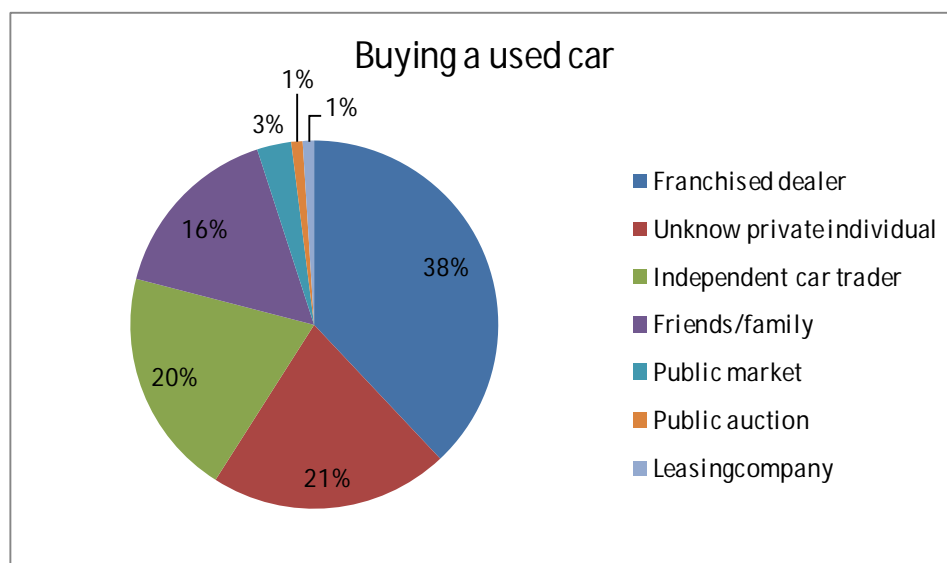


Figure 10-2: Consumer sources of buying a used car

The German consumer prefers buying at the franchised dealer whereas in Luxembourg many consumers buy their cars from private individuals. Dutch consumers trust the independent car trader in 40% of their used car purchases. Older consumers also prefer buying at a franchised dealer whereas younger consumers tend to buy from friends, family and unknown private individuals. This may be caused by a high trust in the quality of a used car or the financial restrictions younger people are facing when buying a used car.

The loyalty of the used car buyer is highest in the segment that is buying from the franchised dealer. Friends and family, as well as independent car traders are rated significantly lower than current buying behavior would suggest. Almost 44% of the used car buyers still have to decide where to buy

their next used car. These research findings are in line with expectations. People tend to buy where they can find the desired used cars.

10.1.3 Purchasing criteria for used cars

When purchasing a used car, consumers first look at the purchase price of the car (78%). The general condition of the car (59%) and the kilometre reading (44%) are the most important qualitative criteria when purchasing a used car. The kilometre reading is more important than the brand and model of a car (44% vs. 19%).

Surprisingly, French consumers consider the kilometre reading as the most important qualitative criterion for buying a used car (66%). In our interviews with professionals from the car sector most interlocutors mentioned that kilometre readings were less important to the French consumer. This survey proves that these opinions are wrong.

German used car buyers find the kilometre reading less important when buying a used car (29%).

10.1.4 Trust in the kilometre reading

As an important purchasing criterion, the kilometre reading plays an important role. But if the kilometre reading is important, can you trust the kilometre reading as a customer?

Cars younger than 4 years old

Only 66% of all consumers interviewed trust the kilometre readings, 13% explicitly distrust the kilometre readings of used cars younger than 4 years that are for sale. Consumers in Germany (19%) and Luxembourg (25%) are the most distrustful of kilometre readings. Consumers in Belgium and the Netherlands have greater trust .

Cars older than 4 years old

When cars become older (older than 4 years old), the distrust in the kilometre readings grows significantly. 39% of all used car buyers distrust the kilometre reading of a used car older than 4 years old. Again Belgium and the Netherlands are an exception to this trend. The distrust does grow, but significantly lower than in the other countries within the scope.

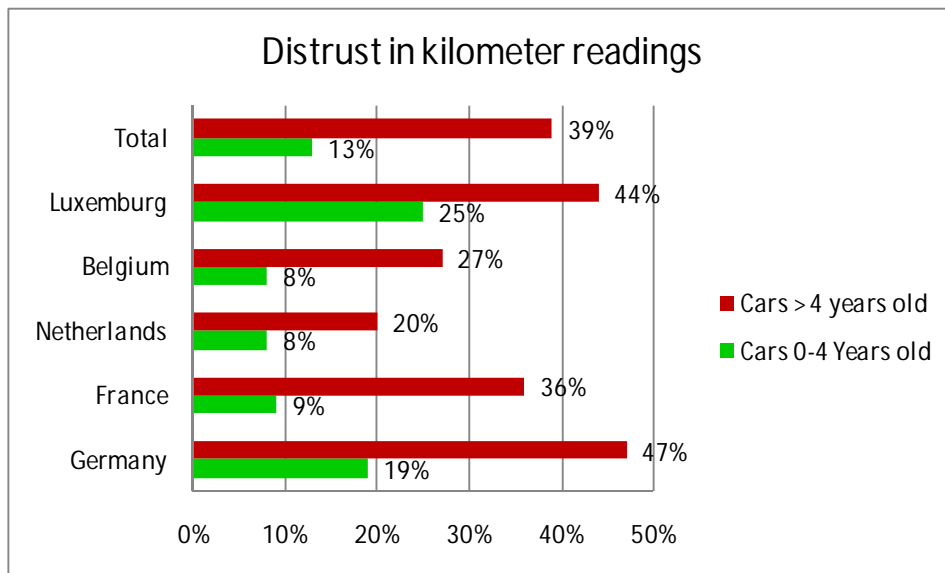


Figure 10-3: Distrusting in the kilometre readings

10.1.5 Perception and experience of mileage fraud

Although mileage fraud is not on the agenda of many governments, the problem of mileage fraud is on the agenda of the consumers. On average 46% of the used car buyers perceive mileage fraud as a problem. There are hardly any consumers who deny the mileage fraud problem. If we take into account that on average 5% of all used car buyers have experienced mileage fraud when buying a used car with a clocked mileage, the distrust of consumers is fair and realistic.

The differences between the countries are significant as well. In Germany only 3% of the interviewees said they had experienced mileage fraud. In Luxembourg 14% of all interviewees were aware they had been victims of mileage fraud by buying a clocked used vehicle.

10.1.6 Strategies to avoid mileage fraud

The most common way of trying to avoid mileage fraud is buying from reputable franchised dealers and traders. On average 46% of all used car buyers build their trust on the retailer. In Luxembourg only 22% trust the dealer or trader. The second strategy for avoiding mileage fraud is buying cars with a Full Service History. Only in Belgium and the Netherlands do the consumers actively check the mileage certificate (37% in Belgium and 24% in the Netherlands). Buying a new car as an alternative is no option to the used car buyers (only 3% contemplate buying a new car).

All those interviewed were also questioned on the helpfulness of a central mileage registration database. An overwhelming majority of 61% support the idea of a Car-Pass-like central database.

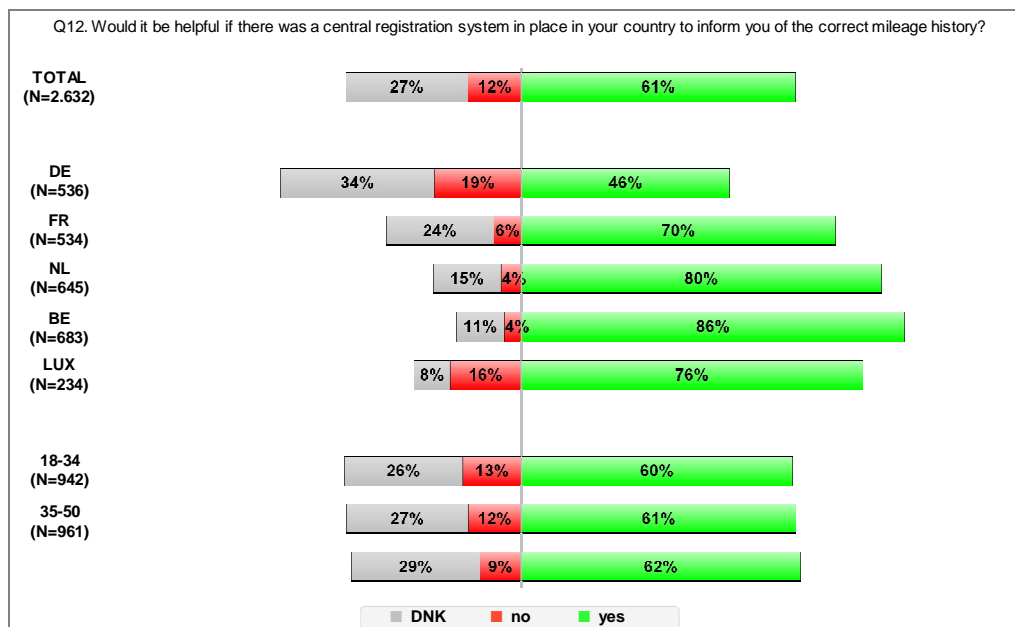


Figure 10-4: A central database in your country

10.2 Conclusions

When buying a used car, the buyer looks at a number of things, but the general condition of the car and the mileage reading are the most important qualitative criteria he/she applies. Overall, there is rather solid trust in the mileage reading for cars younger than 4 years (13% distrust the mileage reading). When the car gets older, however, the distrust in the mileage reading grows significantly to 39%. Consumers try to avoid mileage fraud in the same way as used car retailers. They search for a retailer that can be trusted or for used cars with a Full Service History.

The majority of all interviewees see a central mileage registration database as a possible effective solution for mileage fraud. Mileage fraud is clearly perceived as a real problem.

Another important outcome of this consumer survey is the confirmation of our estimates of the probability of mileage fraud taking place. But we also have to put the survey outcomes into perspective. If we consider that 5% of all used car consumers are aware of having experienced mileage fraud, the real number of tampered used cars is much higher than the discovered 5%²⁹.

²⁹ Imagine a situation where 5% of all credit card payments would be fraudulent: nobody would use credit cards anymore.

11 Overall conclusions and recommendations

The effects of mileage fraud are generally underestimated by automotive professionals, consumers and politicians. Mileage fraud directly harms the European consumer as well as leasing companies, used car traders and franchised dealers. Even governments may be impacted negatively by mileage fraud.

Odometer tampering has become a commodity service with a relatively low price. By tampering odometers, used car prices are manipulated upwards. This makes the realization of illegal profits easily achievable. Moreover, mileage fraud thrives because of the quantitative and qualitative imbalance between supply and demand in the European used car market.

Consumers have little means to verify kilometre readings. Industry and governmental commitment to stamping out mileage fraud is the only way to create a level playing field where consumers can trust the used cars that are on offer.

11.1 Conclusions drawn from the study and the consumer survey

11.1.1 Cost of odometer tampering

- In the low probability scenario (5% of used cars affected by mileage tampering), the total cost of mileage fraud is close to 1,42 billion euro in both depreciation and extra repair costs for Germany, Luxembourg, France and the Netherlands.
- In the high probability scenario (12% of used cars affected by mileage tampering), the total cost of mileage fraud in these countries is over 2,8 billion euro.
- With the international used car market still growing, these figures will likely rise rather than drop in the future
- These figures also represent the potential savings to be made by consumers in Germany, Luxembourg, France and the Netherlands if the Belgian model for rooting out mileage fraud was also applied to these countries.

11.1.2 The Car-Pass model and its results

- By eradicating mileage fraud, Car-Pass has cleaned up the Belgian used car market and put an end to consumers becoming victims of mileage fraud.
- The simplicity of the Car-Pass structure and its comprehensive operations model have had as a result that only 0,2% of all domestic (Belgian) registrations still show a tampered odometer - a vast improvement from the 8,6% figure back in 2006 (excluding imported cars for which no mileage history is available).
- Collecting multiple sourced mileage readings, and distributing them among consumers, is therefore a tried and tested route to create transparency about the actual driven mileage of a used car and thus to eradicate mileage fraud altogether.
- In Belgium, consumers are genuinely protected against accidentally buying a used car with a tampered odometer. The low cost of the Car-Pass mileage certificate of 6,35 euro is no barrier during the car purchase process and provides sufficient funding to operate the system.
- Critical success factors have been the collaborative effort and long-term commitment of all Belgian automotive stakeholders together with support from the government and a legislative framework. A collaborative approach between public and private stakeholders has been established through the Car-Pass organization.
- In addition, the awareness of Car-Pass among Belgian consumers has created a demand for cars with a trustworthy mileage and improved the image of the used car sector.
- Automotive professionals are satisfied with the results of Car-Pass. Every honest used car retailer currently competes with other retailers on a fair and equitable basis. In the past, honest retailers had to compete with dishonest retailers.
- One important concern remains, however: Imported cars with tampered odometers are "contaminating" Belgium's car market. But perhaps more importantly, they also distort competition in the European used car market and more generally the smooth functioning of the European single market in this sector.
- Car-Pass is seeking a pan-European approach to eradicating mileage fraud. If no such initiative is taken, the Belgian used car market risks becoming isolated. Consumers across Europe as well as honest retailers deserve a more comprehensive European system that delivers the same benefits as those enjoyed today by consumers and traders in Belgium.

11.1.3 Used car market, economic impact and pricing mechanism

- The used car market itself is not balanced. The natural supply of used cars does not always correspond to the demand by domestic consumers. One would therefore expect respectable significant volume of cross border transactions, but in reality these volumes are relatively low. The main barriers that hinder a true European used car market, according to traders themselves, are the (1) uncertainties about car history, and (2) above all doubtful odometer readings. As a result, honest used car traders focus on the domestic supply to source used cars.
- Many exported cars go to Central and Eastern European countries. These markets have a high used car demand but lack domestic supply. The absence of any trustworthy system of mileage verification is mentioned as a key driver for the widespread use of this practice in cars destined for these countries
- The combined used car markets of Germany, Belgium, the Netherlands, France and Luxembourg generate an annual turnover of 180 billion euro.
- Other key figures, from across the markets of the study, illustrate the economic impact of the used car sector:
 - The number of used car transactions per year, is close to 21,4 million³⁰.
 - The indirect turnover for used cars, due to sales preparation by the service departments of car retailers represents just over 3,0 billion euro annually.
 - Around 120.000 companies are directly involved in the sale of used cars.
 - Around 100.000 people (FTE)³¹ are involved in the buying, selling and sales preparation of used cars across these countries.
- The used car market is increasingly European, but used car flows do not automatically go from low value countries to high value countries; there are also flows of cars in the opposite direction. There is no single European used car buyer profile, and market needs are different in every country.
- There is still excess supply of certain cars and excess demand for other cars. Odometer tampering has become a “clearing instrument” that can ‘optically’ bring supply into line with existing needs of consumers across the EU and beyond.

³⁰ During 2009, without trade-in volumes

³¹ FTE: Full Time Employee

- On top of the differences between supply and demand within each country, currency fluctuations also influence cross border sales of used cars. Again, odometer tampering is used as a “clearing instrument” to keep up used car trading volumes..

11.1.4 Distribution channel and value chain of used cars:

- Mileage fraud and its effect on the value chain, may take place in every car segment. Mileage- and car history checks have become a standard routine, none of the interviewed retailers realized how much time and money it takes to check a car’s history.
- Honest retailers also face a situation of asymmetric information. Only by applying car history checks, can they reduce their risks of buying tampered cars. To minimize the risk of buying clocked cars they indulge in supplier selection and qualification, creating self-imposed trading obstacles.
- By doing so, many realize that mileage fraud limits their used car business. Used car offers from unknown suppliers are not evaluated properly. The costs of possible mileage fraud in the value chain of used cars are search costs, but also missed revenues due to a lack of supply to offer the consumer.
- The total B2C market in Germany, France, Luxembourg, Belgium, and the Netherlands combined is 7,03 million cars per year. Calculating with only 10 minutes of history checking, at an hourly cost of 24 euro, the search costs for the used car distribution channel is over 28,1 million euro.

11.1.5 Mileage fraud and the used car distribution channel

- Whenever odometer tampering takes place, it only pays off at the moment of ownership change. A group of people that deliberately manipulate odometers for their benefit hurt honest stakeholders.
- Whichever link in the distribution channel of used cars is causing the problem is irrelevant to the consumer. In any case consumers are insufficiently protected in Europe.
- If the used car trade is not made more transparent, we expect that in future a growing flow of used cars between European countries will cause many problems due to odometer tampering.
- The history of a used car crossing national borders is currently almost impossible to trace. Legal prosecution for mileage fraud is not likely to happen and this impunity triggers mileage fraud to a high extent.

- Unfortunately, it is the consumer who is paying the price for this situation. He faces accelerated depreciation because the car's economic life ends earlier than expected. Higher maintenance and repair costs are a costly side effect of the non-discovered odometer tampering.

11.1.6 Additional effects of asymmetric information

- Next to the cost involved, there is also the limitation of trade development, as checking the mileage history is often impossible. This creates an imbalance between supply and demand.
- When used cars are tampered with, there is a big chance that the cars do not receive the service and maintenance they require. This may lead to an increased chance of safety risks, breakdowns and accidents.
- Normal wear and tear not only increases the costs of maintenance and repairs. When clocked used cars do not receive the necessary maintenance, car emissions may increase as well due to the neglected adjustments and replacement of maintenance parts.
- Research in the Netherlands showed that mileage fraud does not only hurt the buyer of a used car. People acting fraudulently are often involved in other criminal activities as well.

11.1.7 Consumer perception of mileage fraud

- Of the interviewed consumers, 5% had experienced mileage fraud themselves. They said mileage fraud is a problem that increases with the age of a used car.
- When buying a used car, buyers want to rely on the kilometre reading as a signal of the quality of a used car. But they do not trust these kilometre readings.
- A majority of consumers believe in the necessity for a central registration system for kilometre readings.

11.2 Recommendations

Having completed this study and consumer survey we are convinced of the strengths of the Car-Pass model in combating mileage fraud in Europe. Its operational approach and IT-platform, as well as the principles the model stands for, are convincing. We have formulated some recommendations accordingly.

11.2.1 Prevention is better than prosecution

Mileage fraud has become a commodity service in the market. If combating mileage fraud becomes a priority, prosecuting suspected offenders is the only real option. This would mean catching the suspect first. It seems unlikely that governments have enough resources to successfully stamp out mileage fraud through prosecution.

A platform that sets out new rules of behaviour for all stakeholders in the distribution channel of used cars is considerably easier and cheaper to realize. Given the broad range of 'registration moments' and number of parties involved in the Car-Pass model it is pointless to try and deceive the system. The car's complete mileage history is known and anomalies become quickly apparent.

11.2.2 Central Registration of mileage readings

With the technical knowledge widely available, mechanical or electronic barriers do not hinder mileage fraud. A technical solution to mileage fraud is not realistic. A system based on the collection of mileage registrations is the next best alternative and is considered a practical and effective solution by consumers.

Car-Pass in Belgium has proven that central mileage registration can be implemented successfully if all stakeholders in the automotive sector work together and see the benefit. Mileage readings need to be provided by many different, independent sources as it is not sufficient for the official dealer network or technical inspection centres to provide data. Setting up a mandatory mileage registration platform appears to be the most cost-effective and easy to implement solution to protect consumers. The market will not rid itself of mileage fraud without compulsory regulation or legislation. There are too many interests at stake throughout the value chain for all stakeholders to co-operate on a voluntary basis.

If we consider the costs of a mileage registration platform like Car-Pass and its possible benefits, the costs of the platform are only a fraction of the savings that could be realized.

11.2.3 Cross border exchange of mileage information

Cross border transactions trigger mileage manipulation and fraud because of the low chances of prosecution and a low level of traceability. Supplies of tampered used cars are contaminating the domestic car markets and halting this should be a priority. There are two possible scenarios:

- One central European mileage readings database.
- Decentralised mileage registrations and mileage readings exchange on request per Member State

Creating one central European mileage readings registration database would seem difficult if we consider the factors that made the Car-Pass model successful. The Car-Pass model is based on the extensive co-operation of the

domestic automotive sector in Belgium. A central European system might be considered too far removed from the practitioners on the ground.

Decentralised mileage registration would seem a more viable solution. If every platform adopted the Vehicle Identification Number (VIN) as the basis of their system, data exchange is easy to realize when importing a used car. Current technological solutions make importing and exporting mileage histories just as easy as importing and exporting used cars.

11.2.4 Public solution versus private solutions

Currently a number of privately owned companies collect car history data to sell to stakeholders in the automotive industry. Could this also be a way of addressing mileage fraud? If stamping out mileage fraud is considered a public policy objective - to protect consumers and ensure a fluid and undistorted functioning of Europe's single market - then the only solution can be a comprehensive system covering all cars registered and including a minimum number of mileage readings for each vehicle. Private operators are unlikely to ever achieve the same level of coverage and accuracy as they would probably need to incur significant costs. These would in turn be passed on to the users of the data. Moreover, a private database operator would want to maximize its profit, through the price of the mileage certificates and/or the use - i.e. sell - the data for other purposes than mileage fraud prevention (suffice it to say that the Belgian Car-Pass system has been built to eradicate fraud and is managed by a non-profit organisation). This could also raise privacy concerns: a system that registers other data than just the VIN and mileage readings with corresponding dates but also contains additional technical as well as more personal information is much more likely to be in conflict with data protection legislation. One potential problem arising from privately gathered mileage history data is the "prisoner's dilemma". An example:

One interviewed car manufacturer refuses to share its mileage history with any privately owned firm. If this manufacturer did share this data, its mileage information could potentially be sold to an insurance company. This insurance company could scan its customer base and filter out those customers that pay too little in insurance premiums based on

their real yearly mileage. By supplying the mileage information to a private company, the manufacturer may create competitive disadvantages for itself. If other manufacturers do not share their mileage data, the yearly insurance costs of their customers could be lower than those of the mileage-sharing manufacturer.

This is not to say that there is no role for private companies. Indeed there is a demand for vehicle history data beyond a car's mileage, for various purposes, which a system like Car-Pass is not designed to satisfy. A mandatory mileage history database and private offerings of - perhaps tailor-made - car histories can be perfectly complementary.

A public body gathering mileage history data - supported by a legal framework - creates a level playing field for all stakeholders.

11.2.5 Document inspections of imported used cars

As we have seen, in the used car market, mileage fraud is more likely to take place with imported used cars than with domestically traded cars. Given most countries require an administrative inspection that focuses on the required vehicle documents, this could be the ideal moment to register the import mileage and to download the history from the database in the country of origin. As soon as used car stakeholders are convinced that the cars they buy can be trusted, used car trade will grow accordingly and balance supply and demand.

11.2.6 Expanding into motorcycles and trucks

Expanding the Car-Pass business model to motorcycles and trucks should be seriously considered. Both in Belgium and the rest of Europe mileage fraud with trucks has also developed. We cannot find any reason why motorcycles would be an exception, but it is a fact that motorcycle kilometre readings are harder to come by as a lot of bikers service their vehicle themselves. There is currently no PTI for motorcycles in the EU. During our interviews, both segments were mentioned as possible areas to expand the Car-Pass registration model.

11.2.7 Upfront availability of data

The used car sector in Belgium currently incurs internal costs when verifying the mileage history of a used car, for example during a transaction between professionals. The historical mileage data is available in the database and should be made more widely available for all stakeholders, before and during their transaction decision. This would also further increase the acceptance and collaboration with Car-Pass among the stakeholders, as well as increasing the feed of mileage.

11.3 Role of Periodic Technical Inspections

In most countries, the first time that a car undergoes the mandatory Periodic Technical Inspection is after 3 to 4 years. Considering the development of less frequent regular maintenance intervals, we consider this period to be too long, particularly in the corporate cars segment. Building a mileage registration database based solely on the precise time of the periodic technical inspection is unwise. Many opportunities for mileage fraud have been identified in the first 3-4 years of a car's history. Cooperation with leasing companies is important as well. Although leasing companies do benefit from mileage fraud with exported used cars, their long-term and strategic objective must be to act in the interests of a fair used car market.

12 Attachments

12.1 Contributors & interviewed automotive professionals

<u>Belgium</u>	Car-Pass	Mr. M. Peelman
	Cardoen	Mr. K. Cardoen
		Mr. B. Pollet
	VAB	Mrs. C. Bovyn
		Mr. G. Popelier
	Touring	Mr. M. Leeman
		Mr. K. van Coillie
		Mr. T. Willemarck
	Stellimo	Mr. S. Lismont
	Cars on the Web	Mr. J. Meyssen
	Autoscout24	Mr. V. Hancart
	Federauto	Mr. P. Pirson
		Mr. B. Lycke
		Mr. J. Reniers
	Arval	Mr. S. Verwilghen
GOCA	Mr. J. Cobbaut	
Soco	Mr. S. Gathon	
Proxicar	Mr. M. Paquet	
Autovlan	Mr. W. Wuyts	
Concentra	Mr. A. Serdon	
<u>France</u>	Le Journal de l'Automobile	Mr. J. Abbou
		Mr. F. Schiettecatte
	CNPA	Mrs. D. Moreau
	Athlon Car Lease	Mr. F. Vantal
	AutoK7	Mr. P. Mercier
	AB Intermediaires	Mr. L. Lafleur
	EurotaxGlass	Mr. D. Allain
	40milliondautomobilistes	Mr. L. Hecquet
	Ford Dealer Association	Mr. C. Digoïn
	Cars on the Web	Mr. J. Lagrange
	Arval	Mr. P. Courlet
	SNVLD	Mr. D. Regal
	Automarché	Mr. J. Abbou
	CarFax	Mr. C. Imbert
	Citroën France	Mr. L. Didenot
<u>Germany</u>	AVAG Holding AG	Mr. G. Cibis
	ADAC	Mr. A. Thiemel
	GW-Trends	Mr. M. Endlein
	DEKRA	Mr. N. Kühnl
	BvfK	Mr. A. Klein
	KIA Europe	Mr. F. Greco
	Ford of Europe	Mr. J. Herzog
<u>Netherlands</u>	VNA	Mrs. R. Hemerik
	BOVAG	Mr. A. Koopman
		Mr. H. Bresser
	Meure	Mr. J. Meure
	NAP	Mr. M. Huisman
	RAI	Mr. W. de Geus
	FleetSelect	Mr. E. van der Hout
		Mr. J. Geelen
	Eukaris/RDW	Mr. H. van der Bruggen
	Autoscout24	Mr. J. Vuchs
Autotrader	Mr. J.W. Kleinjan	

	BCA Kronenbug Consultancy	Mr. O. Thermolen Mr. I. Aukema Mr. E. Uildriks
<u>Luxembourg</u>	Autopolis SNCT	Mr. A. Schmit Mr. C. Gonderinger
<u>Czech Republic</u>	AAA Auto Cebia LeasePlan Business Lease	Mr. R. Howie Mr. M. Emes Mr. Vlastimil Fric Mr. M. Mitterwald Mr. P. Macek
<u>European organisations</u>	EurotaxGlass Europe FIA CECRA Leaseurope	Mr. S. Schlick Mrs. C. Ofoegbu Mr. C. de Marcilly Mrs. R. Soetaert Mr. V. Rupied Mr. R. Knubben

12.2 The monetary costs of mileage fraud

The scenario for Belgium, without a Car-Pass model, and with both scenario's low scenario 5% and high scenario 12%.

Belgium		Increased Depreciation				Domestic & import	
Segment	Split	Low scenario		High Scenario		(#)	
		(#)		(#)			
Small	45,1%	21.858	€20.816.292	41.358	€36.416.393	610	€510.206
Medium	44,7%	21.664	€36.668.376	40.991	€60.498.784	605	€811.847
Exec.	10,2%	4.919	€14.207.912	9.308	€22.107.409	137	€282.803
Total	100,0%	48.441	€71.692.580	91.657	€119.022.585	1.352	€1.604.855
Increased maintenance & repair costs							
Small	45,1%	21.858	€7.151.968	41.358	€13.002.006	610	€186.966
Medium	44,7%	21.664	€18.605.440	40.991	€33.100.822	605	€469.164
Exec.	10,2%	4.919	€5.230.272	9.308	€9.180.020	137	€128.910
Total	100,0%	48.441	€30.987.679	91.657	€55.282.848	1.352	€785.041
Total			€102.680.259		€174.305.433		€2.389.896

When the Car-Pass model is applied to the import:

Belgium (present)			
Segment	Split	Increased Depreciation	
		(#)	
Small	45,1%	8.486	€10.119.080
Medium	44,7%	8.411	€20.327.525
Exec.	10,2%	1.910	€8.791.114
Total	100,0%	18.807	€39.237.719
Increased maintenance & repair costs			
Small	45,1%	8.486	€3.140.514
Medium	44,7%	8.411	€8.665.749
Exec.	10,2%	1.910	€2.521.873
Total	100,0%	18.807	€14.328.136
Total			€53.565.855

The monetary costs of mileage fraud in the low risk scenario (5%), the high risk scenario (12%), and the costs of mileage fraud when the Car-Pass model is applied.

Netherlands		Increased Depreciation				Car-Pass model applied	
Segment	Split	Low scenario		High Scenario		(#)	
		(#)		(#)			
Small	45,1%	46.763	€41.400.830	98.932	€83.135.840	1.554	€1.256.918
Medium	44,7%	46.349	€69.077.851	98.055	€132.831.433	1.540	€1.952.509
Exec.	10,2%	10.524	€25.358.020	22.265	€46.491.574	350	€660.919
Total	100,0%	103.637	€135.836.702	219.252	€262.458.847	3.444	€3.870.345
Increased maintenance & repair costs							
Small	45,1%	46.763	€14.741.554	98.932	€30.392.183	1.554	€470.911
Medium	44,7%	46.349	€37.586.302	98.055	€76.365.853	1.540	€1.173.898
Exec.	10,2%	10.524	€10.434.061	22.265	€21.000.838	350	€321.150
Total	100,0%	103.637	€62.761.917	219.252	€127.758.874	3.444	€1.965.959
Total			€198.598.619		€390.217.721		€5.836.304

France		Increased Depreciation				Car-Pass model applied	
		Low scenario		High Scenario			
Segment	Split	(#)		(#)		(#)	
Small	45,1%	126.369	€107.543.978	281.789	€231.880.023	4.543	€3.677.342
Medium	44,7%	125.248	€154.430.859	279.290	€344.364.161	4.503	€5.551.761
Exec.	10,2%	28.440	€61.558.849	63.418	€124.519.479	1.022	€1.909.455
Total	100,0%	280.057	€323.533.686	624.497	€700.763.663	10.068	€11.138.557
Increased maintenance & repair costs							
Small	45,1%	126.369	€39.062.244	281.789	€85.688.261	4.543	€1.370.558
Medium	44,7%	125.248	€98.501.548	279.290	€214.032.753	4.503	€3.407.420
Exec.	10,2%	28.440	€27.151.025	63.418	€58.631.340	1.022	€930.538
Total	100,0%	280.057	€164.714.816	624.497	€358.352.354	10.068	€5.708.516
Total			€488.248.502		€1.059.116.017		€16.847.074

Germany		Increased Depreciation				Car-Pass model applied	
		Low scenario		High Scenario			
Segment	Split	(#)		(#)		(#)	
Small	45,1%	165.072	€149.749.697	337.198	€287.450.966	5.199	€4.276.933
Medium	44,7%	163.608	€254.626.560	334.208	€464.976.316	5.153	€6.705.838
Exec.	10,2%	37.150	€95.311.484	75.888	€165.039.926	1.170	€2.295.611
Total	100,0%	365.830	€499.687.742	747.295	€917.467.207	11.521	€13.278.382
Increased maintenance & repair costs							
Small	45,1%	165.072	€52.680.882	337.198	€104.318.857	5.199	€1.580.681
Medium	44,7%	163.608	€135.231.066	334.208	€263.181.039	5.153	€3.947.968
Exec.	10,2%	37.150	€37.701.424	75.888	€72.565.645	1.170	€1.081.443
Total	100,0%	365.830	€225.613.372	747.295	€440.065.541	11.521	€6.610.093
Total			€725.301.114		€1.357.532.748		€19.888.475

Luxembourg		Increased Depreciation				Car-Pass model applied	
		Low scenario		High Scenario			
Segment	Split	(#)		(#)		(#)	
Small	45,1%	2.112	€2.310.646	3.000	€3.021.097	35	€32.320
Medium	44,7%	2.094	€4.437.465	2.974	€5.522.736	35	€55.423
Exec.	10,2%	475	€1.853.619	675	€2.213.374	8	€20.923
Total	100,0%	4.681	€8.601.730	6.649	€10.757.208	78	€108.666
Increased maintenance & repair costs							
Small	45,1%	2.112	€744.556	3.000	€1.010.975	35	€11.307
Medium	44,7%	2.094	€2.009.683	2.974	€2.669.824	35	€29.116
Exec.	10,2%	475	€577.542	675	€757.419	8	€8.133
Total	100,0%	4.681	€3.331.781	6.649	€4.438.218	78	€48.556
Total			€11.933.511		€15.195.426		€157.221

12.3 When the same parameters are applied to EU25

Both in a low scenario 5% and high scenario 12%, and when the Car-Pass model is applied throughout Europe (EU25).

Europe (EU25)		Increased Depreciation				Car-Pass model applied	
Segment	Split	Low scenario		High Scenario		Car-Pass model applied	
		(#)		(#)		(#)	
Small	45,1%	1.201.520	€1.141.801.495	2.281.698	€2.005.943.811	33.729	€28.186.827
Medium	44,7%	1.190.864	€2.008.268.869	2.261.461	€3.328.315.714	33.430	€44.818.146
Exec.	10,2%	270.409	€777.033.342	513.509	€1.214.613.167	7.591	€15.598.790
Total	100,0%	2.662.793	€3.927.103.706	5.056.668	€6.548.872.692	74.749	€88.603.762
Increased maintenance & repair costs							
Small	45,1%	1.201.520	€392.703.470	2.281.698	€716.756.838	33.729	€10.333.580
Medium	44,7%	1.190.864	€1.020.993.302	2.261.461	€1.823.941.504	33.430	€25.924.436
Exec.	10,2%	270.409	€286.912.475	513.509	€505.702.388	7.591	€7.122.033
Total	100,0%	2.662.793	€1.700.609.247	5.056.668	€3.046.400.730	74.749	€43.380.049
Total			€5.627.712.953		€9.595.273.422		€131.983.812

12.4 Manipulations of yearly registrations Netherlands & Germany

	Netherlands	Germany
Registered car park	8.518.000	43.847.415
Estimated mileage fraud	5,0%	30,0%
Number of cars with tampered odometers	425.900	13.154.225
Yearly mutations (min)		
Scrappaged vehicles	279.860	3.899.582
Export volume	229.340	389.000
	509.200	4.288.582
Yearly mutations (+)		
Import	70.215	311.340
Registered new vehicles	438.985	3.977.242
	509.200	4.288.582
With a stable registered car park, and in order to sustain a 5% level of mileage fraud with used cars, a certain minimum volume of fraud is "required"		
Volume of used car transactions	1.722.694	5.763.560
Yearly-required cases of mileage fraud to maintain present mileage fraud levels	25.460	1.286.575
In percentage of the registration:	1,5%	22,3%

12.5 The economic value of the used car sector

Key figures Used Car Market (1)	Key figures Used Car Market (1)				Total	Europe (EU25)
	Belgium	Netherlands	France	Germany		
# used cars transactions (total)	1.460.261	2.899.464	7.652.730	9.225.240	125.125	63.114.383
Average sales price	€7.248	€8.144	€8.618	€8.590	€8.150	€8.150
Total transaction volume	€10.584.687.378	€23.613.924.870	€65.950.295.165	€79.244.811.600	€1.019.787.700	€514.391.778.399
Transactions B2B/Import/Export/B2C	1.200.050	2.139.464	4.952.730	6.755.240	105.147	55.927.580
Average transaction price	€7.248	€8.144	€8.618	€8.590	€8.150	€8.150
Total transaction turnover sector	€8.698.550.525	€17.424.303.995	€42.682.025.307	€58.027.511.600	€856.963.975	€455.818.245.760
# Car Dealers (involved in used cars)						
Official franchised retailers	1.691	2.693	5.150	18.250	52	82.239
Car dealers	5.716	3.359	16.500	20.050	180	135.326
Rest	4.000	8.350	15.500	18.500	350	137.971
Total	11.407	14.402	37.150	56.800	582	355.536
Key figures Used Car Market (2)						
B2B transactions for the sector	783.979	1.176.770	2.616.215	3.461.680	86.071	35.703.433
B2B used car sales (1Fte/cars)	250	250	280	300	250	250
# used car sales people	3.136	4.707	9.344	11.539	344	142.814
B2C transactions for the sector	416.071	962.694	2.336.515	3.293.560	19.076	20.224.147
B2C used car sales (1Fte/cars)	150	150	180	220	180	180
Average preparation cost	€400	€500	€400	€450	€450	€450
Hourly tariff	€45	€55	€50	€60	€50	€50
After sales (preparation)	€166.428.400	€481.347.000	€934.605.993	€1.482.102.000	€8.584.200	€9.100.866.138
Parts (50%)	€83.214.200	€240.673.500	€467.302.997	€741.051.000	€4.292.100	€4.550.433.069
Hours (50%)	€83.214.200	€240.673.500	€467.302.997	€741.051.000	€4.292.100	€4.550.433.069
Used car employment for the sector						
# used car sales people	5.910	11.125	22.324	26.510	450	255.170
Administration (1Fte/1.000 cars)	1.200	2.139	4.953	6.755	105	55.928
Mechanic (1Fte/1.407 hours)	1.314	3.110	6.643	8.778	61	64.683
Total	8.424	16.375	33.920	42.043	616	375.780

Table 12-1: Economic value of the used car sector

12.6 Cost/benefit ratio calculations for countries of the study

Cost	België	Netherlands	France	Germany	Luxembourg
Registered car park	5.736.384	8.518.000	36.380.000	43.847.415	354.314
Ratio registrations/vehicle	2,36	2,36	2,36	2,36	2,36
Total mileage registrations/year	13.537.866	20.102.480	85.856.800	103.479.899	836.181
Automated through	90%	90%	90%	90%	90%
Total automated registrations	12.184.080	18.092.232	77.271.120	93.131.909	752.563
Through use of fax	10%	10%	10%	10%	10%
Manual registrations	1.353.787	2.010.248	8.585.680	10.347.990	83.618
Time per registration (sec)	30	30	30	30	30
Hourly cost rate administrative	€25	€25	€25	€25	€25
Subtotal cost manual registrations	€282.039	€418.802	€1.788.683	€2.155.831	€17.420
Rectifying errors (estimated)	€282.039	€418.802	€1.788.683	€2.155.831	€17.420
Total cost manual registrations	€564.078	€837.603	€3.577.367	€4.311.662	€34.841
Number used car dealers	11.407	14.402	37.150	56.800	582
Alteration cost, euro 200/DMS	€2.281.400	€2.880.400	€7.430.000	€11.360.000	€116.400
Total cost	€2.845.478	€3.718.003	€11.007.367	€15.671.662	€151.241
Benefits					
Low scenario	100.290.363	192.762.315	471.401.428	705.412.639	11.776.290
High scenario	171.915.536	384.381.416	1.042.268.943	1.337.644.273	15.038.205
Low scenario cost/benefit ratio	0,028	0,019	0,023	0,022	0,013
High scenario cost/benefit ratio	0,017	0,010	0,011	0,012	0,010

12.7 Approach and result consumer survey

- Reference population and sample:
 - In this study, the survey sample consists of 4.823 car drivers in Belgium, Germany, France, Luxembourg, and the Netherlands. Out of these, 2.632 are « non-refractory to used cars » (that is to say, who may consider purchasing a used car for their next one). We mainly used this sample of « non-refractors » to used cars in this report.
 - The final sample has been weighted by the number of inhabitants in each surveyed country to obtain a more representative sample of car drivers' profile per studied country.
- Method of information collection:
 - The approach proposed by Car Pass was to work with partners in different countries bordering Belgium to recruit respondents. On top of that, Dedicated Research worked with a panel provider to increase the sample and make the analyzed sample more representative of car drivers' profile (note that for Luxembourg, there is no panel for Internet studies. As such, results collected in this

country only represent information provided through car drivers' associations).

- This was carried out on the Internet in a self-administrated mode (CAWI: Computer Assisted Web Interviewing) and conducted between 29 April and 19 August 2010.
- The average duration of administration of the questionnaire was about 6 minutes.
- The questionnaire was submitted for approval to Car Pass.
- The survey was conducted in strict compliance with EMROS quality standards (EFAMRO Market Research Quality Standards), standards according to which Dedicated Research is certified, as well as ESOMAR Code of Conduct.

<u>Age:</u>	TOTAL (weighted*)		TOTAL (not weighted)		Next car new		Next car used		Margin of er- ror**
▪ 18 - 34 years old	1.965	41%	1.545	32%	603	28%	942	36%	-
▪ 35 - 50 years old	1.721	36%	1.774	37%	813	37%	961	37%	-
▪ 51 years & older	1.101	23%	1.439	30%	745	34%	694	26%	-
○ not specified	37	1%	65	1%	30	1%	35	1%	-
Sex:									
- man	2.100	44%	2.431	50%	1.132	52%	1.299	49%	-
- woman	2.723	56%	2.392	50%	1.059	48%	1.333	51%	-
Country:									
- Germany	2.256	47%	924	19%	388	18%	536	20%	3.2%
- France	1.804	37%	866	18%	332	15%	534	20%	3.3%
- the Netherlands	455	9%	890	18%	245	11%	645	25%	3.2%
- Belgium	294	6%	1.721	36%	1.038	47%	683	26%	2.3%
- Luxembourg	14	0%	422	9%	188	9%	234	9%	4.7%
Total	4.823		4.823		2.191		2.632		-

* data weighting in function of the number of inhabitants per studied country.

** maximum margin of error, this is to say for the observed frequencies close to 50%

Table 12-2: Description table of the sample

Results are sorted on the following criteria:

- **Country*:**
 - Germany (20%),
 - France (20%),
 - the Netherlands (25%)
 - Belgium (26%)
 - Luxembourg (9%)

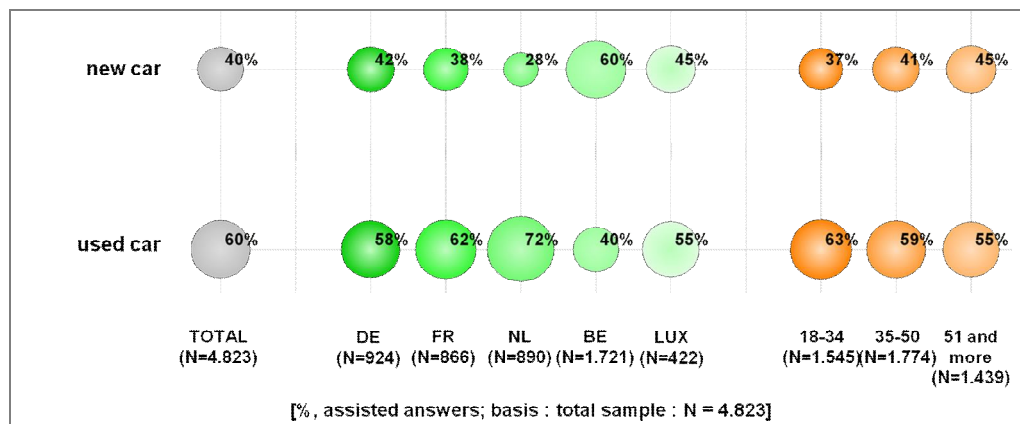
- **Age:**
 - between 18 and 34 years old (36%)
 - between 35 and 50 years old (37%)
 - 51 years, and older (26%)
 - not specified** (1%)

* The number of respondents per country has been weighted in function of the number of inhabitants per analyzed country in order to have a better representation of each country's used car drivers' profile.

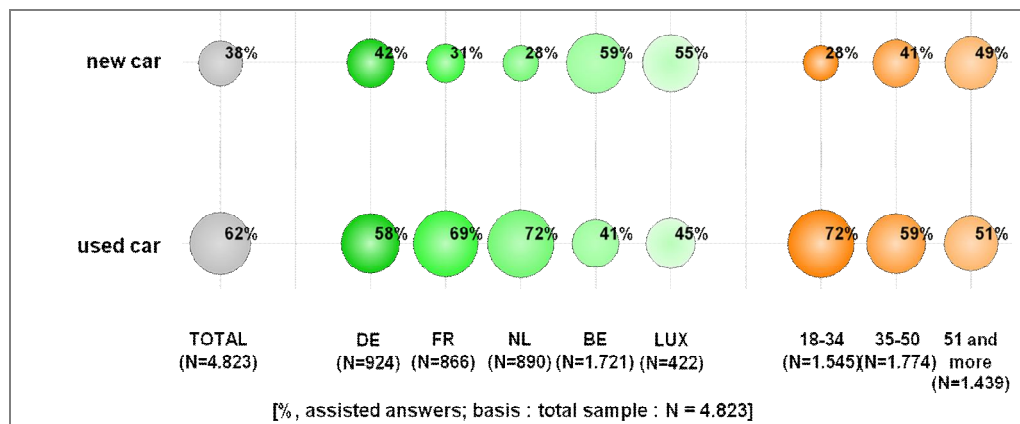
** We will not analyze these respondents in the following report as it is not possible to split them accordingly to the different analyzed profiles.

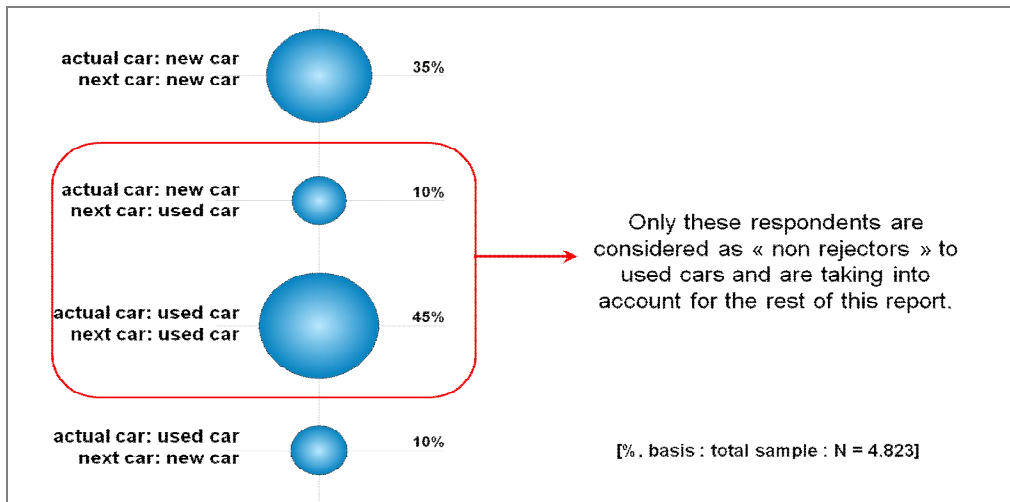
12.7.1 Result of the Consumer survey

1. The car you are currently driving, was it purchased as a used car?

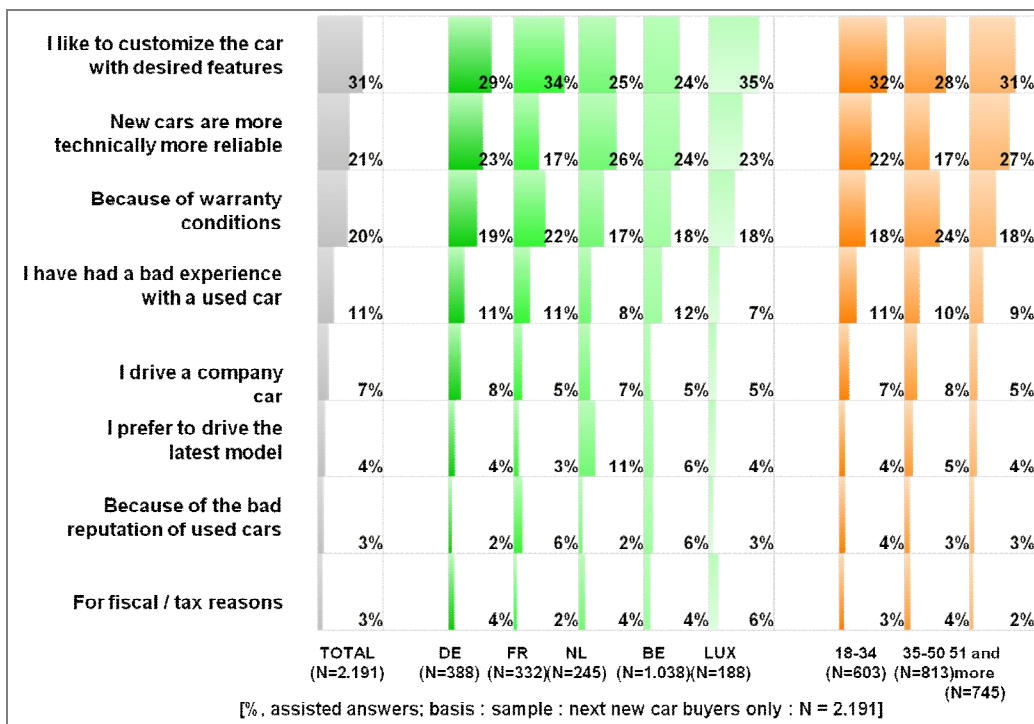


2. Your next car, will it be a new or a used car?

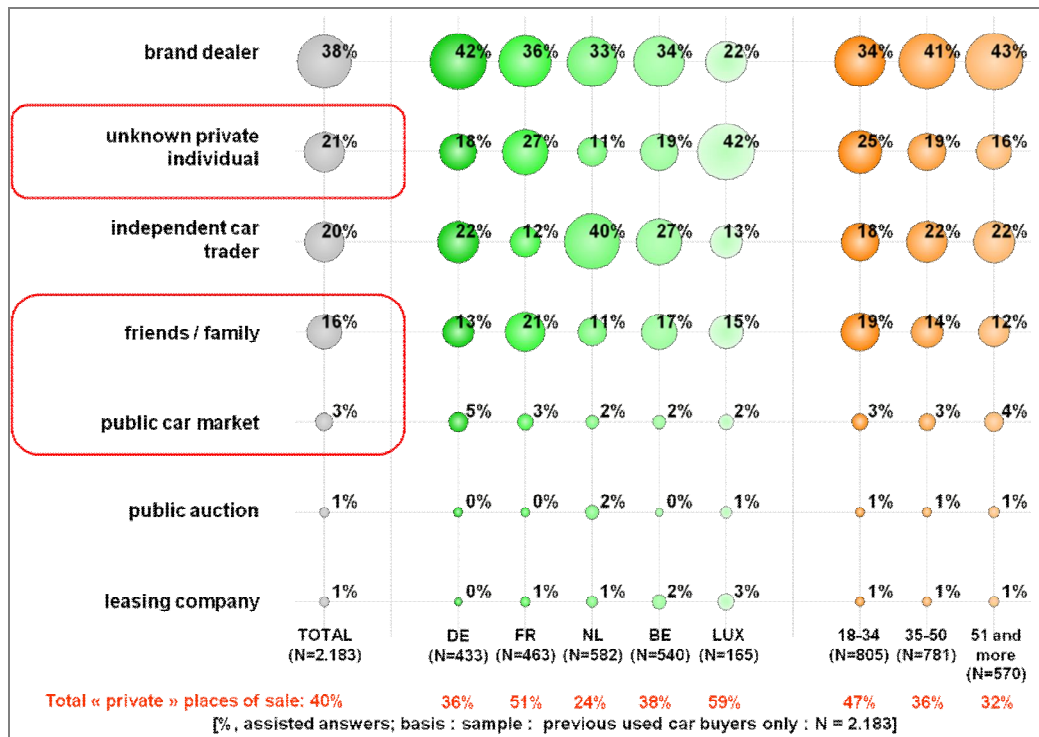




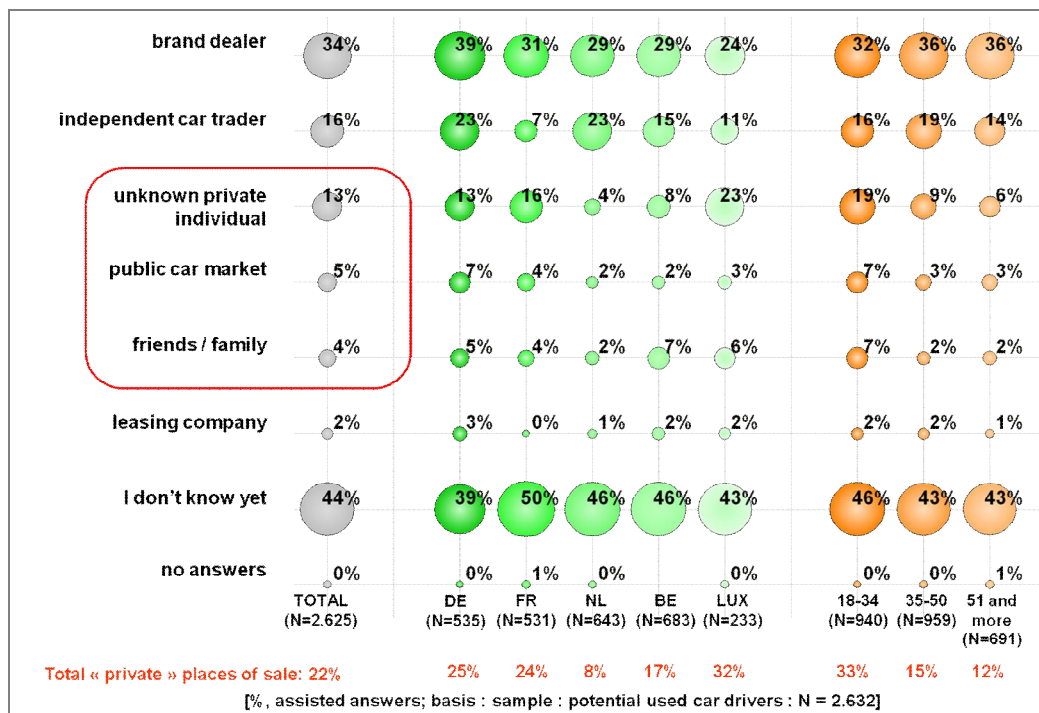
3. For new car buyers, why are you not buying a used car?



4. For used car buyers, where did you buy your used car?



5. From which source would you buy your next used car?



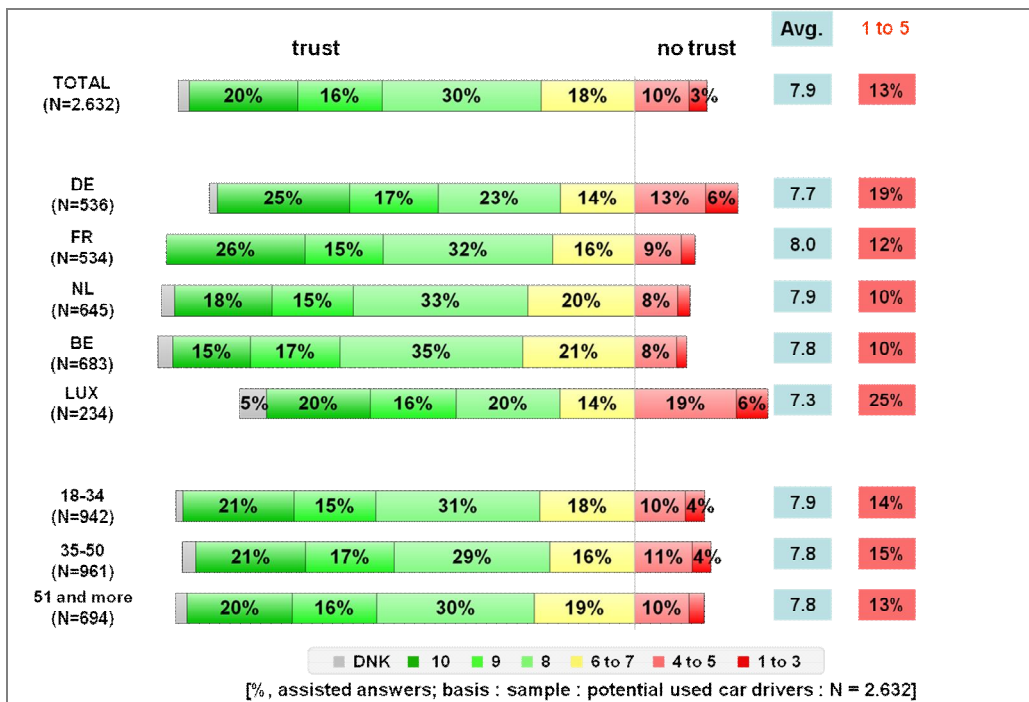
6. Can you indicate the 3 most important criteria you consider while purchasing a used car?

the purchase price of the car	78%	78%	83%	71%	68%	54%	81%	81%	69%
general condition of the car	59%	61%	58%	53%	56%	62%	65%	54%	53%
the kilometer reading of the car	44%	29%	66%	34%	41%	40%	48%	45%	36%
brand and model of the car	19%	19%	17%	24%	18%	31%	18%	19%	22%
the age of the car	17%	21%	10%	23%	21%	21%	15%	17%	20%
expected reliability of the car	17%	16%	16%	23%	14%	8%	15%	17%	21%
the fuel consumption of the car	12%	16%	9%	9%	6%	5%	11%	12%	14%
car is accident free	9%	13%	6%	3%	12%	16%	9%	9%	11%
low maintenance and usage cost	8%	10%	4%	12%	7%	3%	5%	9%	10%
trustworthiness of the salesperson	5%	5%	3%	6%	14%	7%	2%	6%	8%
reliable repair and maintenance history	4%	3%	5%	4%	7%	14%	4%	3%	6%
available safety features (ABS, airbags)	4%	6%	2%	4%	3%	6%	3%	3%	7%
practical interior use and spaciousness	4%	4%	2%	7%	4%	3%	3%	5%	4%
comfort features	3%	2%	4%	6%	5%	4%	3%	4%	2%
low exhaust emissions	3%	4%	1%	2%	1%	2%	1%	4%	5%
design of the car	2%	2%	3%	4%	2%	4%	4%	1%	1%
performance of the car	2%	2%	1%	5%	1%	4%	3%	2%	1%
warranty period	2%	1%	2%	3%	6%	1%	1%	1%	3%
options available on the car (luxury)	1%		2%	2%	2%	3%	2%	1%	1%
information on the previous owner	0%	0%		1%	2%	1%	0%	0%	1%
I don't know	1%	2%	0%	0%	1%	0%	1%	1%	1%
TOTAL (N=2.632)		DE (N=536)	FR (N=534)	NL (N=645)	BE (N=683)	LUX (N=234)	18-34 (N=942)	35-50 (N=961)	51 and more (N=694)

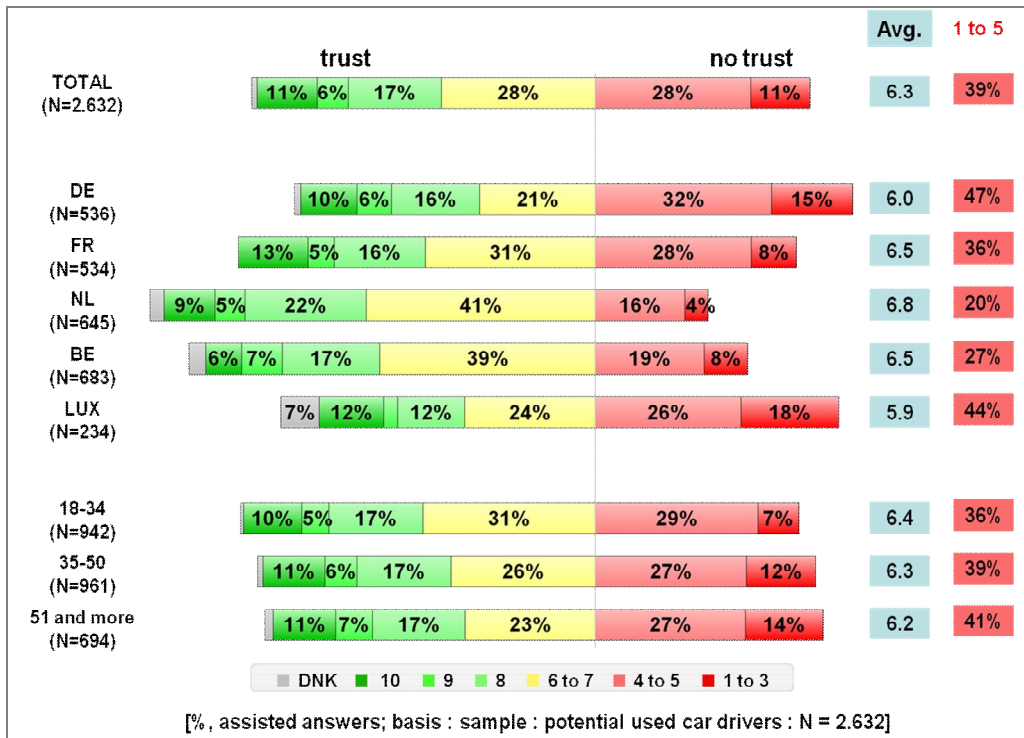
[%, assisted answers; basis : sample : potential used car drivers : N = 2.632]

7. Do you trust the kilometre reading when you want to purchase a used car?

a. Cars <4 years:

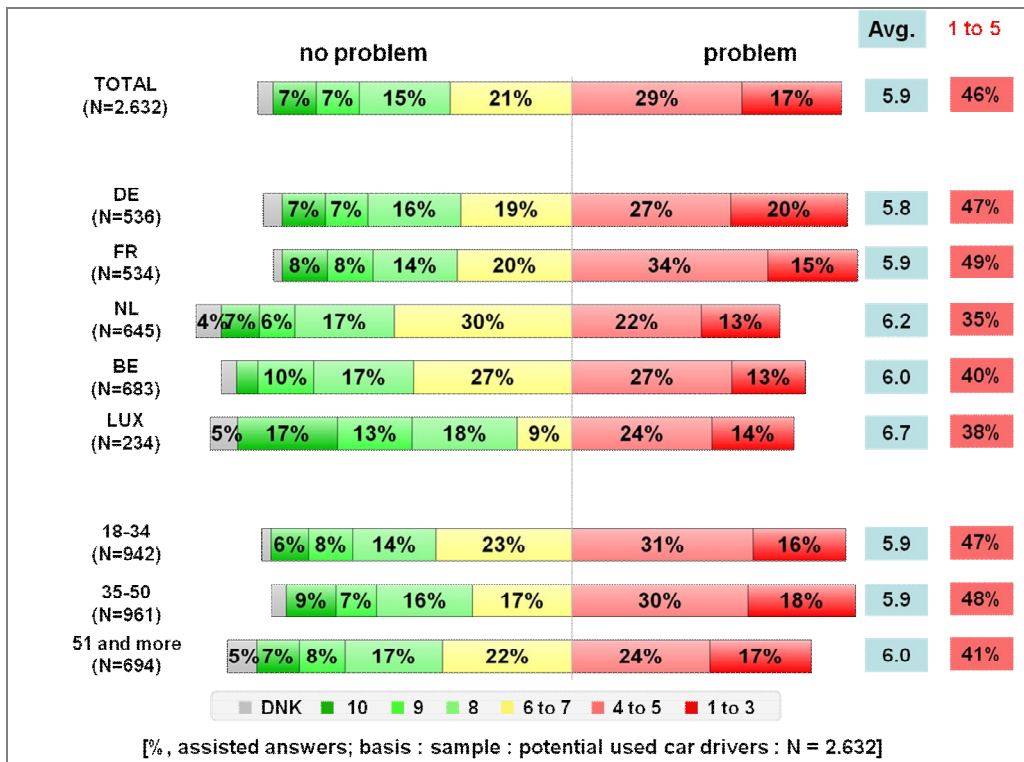


b. Cars >4 years:



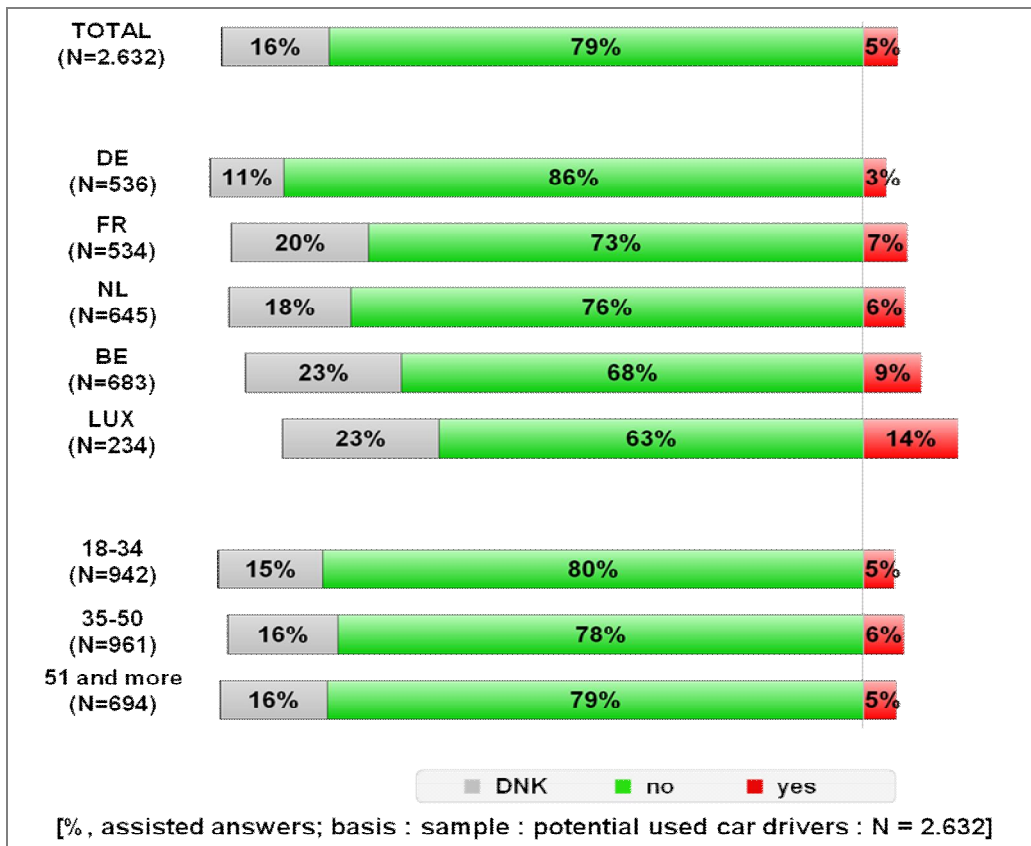
Answers giving through a score from 1 (no trust at all) to 10 (a lot of trust)]

8. Do you consider used car mileage fraud as a problem in your country?

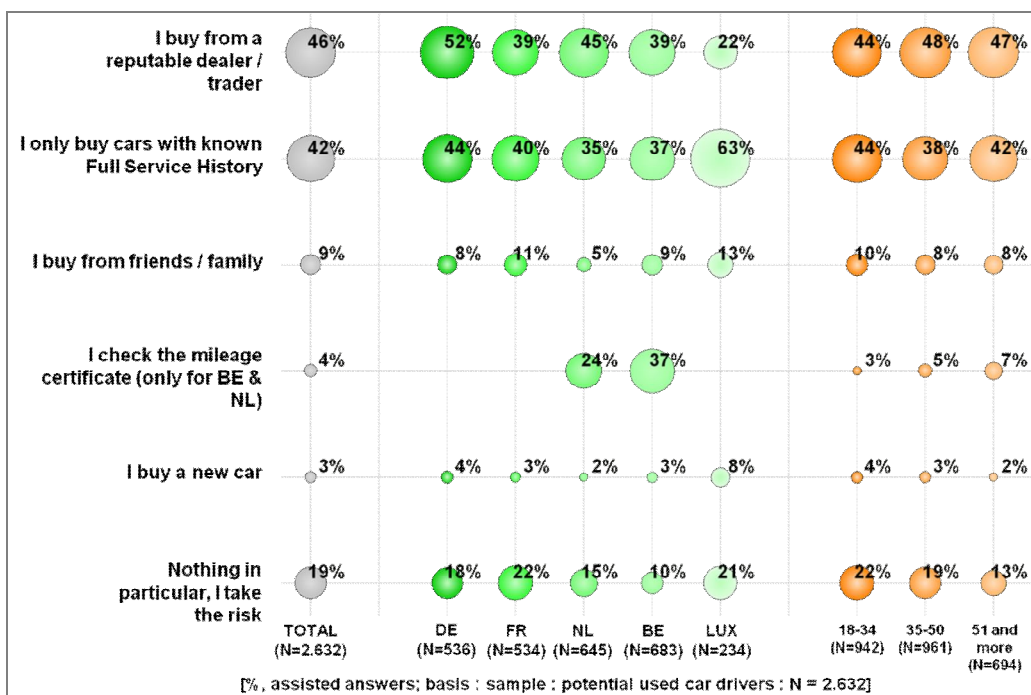


Answers giving through a score from 1 (big problem) to 10 (no problem)

9. Have you ever bought a used car with a clocked mileage?



10. How do you avoid the purchase of a car with a clocked mileage?



11. *Would it be helpful if there was a central registration system in place, in your country, to inform you on the correct mileage history?*

