

Embracing the Car-as-a-Service model – The European leasing and fleet management market

Market report



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Traditional car leasing is rapidly developing into consumer focused Car-as-a-Service and a dynamic used cars market

Development of traditional leasing to Car-as-a-Service (CaaS) and used cars



Driven by the surge in digitization and connectivity, multiple industries transformed in recent years from selling stand-alone products to providing consumer-oriented full-service solutions



Likewise, the car leasing industry is facing similar trends and is thereby on the brink of significant changes in the fundamentals of the industry



Traditional car leasing is transforming into Car-as-a-Service, which shifts the historical asset-oriented, fixed leasing period paradigm toward flexible and service-oriented mobility solutions



Similarly, the leasing industry is increasingly viewing the used car market as a business opportunity on its own, regarding used cars as a source of profits instead of an asset with residual value

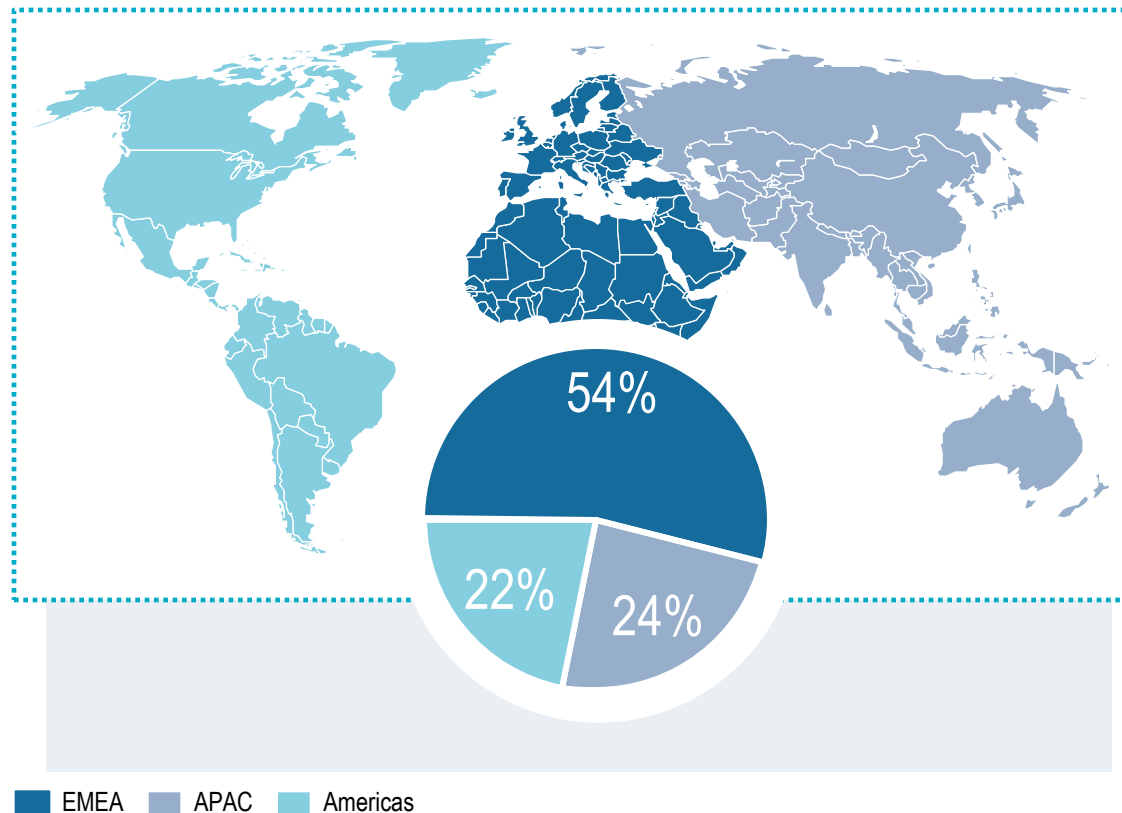


In this report, we analyze the Car-as-a-Service and the used car markets separately and highlight the market trends and drivers that offer exciting opportunities in the years to come

This report focuses on the European market as it is globally the largest and most developed market for Car-as-a-Service

Regional scope of report

Global car leasing volume distribution by region [%]



- > Globally, Europe is the leading market in both size and maturity with a very high penetration of operating leases, making this market the most attractive for the development of service-oriented solutions 
- > Within the EU, six core countries (EU-6) that are at the forefront of this development have been analyzed
 - France
 - Germany
 - Italy
 - The Netherlands
 - Spain
 - The United Kingdom
- > In addition to the six core European markets, 12 other markets are analyzed, thereby covering a total of **96%** of the EU passenger vehicle market

This report covers Car-as-a-Service and used cars from both the passenger vehicle and light commercial vehicle markets

Definitions and scope of report content

Segments

Car-as-a-Service (CaaS)

We define CaaS as a long-term subscription-based mobility solution (i.e. vehicle leasing) with integrated services

Used cars

We define a used car as a car that has been sold and registered at least once after initial registration



Countries

We focus on the **EU-18** countries, which can be referred to as **EU-6**: France, Germany, Italy, the Netherlands, Spain and the UK, and **EU-12**: Austria, Belgium, Czech Republic, Denmark, Finland, Greece, Hungary, Norway, Poland, Portugal, Sweden and Switzerland, where appropriate



Vehicle age segments

For CaaS we cover the whole car parc, whereas in the used car market the report specifically focuses on 3-4-year-old¹⁾ cars as the typical leasing contract covers a period of 3-4 years



Car types

Passenger vehicles (PV)

Vehicles used for passenger transportation purposes and with no more than eight passenger seats

Light commercial vehicles (LCV)

Vehicles mainly used for goods transportation purposes, with a gross vehicle weight of less than or equal to 3.5 tonnes



Focus on leasing and fleet management companies

Although we consider all players in the CaaS and used car markets, we **focus on leasing and fleet management companies (FMCs)**. These companies typically have high shares of operating lease contracts and cover an extended service range



Customer segments and channels

We incorporate both **corporate and private buyers/sellers** of used cars and CaaS²⁾ into our market report and analyze sales between these parties at both **physical stores and online**



1) We define 3-4-year-old cars as cars that are 36 and up to 59 months old; 2) We define companies with more than EUR 50 m in annual revenues or with a fleet of 25 vehicles or more as 'corporates', companies with less than EUR 50 m in annual revenues or with a fleet of less than 25 vehicles as 'SMEs', car rentals, taxis, ride hailing and ride sharing as 'mobility providers', and private individuals as 'private customers'

Several automotive as well as CaaS-specific trends will reshape the market and provide unmissable opportunities for FMCs

Executive summary – Market trends and drivers

- **Increasing mobility demand** and transformation of **consumption preferences toward the subscription model** provides a significant opportunity for CaaS mobility solution providers in the coming decade
- Besides those mainly CaaS-related trends, the European market will also be affected by six automotive megatrends, which are relevant for passenger vehicles as well as light commercial vehicles. Those trends in particular are the rise of **new mobility solutions**, the technological maturity of **autonomous vehicles**, an increased **digitization** in and around the vehicle and an increasing push toward **powertrain electrification**. **New logistics solutions** and an increasing demand for **customization of commercial vehicles**, which are rather specific to LCVs, complete the six megatrends
- Although some of the described trends also carry risks for the core business model of CaaS providers, almost all **trends provide unmissable opportunities** for leasing and fleet management companies if addressed properly
- The rise of new mobility solutions and providers, increased digitization and new logistics solutions and customization particularly give **FMCs the chance to tap into new customer segments and to explore new revenue streams**

The overall market outlook for the European CaaS market for passenger vehicles (PV) is very promising

Executive summary – Car-as-a-Service for passenger vehicles

- Overall, the European CaaS market for passenger vehicles is expected to **outpace mobility demand as well as new car sales** due to an expected shift toward CaaS solutions (continuous growth for last 50 years)
- In total, the CaaS market for passenger vehicles in the EU-18¹⁾ countries (EUR ~56 bn in 2016) will **grow steadily at ~5.0% p.a. until 2025, amounting to EUR ~86 bn**. This growth is accompanied by an increase of CaaS penetration in the car parc, which will lead to a total CaaS car parc of **~15 m passenger vehicles** in 2025
- The expected growth in volume and value is fueled by a **two-fold dynamic of the traditional** (corporates and SMEs) and **emerging** (private customers and mobility providers) **customer segments** who seek full-service leasing packages to optimize total cost of vehicle usage and to cover a lack of expertise in fleet management
- Although both segments are expected to drive growth, the **traditional segments are expected to grow at a slower pace** than the emerging segments, which are expected to experience a significant increase in CaaS penetration
- In Europe, **incumbent market leaders** catering to the corporate segment are **well positioned** vis-à-vis new entrants as most of the markets are mature with high entry barriers; however, the **battle for market share in the SME and emerging market segments** will be ongoing
- As captives and bank affiliates **start adapting their business models** toward multi-brand, full-service offerings, FMCs should cater their strategies to individual customer segments and consider different market environments

1) Including Austria, Belgium, the Czech Republic, Denmark, France, Finland, Germany, Greece, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the UK

Light commercial vehicle (LCV) CaaS market differs fundamentally from the PV market, however growth rates are similar

Executive summary – Car-as-a-Service light commercial vehicles

- The LCV market in the EU-6¹⁾ countries **fundamentally differs from the passenger vehicle market** in terms of size, customer segment mix and purpose of use of the vehicles. Furthermore, the LCV market is less mature and more fragmented than the PV market
- One notable difference is that the **development of LCV** sales within the long-term LCV car parc **correlates strongly with GDP** development as well as with the **number of SMEs**
- Overall, expectations for growth in the CaaS market for light commercial vehicles in the EU-6 countries are similar to the passenger vehicle market: for the former, steady **growth at ~5.8% p.a. until 2025 amounting to EUR ~21 bn**, which is less than a third the size of the respective PV CaaS market. The growth is also accompanied by an increase of CaaS penetration in the car parc, which is projected to lead to a total **LCV CaaS car parc of ~4 m LCVs in 2025**
- In contrast to the developments in the PV CaaS market, expected growth in the light commercial vehicle CaaS market is mainly driven by **traditional customer segments** due to a further shift toward **outsourcing of fleets and a strong TCO orientation**
- Within the traditional customer segments of LCVs, which continue to grow at a slightly higher pace than the PV market, **SME expansion is the major growth driver**, making up ~50% of the total LCV CaaS market in 2025
- In contrast to the PV CaaS market, the LCV market in EU-6 countries is **still very fragmented** and a wider variety of players compete. Overall, the **leading players from the PV** market also control majority shares in the LCV market

1) Including France, Germany, Italy, the Netherlands, Spain and the UK

The used car PV market is as large as the CaaS PV market and is expected to grow in volume at ~4% p.a. until 2020

Executive summary – Used passenger vehicles

- The **EU-18 3-4-year-old used car market** was valued at **EUR ~62 bn in 2016** and shows a relatively stable market development overall, with **volumes** being mainly driven by new car volumes and RVs developing stably over time
- The volume of 3-4-year-old cars is **expected to grow** by **4.2% p.a.** in the period 2016-2020, with **stable** short-term **residual value outlooks**. Different maturities regarding leasing penetration rates across countries offer growth opportunities for FMCs
- **Diesel** residual values are exposed to **potential regulatory action**, but the **impact** on 3-4-year-old diesel cars for FMCs is **expected to be limited** as regulations are mainly local and focused on older diesel vehicles and FMCs' fleets are renewed every three to four years. Increasing **electric vehicle penetration** is expected to have **only a minor impact on** the 3-4-year-old used car market until 2025
- **Key recent developments** in the used car market include forward integration and digitization. FMCs are **increasingly forward integrating** in the used car value chain by shifting toward direct B2C sales to improve profit margins, complementing online sales with physical retail stores. The **digitization of the customer journey** has also driven the emergence of multiple **new digital players** in the market
- Additionally, FMCs are increasingly **exploring additional profit pools** by exploiting cross-country arbitrage potential, engaging in used car leasing and offering ancillary services

Strong new LCV sales and promising e-commerce growth are expected to drive the used LCV market at ~8% p.a. until 2020

Executive summary – Used light commercial vehicles

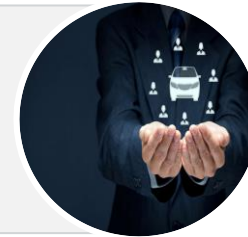
- The **EU-6 3-4-year-old LCV market** was valued at **EUR ~3.7 bn in 2016**, showing a decline in recent years due to falling new LCV sales following the economic crisis
- Although 3-4-year-old LCV volumes declined in the past, they are **expected to grow by 8.1% p.a. (2016-2020)** following growing new LCV sales in recent years, while **residual values** are expected to see **stable to positive** development in the short term. The main growth is expected **to come from the e-commerce** and construction sectors, both of which have promising outlooks for the near future
- The LCV market is highly **fragmented**, displaying **similar disintermediation trends** as the passenger vehicle market. In contrast to the PV market, **direct B2C sales** attempts have so far been **unsuccessful**
- **Diesel** is the **predominant fuel type** for LCVs and is expected to remain so in the coming years. TCOs of new **EVs** are not expected to become lower than diesel **before 2022**. Increasing emission regulations and high fuel costs are driving the **replacement of HCVs with LCVs**, which especially applies to **"last-mile delivery"** to customers in city centers

The report sheds light on three common misconceptions about the impact of automotive trends on fleet management and leasing

Three myths – Insights and future reading available

Myth #1

The emergence of a subscription economy and accelerating trends toward usership rather than ownership will lead to a reduction in the number of vehicles on the road, thus a shrinking leasing and fleet management market



Myth #2

Engine technology is developing at an ever-increasing pace. This creates a risk that leasing and fleet management companies will be left with a growing number of obsolete vehicles



Myth #3

Leasing and fleet management companies only operate in one market, namely the leasing and servicing of cars. Selling cars at the end of their leases for their residual value is a risk rather than a source of real profit

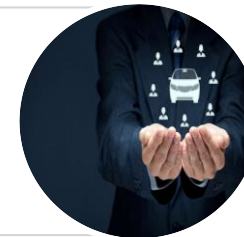


The emergence of subscription models are just the latest chapter in a trend that has fueled the growth of leasing and fleet management

Myth #1 – Subscription economy

Myth #1

The emergence of a subscription economy and accelerating trends toward usership rather than ownership will lead to a reduction in the number of vehicles on the road, thus a shrinking leasing and fleet management market.



Insights
p. 27-36

Reality #1

Cars have in fact been undergoing a 50-year evolution from ownership toward usership. Current developments are just the latest chapter in a trend that has fueled the growth of the leasing and fleet management sector

- > A shift toward subscription and pay-per-use models is clearly observable in many industries. Companies in different sectors have successfully migrated from selling products to providing "products-as-a-service", be it in the area of music (Spotify), movies (Netflix) or data storage (Dropbox)
- > The automotive industry adopted this trend away from ownership and toward usership early on by offering leasing options for over 50 years. The emergence of phenomena such as ride hailing, car sharing and car pooling is simply the next stage in the evolution of the car-as-a-service continuum
- > As these players look for full-service leasing packages for asset lifecycle management, this new segment for leasing and fleet management companies is expected to grow significantly, at rates of more than 50 percent a year until 2025

Technological advances will not develop at a faster pace than leasing and fleet management companies are able to handle

Myth #2 – Engine technology development

Myth #2

Engine technology is developing at an ever-increasing pace. This creates a risk that leasing and fleet management companies will be left with a growing number of obsolete vehicles



Insights
p. 69-71

Reality #2

In fact, despite technological advances, today's vehicles will not become obsolete fast enough to impact leasing and fleet management companies. Leasing and fleet management companies own only the newest models and completely renew their fleet every three to four years. Their exposure to technology risk is therefore very limited

- > The core base of vehicles is not expected to change significantly in the coming years. Consumer interfaces are likely to undergo major alterations, but this will increasingly be a matter of software updates. Engine technology is developing rapidly, but from a very small base
- > Leasing and fleet management companies typically own only the latest models, and renew their car parc every three to four years. Average development cycles are still more than four years and will thus not burden FMCs
- > The regulation of diesel vehicles is also less of a risk to leasing and fleet management companies than to other market players. While the majority of today's 3-4-year-old diesel cars meet Euro 6 standards, only 3 (ultra) low emission zones currently affect these vehicles and only 9 will do so in the future

Vehicle remarketing is no longer just a residual part of the business model, but presents a huge, untapped opportunity

Myth #3 – Vehicle remarketing

Myth #3

Leasing and fleet management companies only operate in one market, namely the leasing and servicing of cars. Selling cars at the end of their leases for their residual value is a risk rather than a source of real profit



Insights
p. 75-80

Reality #3

In fact, vehicle remarketing is no longer just a residual part of the business model of leasing and fleet management companies: It is a huge, untapped opportunity. Leasing and fleet mgmt. companies can become leaders in used vehicle markets by embracing digitization and globalization, disrupting and disintermediating traditional wholesale and auction channels. The used vehicle market is as big as the leasing and fleet management market is today

- > Traditional barriers in the used vehicle market are rapidly breaking down by increasing the transparency from developments in digitization and globalization
- > Leasing and fleet management companies are in an enviable position to take advantage of these developments: they are already among the biggest resellers in Europe, are trusted by the customer and have the capability to sell, lease or rent used vehicles, and extensive repair and maintenance networks with which to service them
- > Moreover, the breaking down of barriers in the used vehicle market allows international leasing and fleet management companies to maximize the resale value of their vehicles by selling them cross-border

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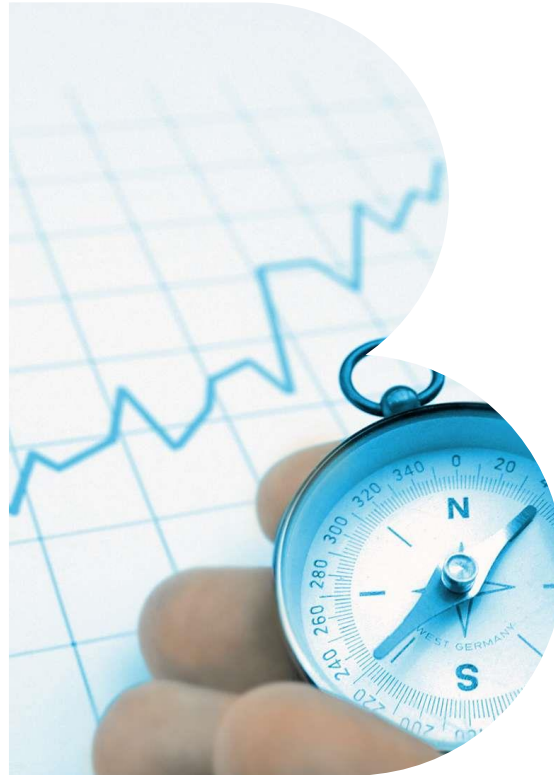


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A. Market trends and drivers



Trends in new mobility, digitization, logistics as well as customization provide unmissable opportunities for the industry

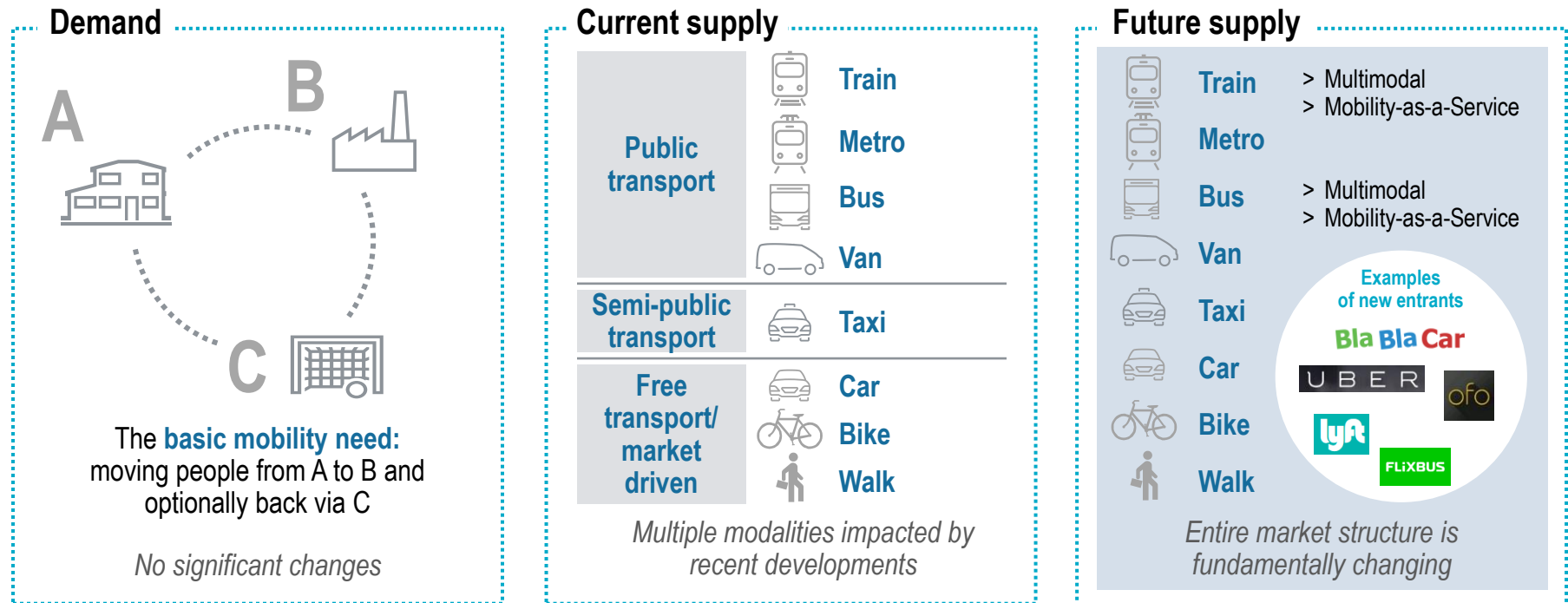
Key trends and drivers for the leasing and fleet management industry

Market trends	Impact for FMCs ¹⁾	PV ²⁾	LCV ³⁾
 New mobility solutions		✓	(✓)
 Autonomous vehicles		✓	✓
 Digitization and connectivity		✓	✓
 Powertrain electrification		✓	✓
 E-commerce and new logistics			✓
 LCV customization			✓

1) Fleet management companies; 2) Passenger vehicle; 3) Light commercial vehicle  Positive influence  Negative influence

Although the basic need for mobility remains the same, a changing market structure will strongly affect FMCs' core business model

Mobility demand, current and future supply



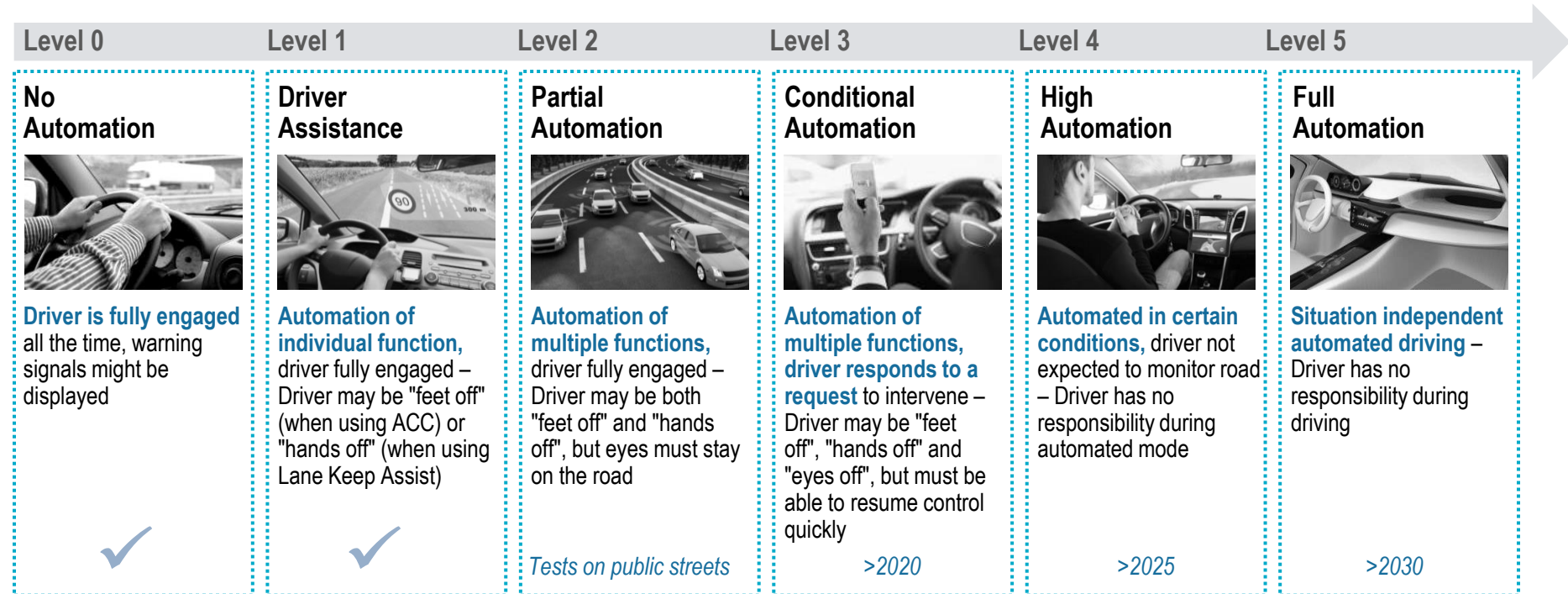
! Impact on leasing and fleet management companies

- > Reduced vehicle ownership and Mobility-as-a-Service could put **pressure on FMCs' core business model**
- > Opportunity for FMCs to **grow within existing customer base** due to pay-per-use models and within **thus far untouched** segments (e.g. private customers)
- > Opportunity for FMCs to **develop completely new customer segments** (e.g. mobility providers) as those segments also need **fleet management solutions**



Autonomous vehicles (AVs) are expected to increase the CaaS penetration

Technology roadmap for autonomous driving



! Impact on leasing and fleet management companies



- > Level 5 automation will allow FMCs to increase direct CaaS penetration with mobility providers and generate new revenue streams (especially through fleet management services and offering advanced control centers to steer autonomous vehicle fleets)
- > Risk of negative impact on FMCs' profitability as autonomous vehicle will reduce RMT (repair, maintenance and tires) and insurance business

By offering connectivity solutions and using online channels, FMCs can benefit from the digitization inside and outside the vehicle

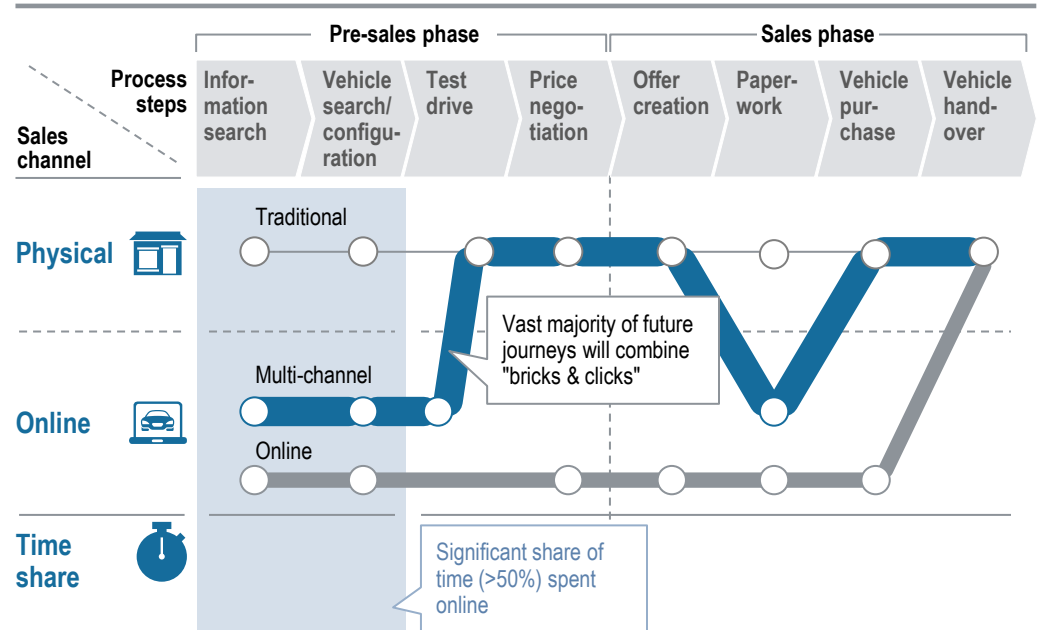
Connectivity solutions and future sales

Connectivity solutions

	1 Embedded	2 Tethered	3 Smartphone based
Interface	Vehicle based	Vehicle based	Mobile based only or projection on vehicle display
Connectivity	Vehicle based	Through mobile or modem	Through mobile or modem
Intelligence/apps	Vehicle based, downloaded in the vehicle and run by the onboard computer	Vehicle based, downloaded in the vehicle and run by the onboard computer	Mobile based, downloaded and run by the device



Future customer journey



! Impact on leasing and fleet management companies



- > Opportunity for FMCs to develop **new revenue streams** from **digital fleet management**, **data monetization** and via **usage of online channels** (e.g., in the LCV market **telematics penetration** is expected to reach approximately 71% in 2025 vs. approximately 10-15% in 2016)
- > Opportunities for FMCs to **decrease damage to** and **increase RV of their own leasing fleets**
- > Access to **data will be critical** as there are legal and technological hurdles as well as OEMs trying to claim exclusive access to vehicle data

Expansion of powertrain electrification puts pressure on FMCs' core business but can also be an opportunity for new service offerings

Pull side¹⁾

Consumers demanding EVs and PHEVs

- > Key driver is the fulfillment of customers' mobility needs
- > Total cost of ownership expectations:
 - > Fuel/battery prices
 - > Taxes/incentives
- > Image/comfort requirements

**Expected
market
development
for EVs⁴⁾ and
PHEVs⁵⁾**

Push side

Forcing OEMs to supply a significant number of EVs and PHEVs

Key drivers

- > Regulations on new car sales
 - ZEV²⁾ sales targets (CARB³⁾)
 - CO₂ fleet emission targets (EU)
 - Fuel efficiency targets (CAFE⁶⁾)
- > R&D support for EV technology
- > State subsidies for EV purchases

Regionally leading factor



⁷⁾



! Impact on leasing and fleet management companies

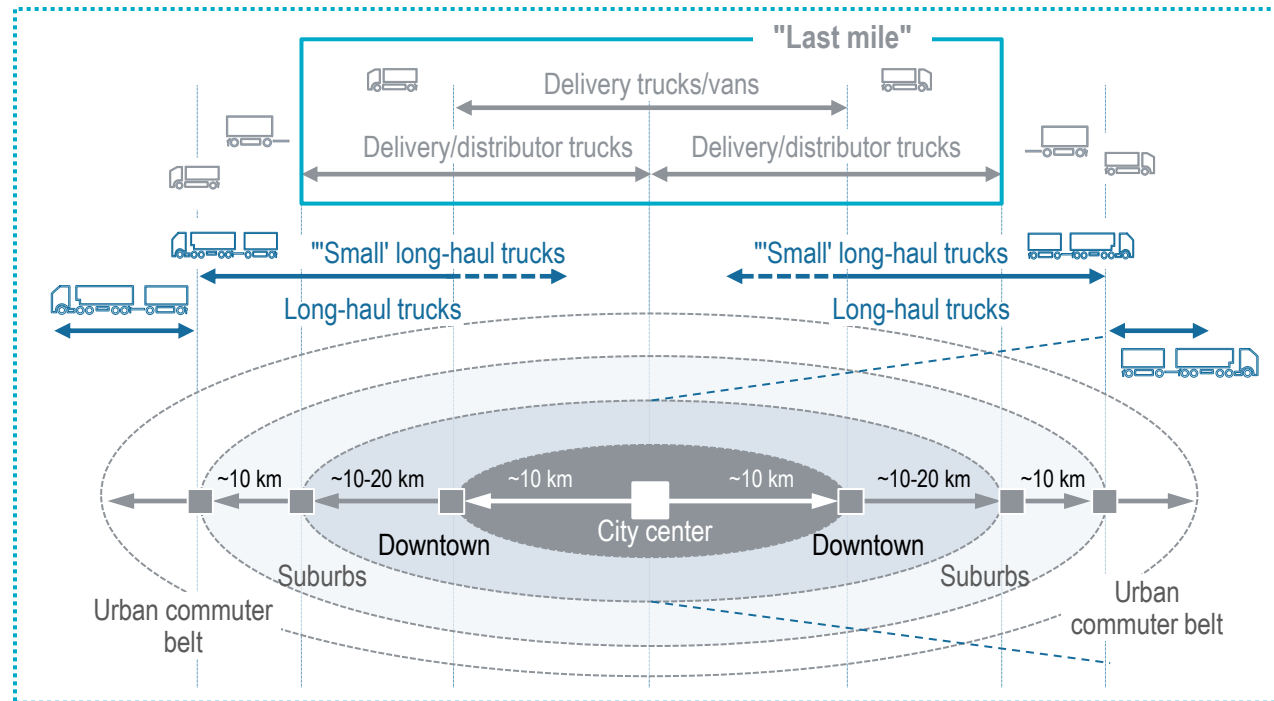


- > FMCs have to face the residual value risk, which increases considerably due to the battery technology, as well as the risk of declining service and maintenance requirements, which directly affect one of the profitable revenue streams for FMCs
- > By contrast, there are opportunities for FMCs to expand their offering through new profitable services (e.g. providing battery-related service checks, advisory on integration of EV in fleets)

1) Both pull and push factors exist in all regions, however with various factors prevailing; 2) Zero emission vehicle; 3) California Air Resources Board; 4) Electric vehicle; 5) Plug-in hybrid electric vehicle; 6) Corporate Average Fuel Economy; 7) Push is the leading factor in CARB Section 177 States

Increasing e-commerce and logistics requirements lead to higher LCV CaaS demand from both existing and new customer segments

The last mile



- > "Small" long-haul trucks will connect the urban logistics hubs
- > Smaller delivery trucks will distribute deliveries within the radius of the logistics hub
- > While the market as a whole is not expected to change significantly, the **small panel van** is expected to almost double in volume
 - This is due to its room for passenger comfort, as well as ideal cargo space for smaller batches of customized and fragmented inner-city freight

! Impact on leasing and fleet management companies

- > The rise in online delivery platforms presents opportunities for FMCs to serve existing customer segments (large parcel companies, smaller SMEs) with **smaller delivery vans for deliveries in city centers**
- > Opportunity for FMCs to serve a **new customer group, private individuals**, by working for online (peer-to-peer) delivery platforms



Increasing demand for LCV customization offers new opportunities for FMCs to act as a one-stop shop

Status quo of market structure and customer behavior

Different setups for customization



OEM

1. In the series production line

Customization performed within the manufacturing line

2. In a separate area (in or near the plant)

Vehicle customized at dedicated areas outside the production line, but near or within the plant

3. In a dedicated customization center

Chassis are shipped from plants to conversion center where customization activity is performed



Vehicle body builder

4. Externally by vehicle body builder

Vehicle customization realized by vehicle body builders at their premises



Status quo on customer behavior



Standard configuration order

~40%¹⁾

- > **Customer** is only in contact with **dealer**
- > **Standard superstructures** are **mounted** on chassis cab **at the OEM**
- > **Single-invoice** transaction to the end customer



Customized configuration orders

~60%¹⁾

- > **Dealer coordinates transform. process** via OEM and body builder
- > **OEM delivers chassis to vehicle body builder** who manufactures superstructure in parallel
- > **Dual-invoice** transaction



Future outlook for customer behavior



Customers, especially SMEs, are increasingly asking for customization solutions to fit their individual needs

Customers are willing to pay more for a vehicle customized by a single source

Customers are looking for different ways and forms of financing

! Impact on leasing and fleet management companies



- > Opportunity for FMCs to provide clients with **customized vehicles as a one-stop shop** to increase convenience and strengthen customer relationships
- > Opportunity to offer a **new form of financing for customization** (within the lease fee) in exchange for fully integrated customization

1) Ratio applies to selected market players

B. Car-as-a-Service market development



Contents

Passenger vehicle development in EU-18

A. Overall market development

- > Trend toward subscription economy
- > Mobility demand development
- > Overall market development in EU-18
- > Market development by customer segment in EU-18

B. Competitive landscape in the CaaS market

- > Competitor categories and developments
- > Competition within the CaaS market
- > Positioning of market players and key success factors

LCV development in EU-6

A. Overall market development

- > Differences between LCV and PV and core drivers of LCV
- > Overall market development of LCV in EU-6
- > Market development by customer segment in EU-6

B. Competitive landscape in the LCV CaaS market

- > Competitor categories and developments within LCV
- > Competition within the LCV CaaS market
- > Positioning of market players and key success factors

The overall market outlook for the European CaaS market for passenger vehicles (PV) is very promising

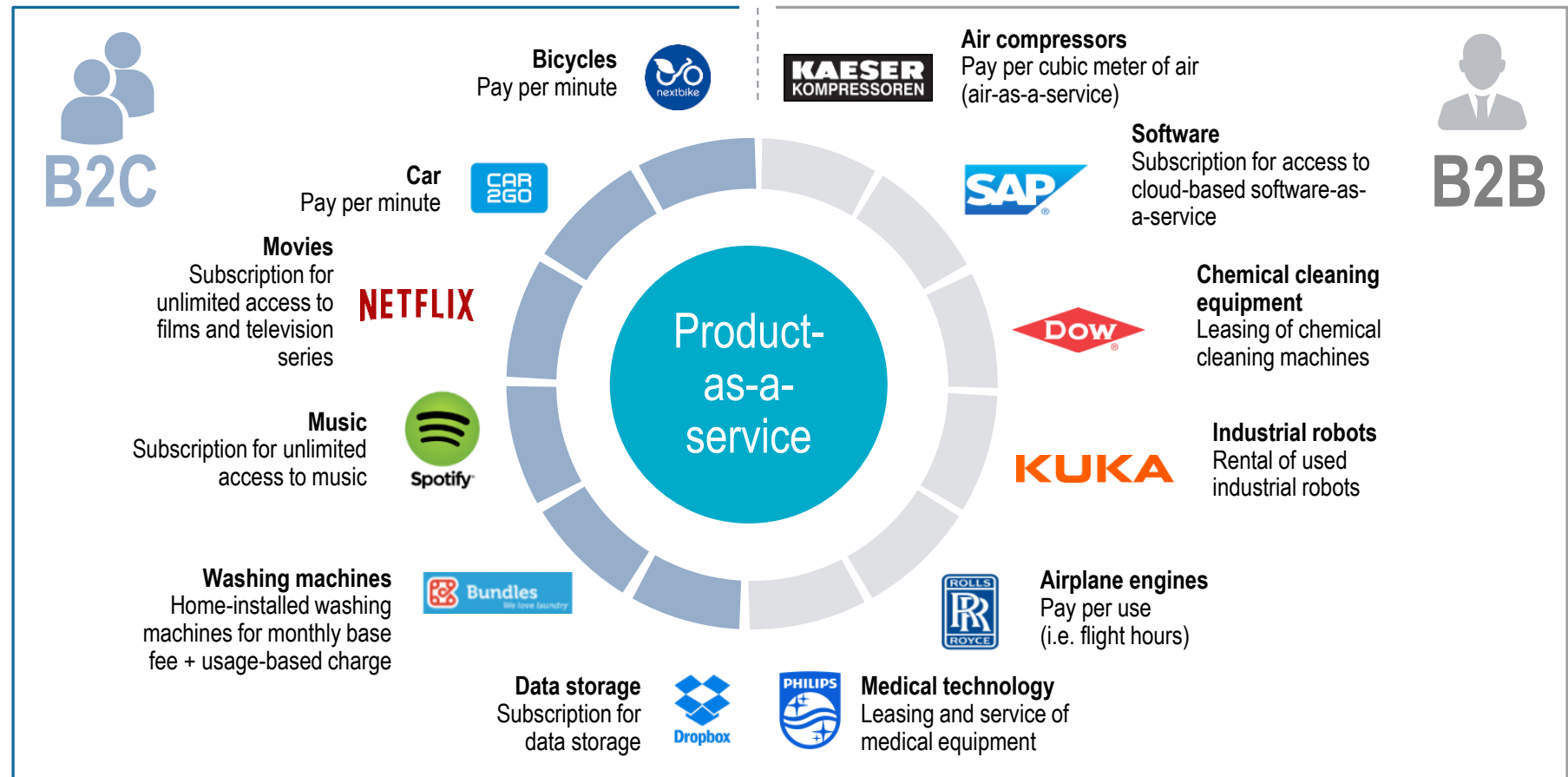
Car-as-a-Service for passenger vehicles

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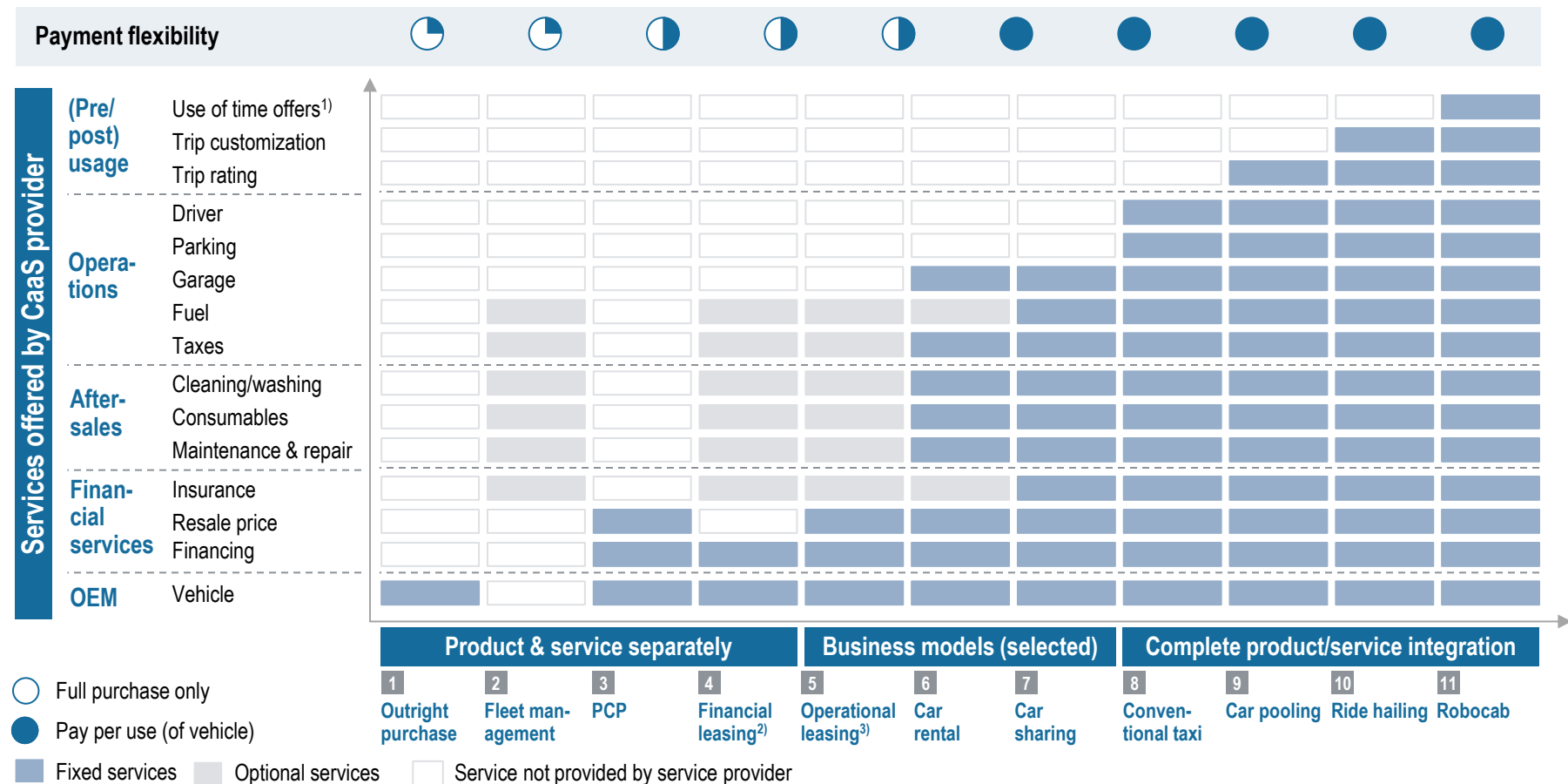
Companies in various industries have already successfully transitioned from selling products to providing "product-as-a-service"

Examples of service transformation



Evolution of the mobility industry toward a service focus is evident from the current mobility service business models

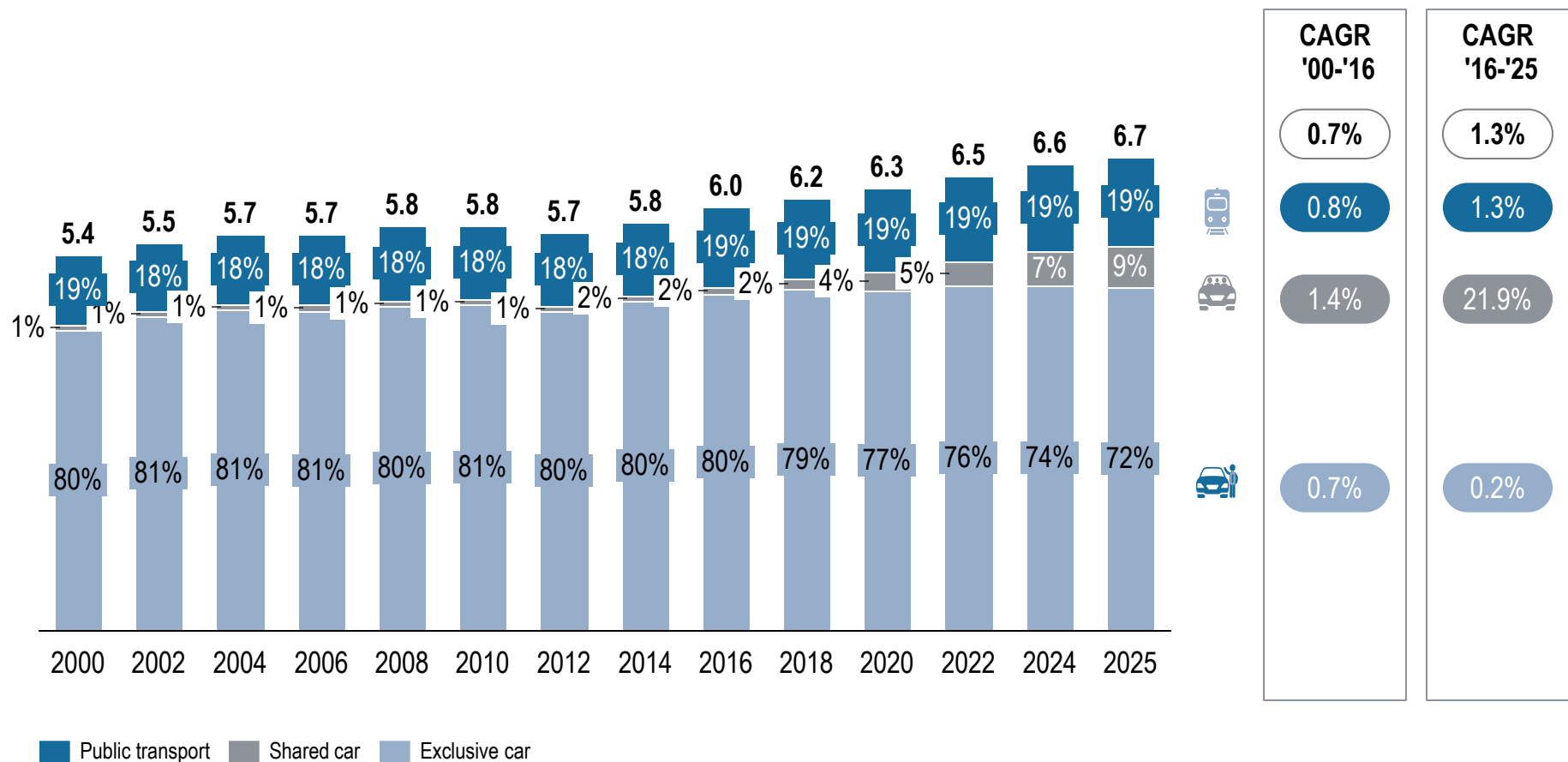
Service spectrum of existing CaaS models – High-level overview



1) For example mobile office, sleep wagon; 2) Financial leasing with extended services considered as CaaS; 3) Considered as CaaS

The increasing demand for mobility solutions in Europe is expected to have a positive effect on the CaaS market

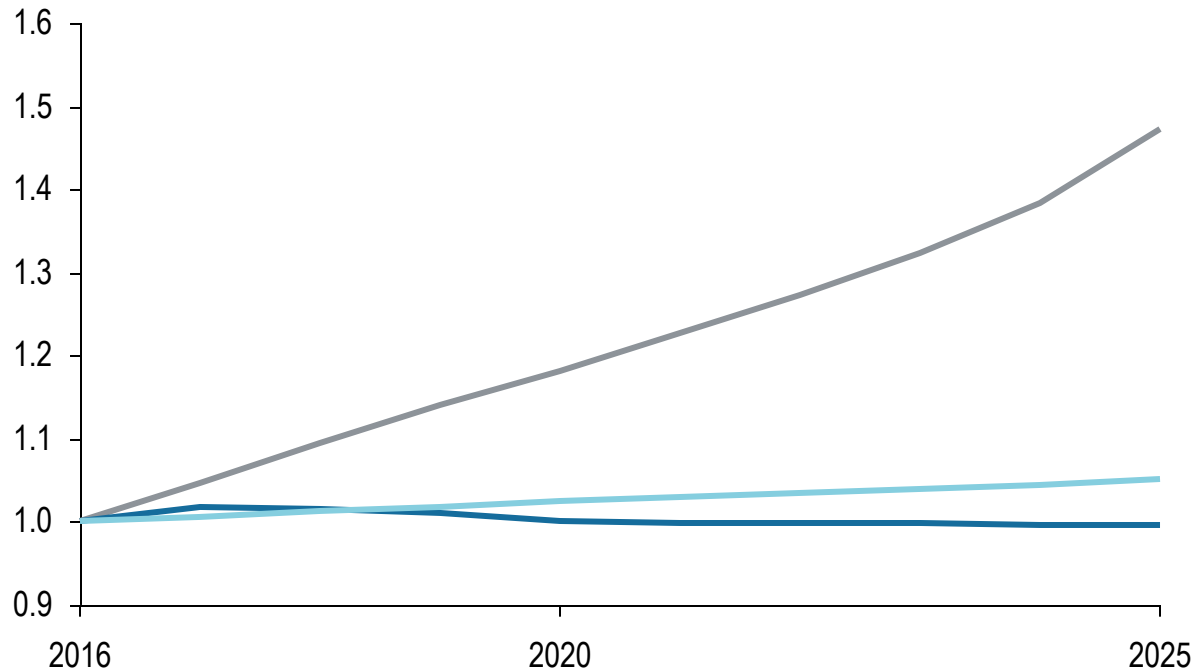
Development of mobility demand by transport mode (EU-28), 2000-25 [trillion pass. km]



The European PV CaaS market is growing faster than mobility demand and new car sales due to a rise of new customer segments

Overview of CaaS market drivers (EU-18), 2016-2025

Index vs. 2016 [2016 value set as 1]



CAGR
'16-'25

4.4%

0.5%

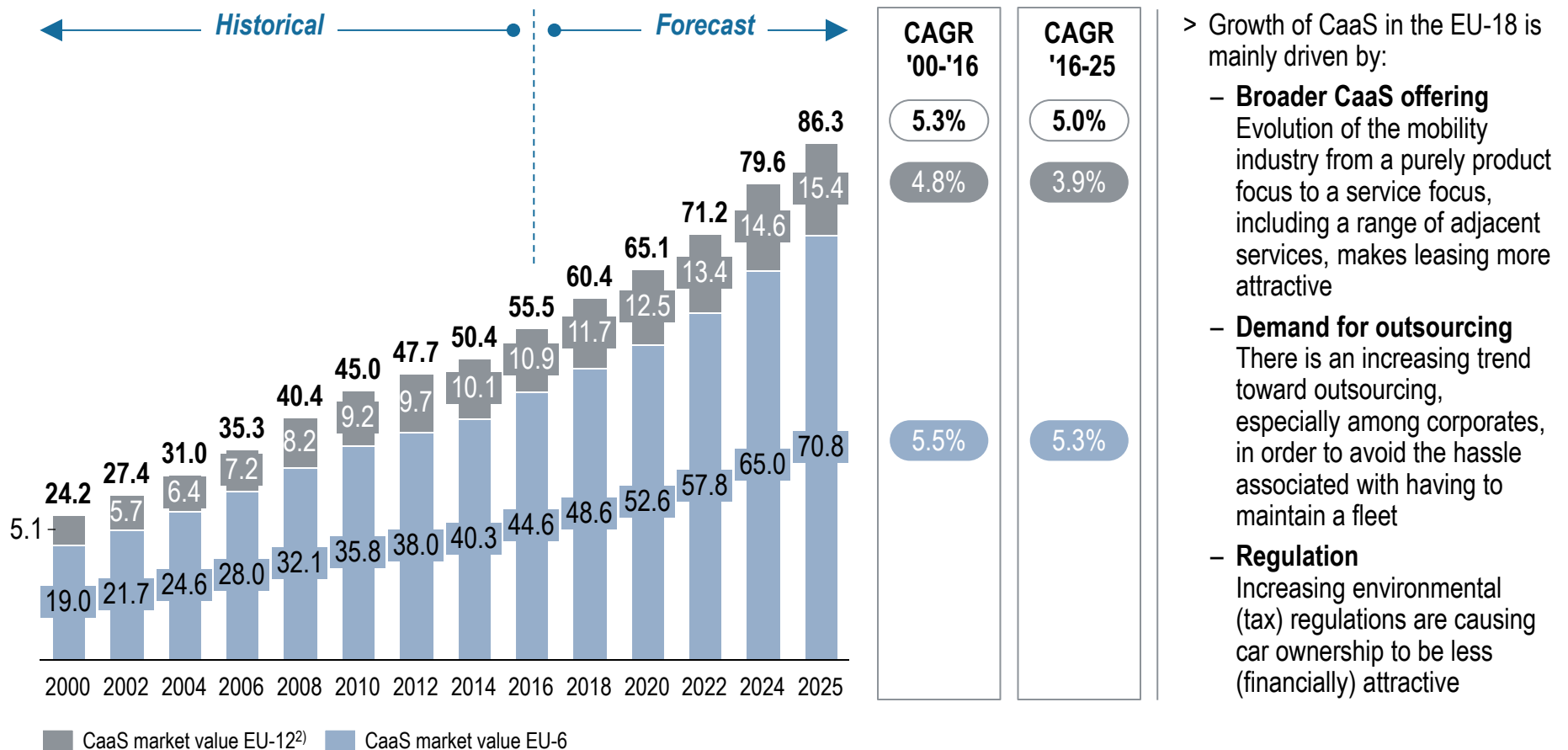
0.0%

- > The most important driver of the CaaS market is the overall trend toward the increasing number of services associated with cars, reflected in the growing penetration of CaaS units in the overall market
- > Overall growth in demand for mobility solutions contributing to the positive development of the CaaS market
- > Total new vehicle sales and size of the car parc have limited impact on CaaS market development

— CaaS market [# vehicles] — New vehicle sales [# vehicles] — Car parc [# vehicles]

In total, the PV market in EU-18 countries amounted to EUR ~56 bn in 2016, mainly driven by the core EU-6¹⁾ countries

CaaS market value (EU-18), 2000-2025 [EUR bn]



> Growth of CaaS in the EU-18 is mainly driven by:

- **Broader CaaS offering**
Evolution of the mobility industry from a purely product focus to a service focus, including a range of adjacent services, makes leasing more attractive
- **Demand for outsourcing**
There is an increasing trend toward outsourcing, especially among corporates, in order to avoid the hassle associated with having to maintain a fleet
- **Regulation**
Increasing environmental (tax) regulations are causing car ownership to be less (financially) attractive

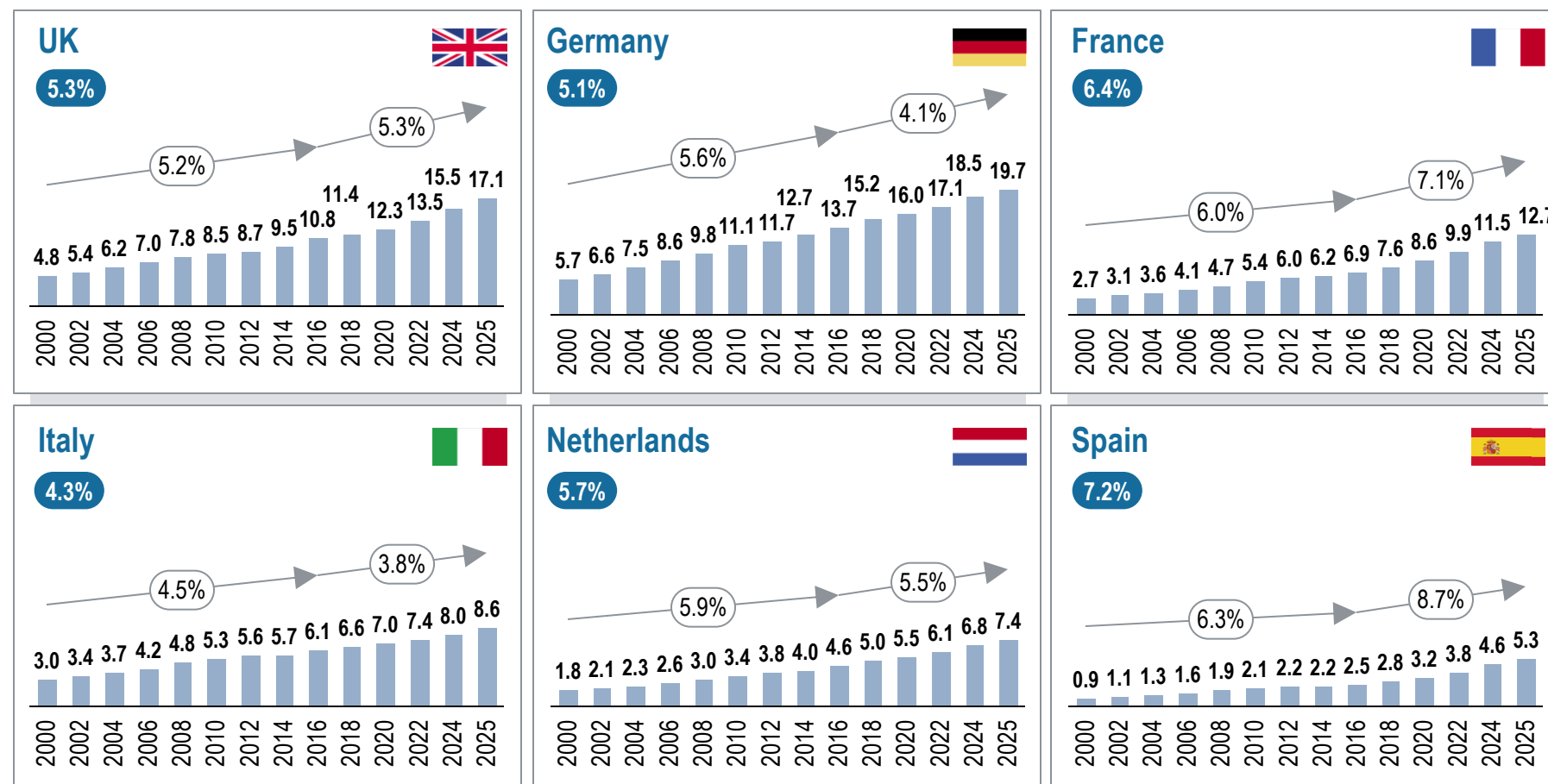
■ CaaS market value EU-12²⁾ ■ CaaS market value EU-6

1) Including France, Germany, Italy, Spain, Netherlands, the UK; 2) Including Austria, Belgium, the Czech Republic, Denmark, Finland, Greece, Hungary, Norway, Poland, Portugal, Sweden, Switzerland

Source: IHS; Frost & Sullivan; Profit pool analysis (RB Study 2016); Interviews with market participants

Within the EU-6 markets, Spain and France show the highest growth rates until 2025 for passenger vehicles

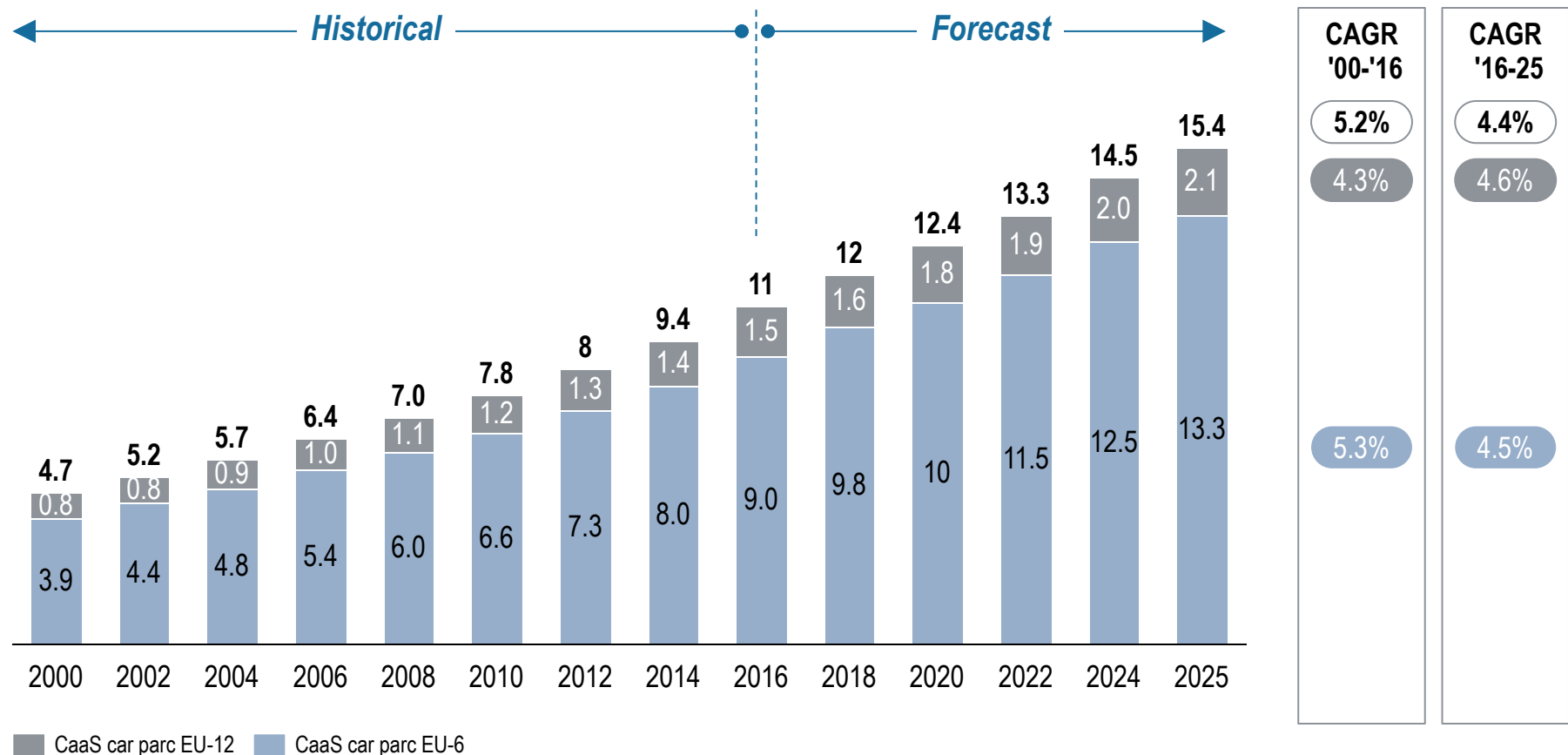
Passenger vehicle CaaS market, total by country (EU-6), 2000-2025 [EUR bn]



% CAGR '00-'25

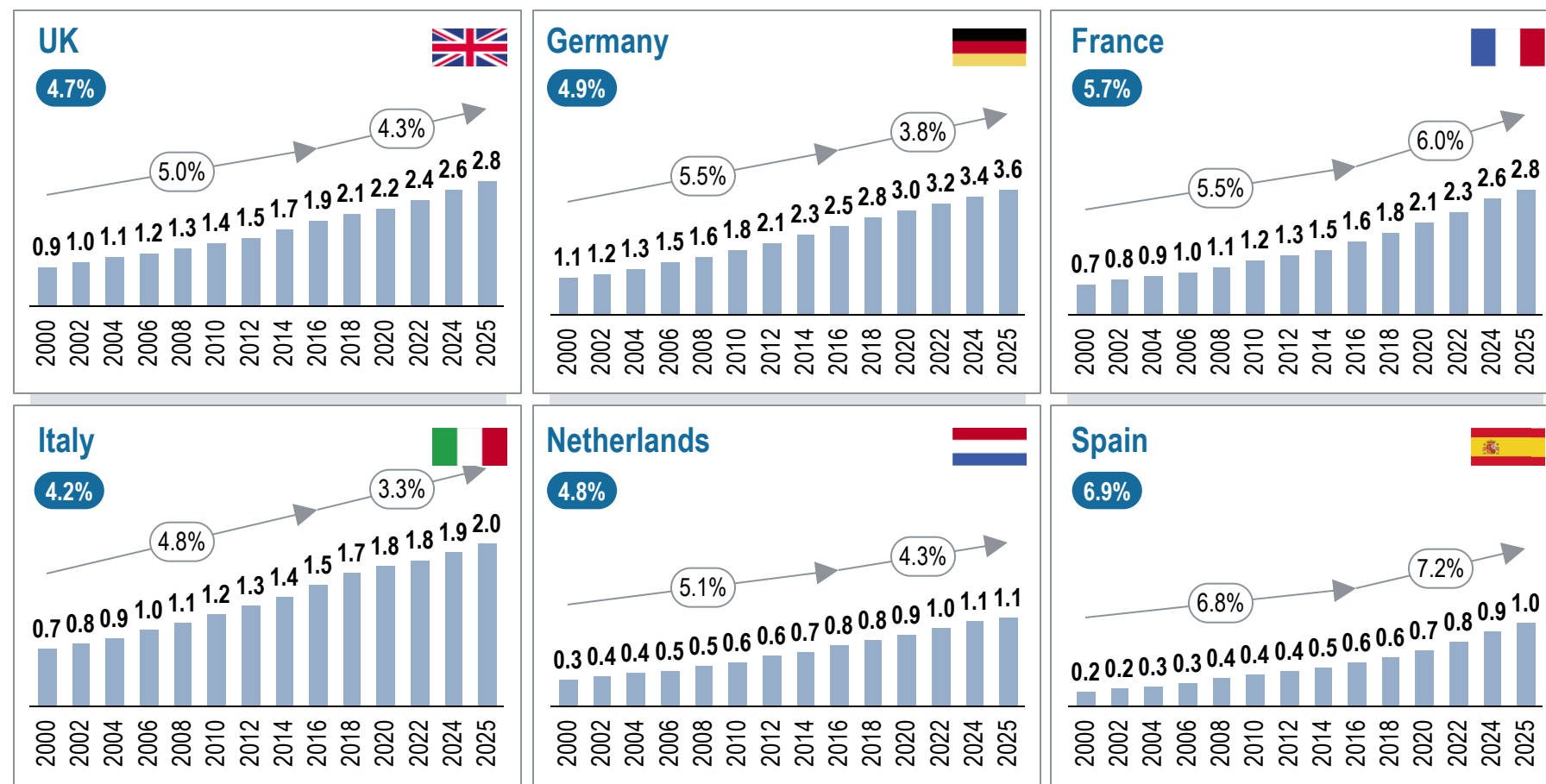
In terms of volume, the PV car parc managed by CaaS providers in EU-18 countries is expected to comprise ~15 m units in 2025

Passenger vehicles car parc (EU-18), 2000-2025 [m units]



The underlying CaaS car parc is also projected to show strong growth across all EU-6 markets

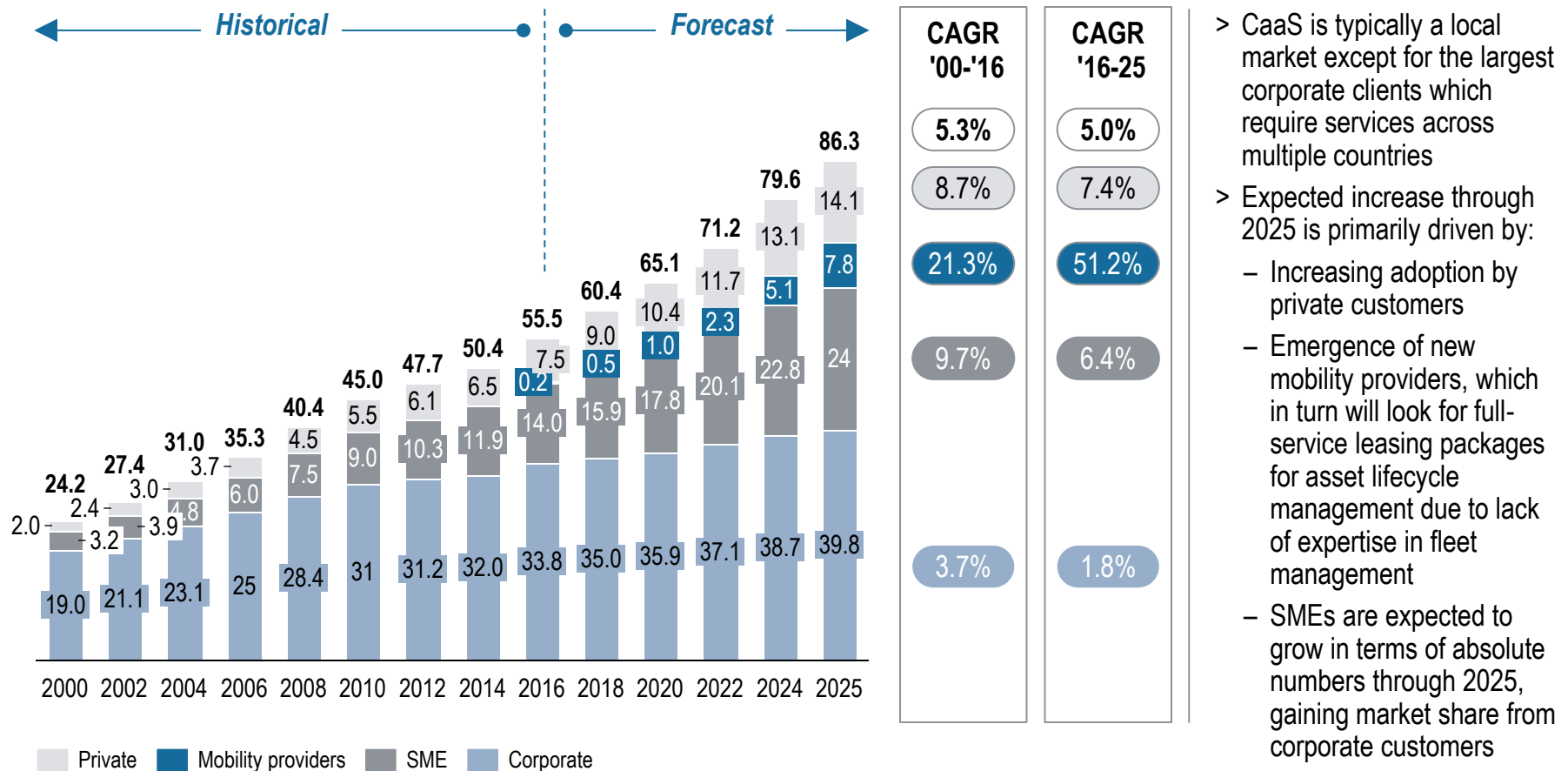
Passenger vehicle CaaS in car parc (EU-6), 2000-2025 [m units]



% CAGR '00-'25

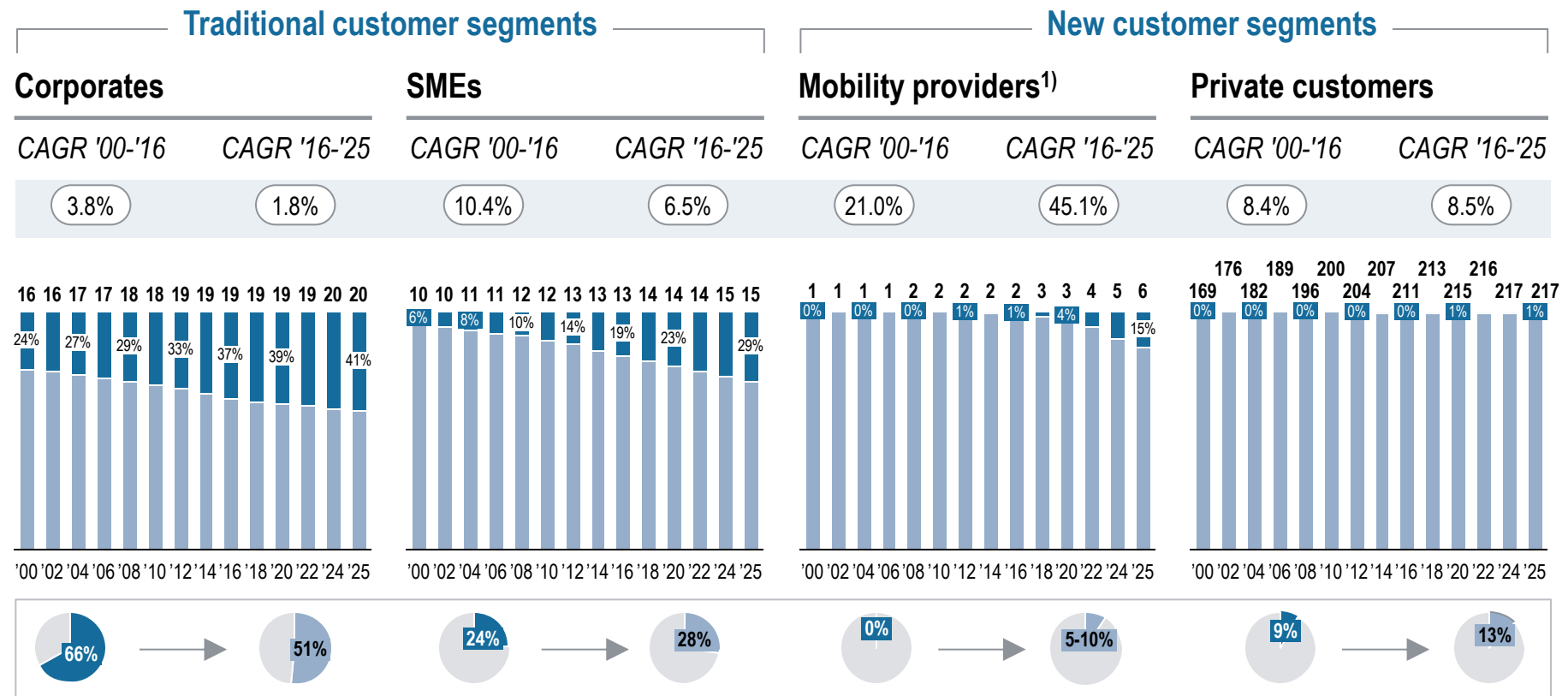
The expected growth in the PV CaaS market is mainly driven by new emerging customer segments

CaaS market development by key customer segments (EU-18), 2000-2025 [EUR bn]



Traditional customer segments continue to grow, yet at a slow pace – Highest increase in CaaS from new segments

CaaS penetration in overall car parc (EU-18), by customer segment, 2000-25 [m units,%]

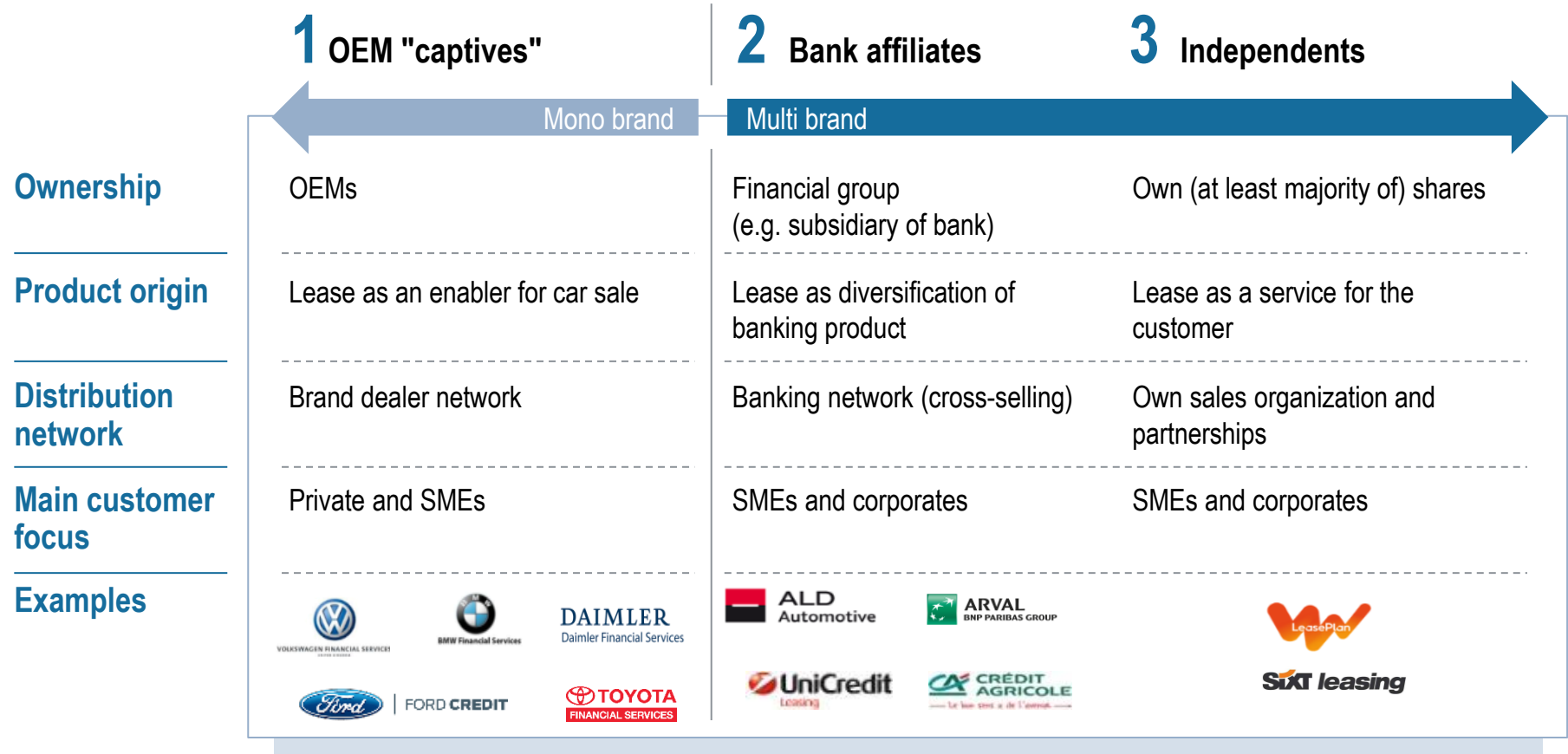


● Share in total CaaS market value 2016 ● Share in total CaaS market value 2025

1) Depending on extent of growth of new mobility concepts

There are three different categories of players serving the CaaS market

Characteristics of traditional competitor categories

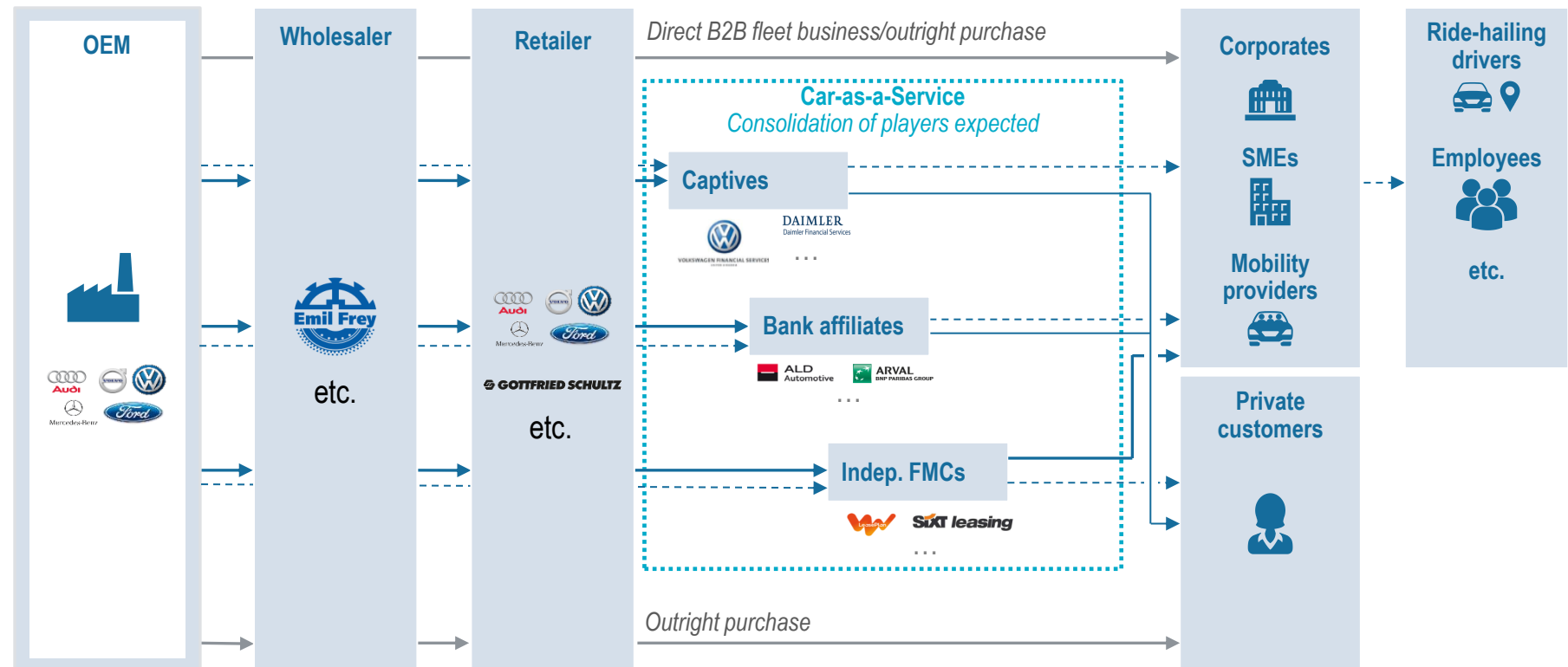


The competitive landscape is versatile, with players targeting different customers and trying to capture parts of the value chain

CaaS value chain¹⁾

Indicative with selected examples

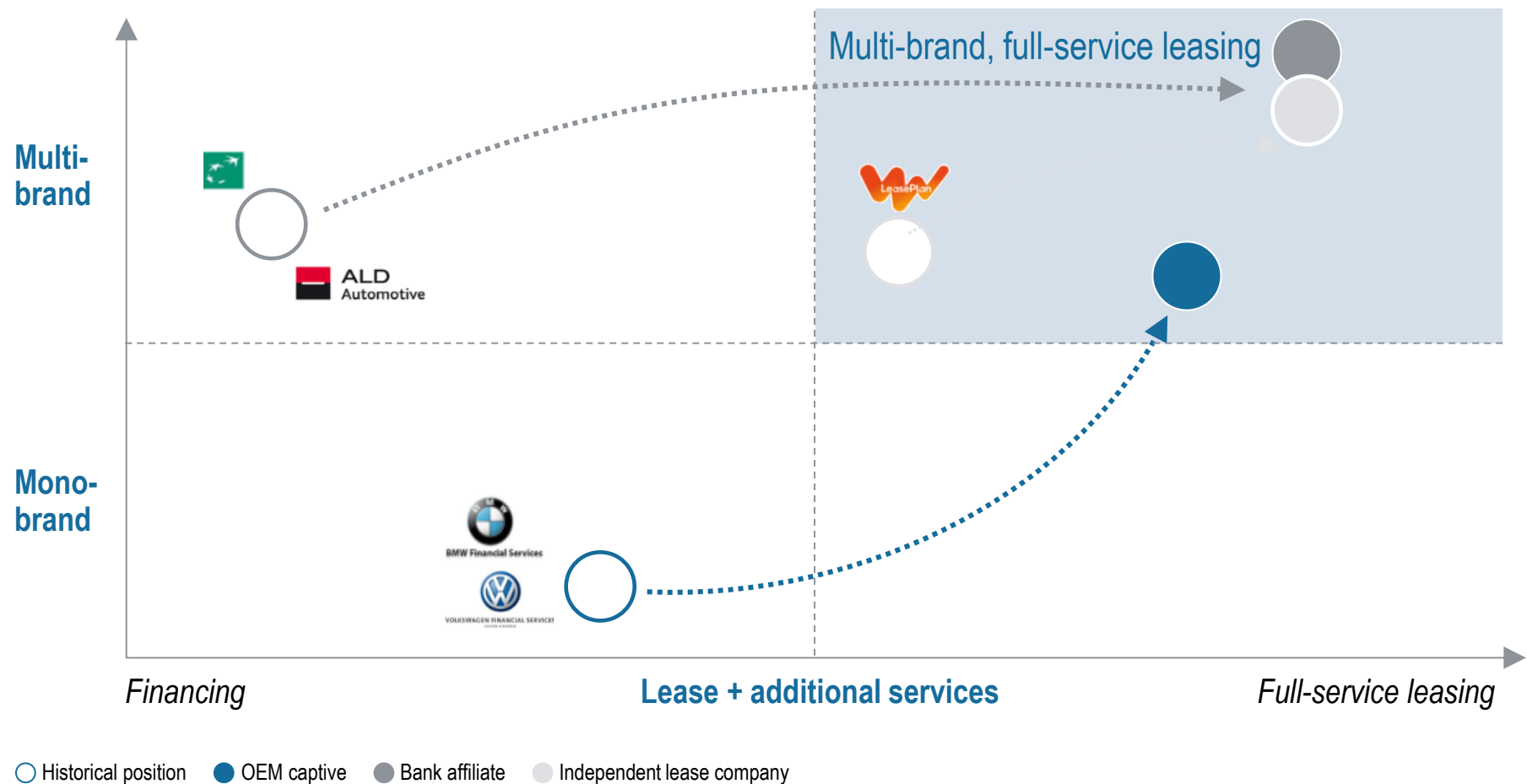
Sources of cars



1) Excluding virtual marketplaces — Primary channel - - - Secondary channel Channels include online and offline

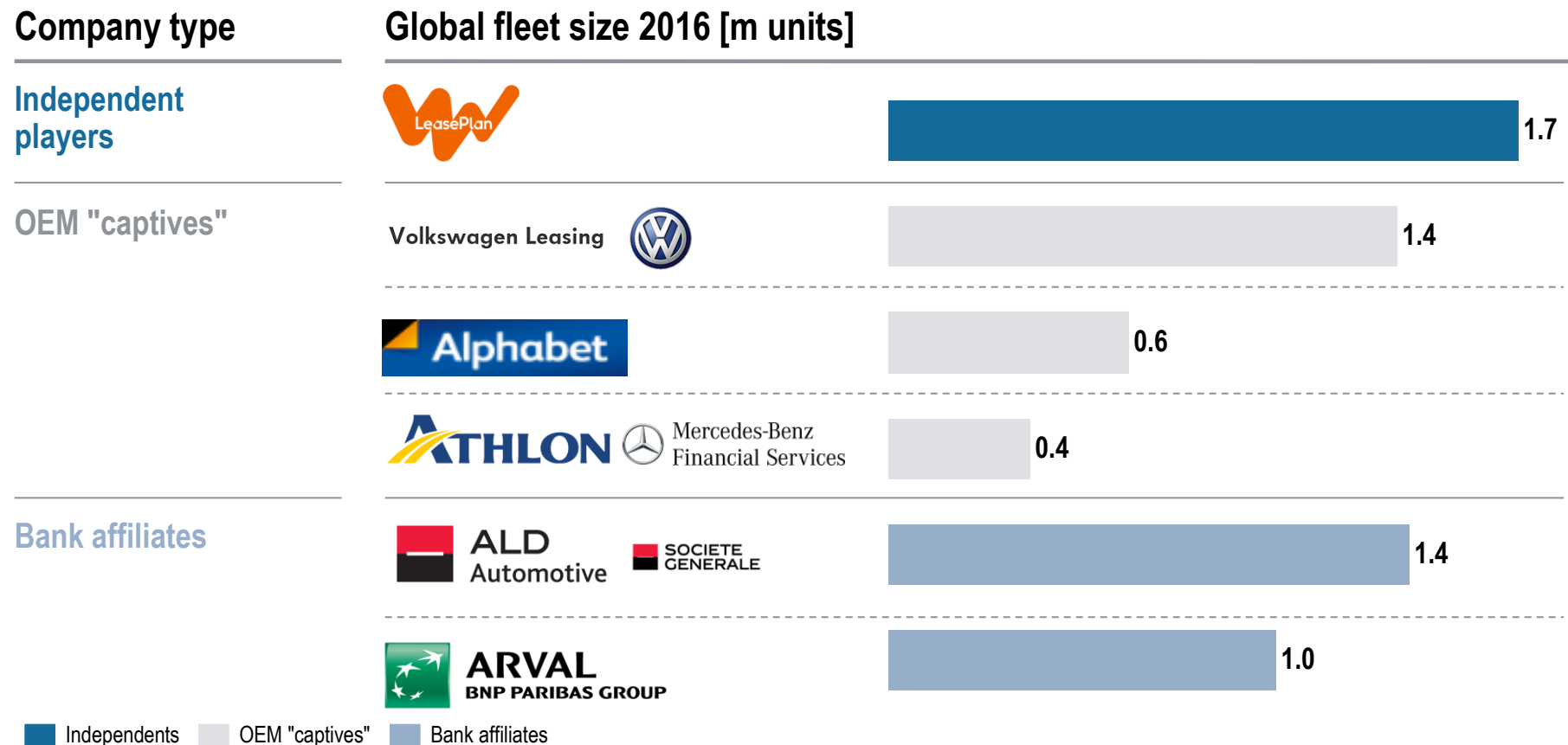
Yet over time, players in all three categories have moved from their different initial positions toward multi-brand, full-service leasing

Historical development of competitor categories (incl. examples)



The major European players are active globally but differ in size and geographic and customer focus

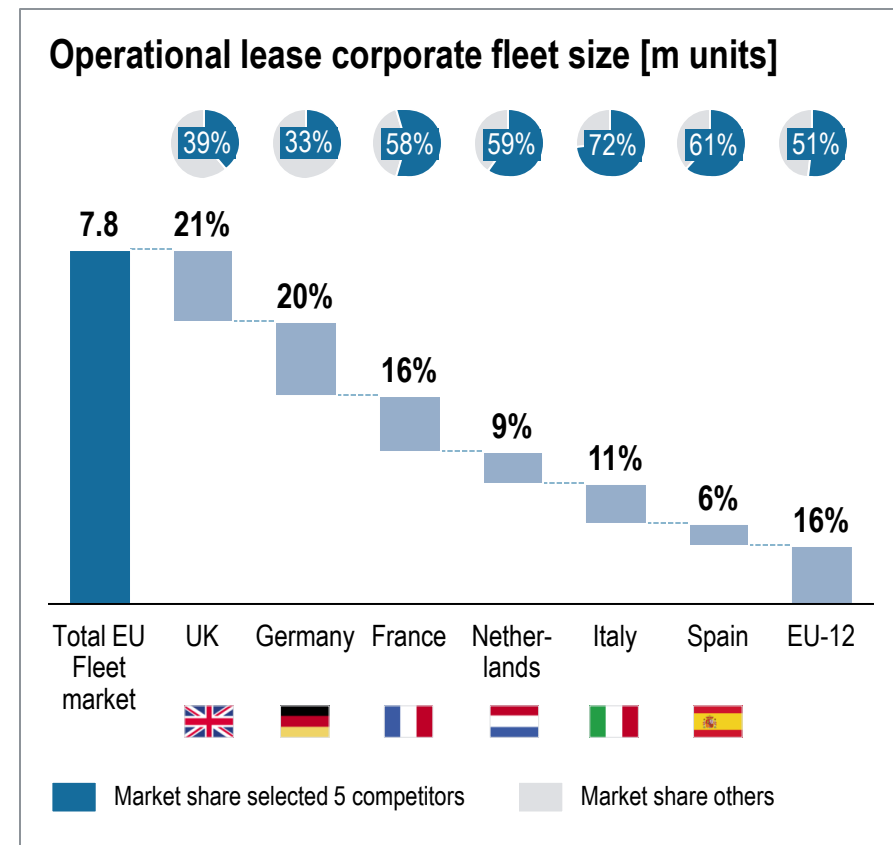
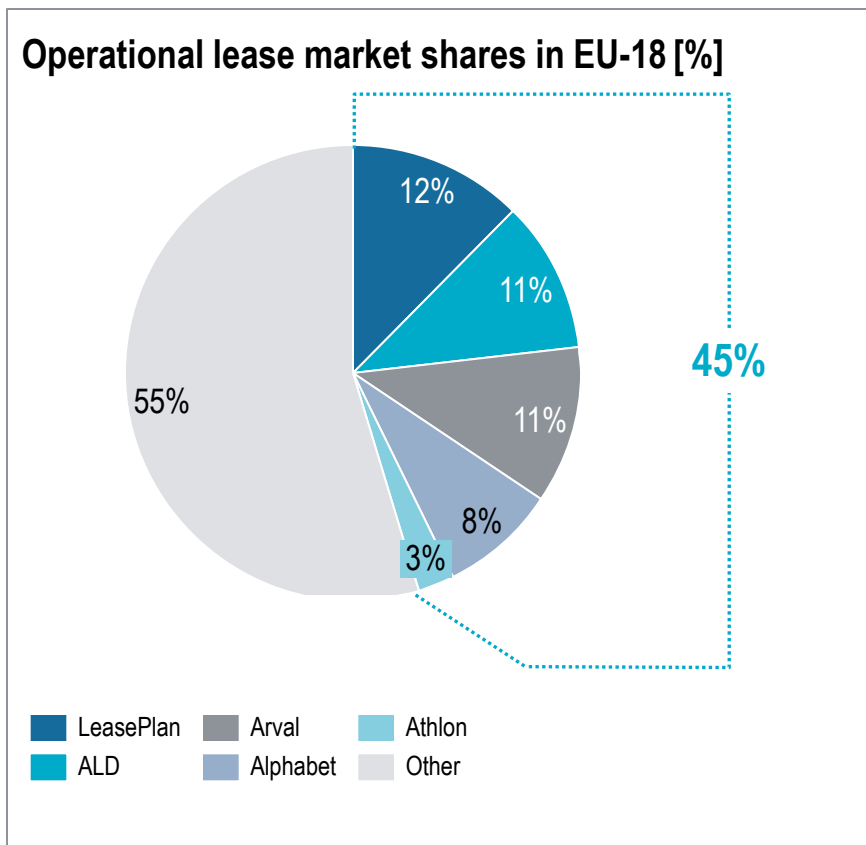
Global fleet size of major European FMCs¹⁾



1) In terms of vehicles worldwide

The European CaaS market is led by the five major players serving ~45% of the market – LP, Arval and ALD are currently leading

Operational lease market PV (EU-18), 2016



The major European captives mainly focus on offering financial leases B2C – Different to the approach of FMCs to date

Overview of key European captives and their activities (2016)

		VOLKSWAGEN FINANCIAL SERVICES BANK. LEASING. VERSICHERUNG. MOBILITÄT.*	DAIMLER Daimler Financial Services	RCI BANK AND SERVICES ¹⁾	PSA BANQUE	FCA BANK ²⁾
Business focus	 Business	> Financing, leasing, fleet management, insurance and mobility services (e.g. rental, car sharing) – Increasing but relatively low share of operating leases in EU-6 countries (ranges between ~20% and 40%) – main focus on financial leases				
	 B2C vs B2B	> Rather high share of B2C business (~55-75%) compared to B2B business (~25-45%)				
Company specific	 Key figures	> Revenue: EUR ~14.7 bn > Fleet size: ~1,350,000 > # countries: 51 > Owner: VW (100%)	> Revenue: EUR ~20.7 bn > Fleet size: ~850,000 > # countries: 40 > Owner: Daimler	> Revenue: EUR ~1.5 bn > Fleet size: ~700,000 > # countries: 36 > Owner: Renault	> Revenue: EUR ~1.4 bn > Fleet size: ~400,000 > # countries: 18 > Owner: PSA	> Revenue: EUR ~0.8 bn > Fleet size: ~125,000 > # countries: 18 > Owner: FCA, Crédit Agricole
	 Sales channels	> Own online and offline retail network	> B2C and B2B via its own online and offline retail network	> B2B via auction websites, and offline retail via dealerships	> B2B via wholesalers; B2C through its own online and offline retail network; C2C sales through virtual marketplaces	> B2B sales through its own virtual marketplace Clickar and B2C via Clickar stores

1) Partnership between Santander and PSA Banque led to a strong decrease in PSA workforce; 2) FCA operates mainly through leases

The competitive landscape in EU-12 countries varies greatly within geographies but most markets are mainly led by FMCs

Key findings on competitive landscape (EU-12)



Within the Northern European countries, as well as in Austria, Switzerland and Belgium, the CaaS markets are **relatively mature and consolidated**



In those markets, **captives are rarely present** (except for VWFS), and the **main opportunities** for FMCs are in the **SME and private segment**



In the **Northern European countries**, the markets are **effectively closed** due to unfavorable **tax regulations**, and mainly led by FMCs and local banks



The **Eastern European markets** by contrast are **very open markets** with few laws regarding CaaS. Consolidation is already occurring, however, driven by OEMs joining those markets due to the comparatively low entry barriers



Portugal and Greece are still **recovering** from the economic crisis and therefore with regard to CaaS are still at a **relatively immature stage**



Those two markets are **easy to enter and mainly led by FMCs**, as captives are not able to compete on price – it is not a very attractive CaaS market at the current time

From a customer and business perspective, success is particularly determined by customer support and the distribution network

Key success factors for B2B PV CaaS

Indicative

Customer perspective			Business perspective		
Key success factors	Description	Importance	Key success factors	Description	Importance
 Customer support	Speed/quality/convenience of supporting fleet managers in day-to-day management and ad hoc handling of drivers' problems		 Distribution network	Density and accessibility of sales network/organization	
 Service portfolio	Scope of services offered for ensuring operability of cars		 Economies of scale	Procurement leverage and operational synergies as a function of fleet size	
 Price	Competitive pricing on leasing quotes, both concerning car and service fees		 Maintenance/supplier network	Density and quality of partner outlets for service and repair	
 Reputation	Reputation of leasing provider as trustworthy and transparent service partner		 Service digitization	Digitized functionalities to support users and fleet managers, e.g. emergency apps or analysis tools for fleet data	
 Car portfolio	Range of OEM brands and car models offered for leasing		 Global reach	Global network of sales and service points as well as customer support organizations	

 High importance
  Low importance

Contents

Passenger vehicle development in EU-18

A. Overall market development

- > Trend toward subscription economy
- > Mobility demand development
- > Overall market development in EU-18
- > Market development by customer segment in EU-18

B. Competitive landscape in the CaaS market

- > Competitor categories and developments
- > Competition within the CaaS market
- > Positioning of market players and key success factors

LCV development in EU-6

A. Overall market development

- > Differences between LCV and PV and core drivers of LCV
- > Overall market development of LCV in EU-6
- > Market development by customer segment in EU-6

B. Competitive landscape in the LCV CaaS market

- > Competitor categories and developments within LCV
- > Competition within the LCV CaaS market
- > Positioning of market players and key success factors

Light commercial vehicle (LCV) CaaS market differs fundamentally from the PV market, however growth rates are similar

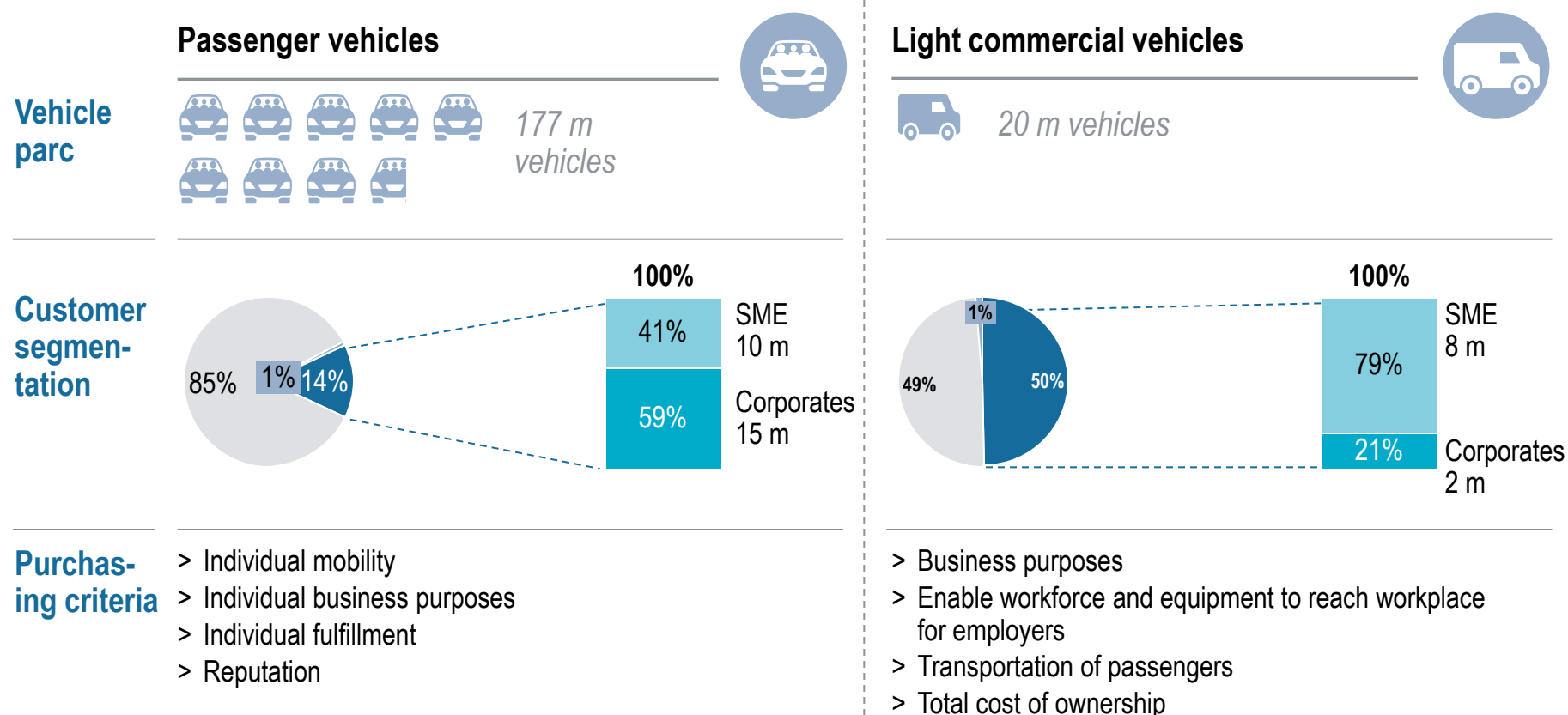
Car-as-a-Service for light commercial vehicles

- The LCV market in the EU-6¹⁾ countries **differs fundamentally from the passenger vehicle market** in terms of size, customer segment mix and purpose of use of the vehicles
- One notable difference is that the **development of LCV** sales within the long-term LCV car parc **correlates strongly with GDP** development as well as with the **number of SMEs**
- Overall, expectations for growth in the CaaS market for light commercial vehicles in the EU-6 countries are similar to the passenger vehicle market: for the former, steady **growth at ~5.8% p.a. until 2025 amounting to EUR ~21 bn**, which is less than a third the size of the respective PV CaaS market. The growth is also accompanied by an increase of CaaS penetration in the car parc, which is projected to lead to a total **LCV CaaS car parc of ~4 m LCVs in 2025**
- In contrast to the developments in the PV CaaS market, expected growth in the light commercial vehicle CaaS market is mainly driven by **traditional customer segments** due to a further shift toward **outsourcing of fleets and a strong TCO orientation**
- Within the traditional customer segments of LCVs, which continue to grow at a slightly higher pace than the PV market, **SME expansion is the major growth driver**, making up ~50% of the total LCV CaaS market in 2025
- In contrast to the PV CaaS market, the LCV market in EU-6 countries is **still very fragmented** and a wider variety of players compete. Overall, the **leading players from the PV** market also control majority shares in the LCV market

1) Including France, Germany, Italy, the Netherlands, Spain and the UK

The LCV market differs fundamentally from the PV market

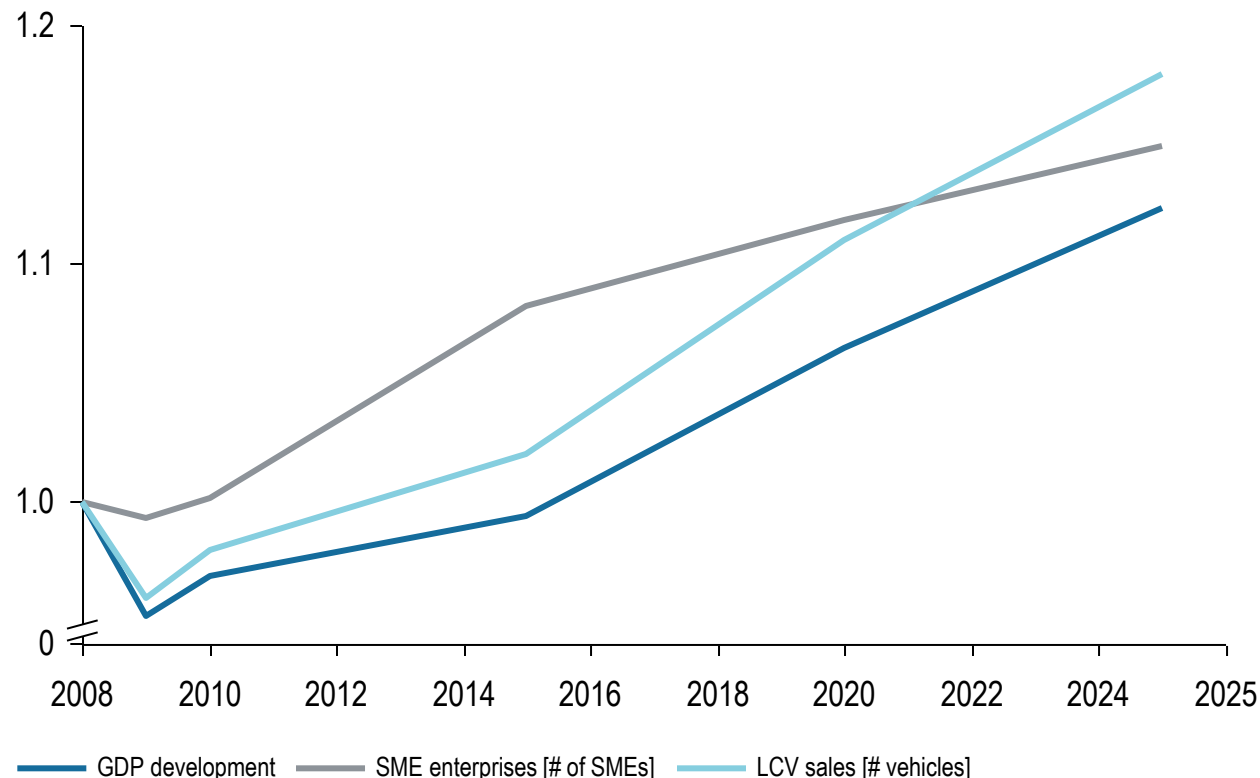
Key differences between the PV (EU-6) and the LCV markets (EU-6)



LCV sales correlate strongly with the number of SMEs and with GDP development – Both variables currently display a positive outlook

Overview of LCV sales and macroeconomic factors development (EU-6)

Index vs. 2000 [2008 value set as 1]

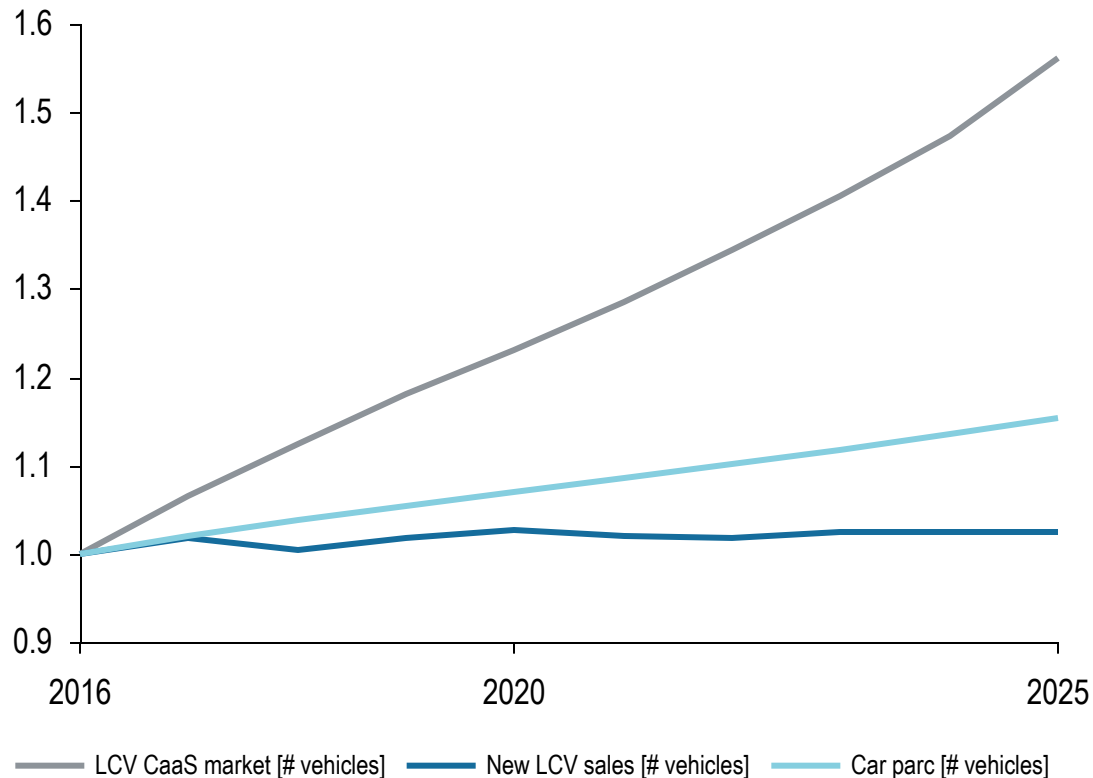


- > The growth in SMEs positively affects LCV sales growth
- > Whereas economic downturns are directly reflected in GDP and LCV sales, SMEs are affected only after a certain period of time
- > Moreover, the impact of economic developments on the number of SMEs is not as strong as on LCV sales

The LCV CaaS market is projected to grow faster than both mobility demand and new car sales, similar to the PV CaaS market

Selected drivers of LCV CaaS market (EU-6), 2016-2025

Index vs. 2016 [2016 value set as 1]



**CAGR
'16-'25**

5.1%

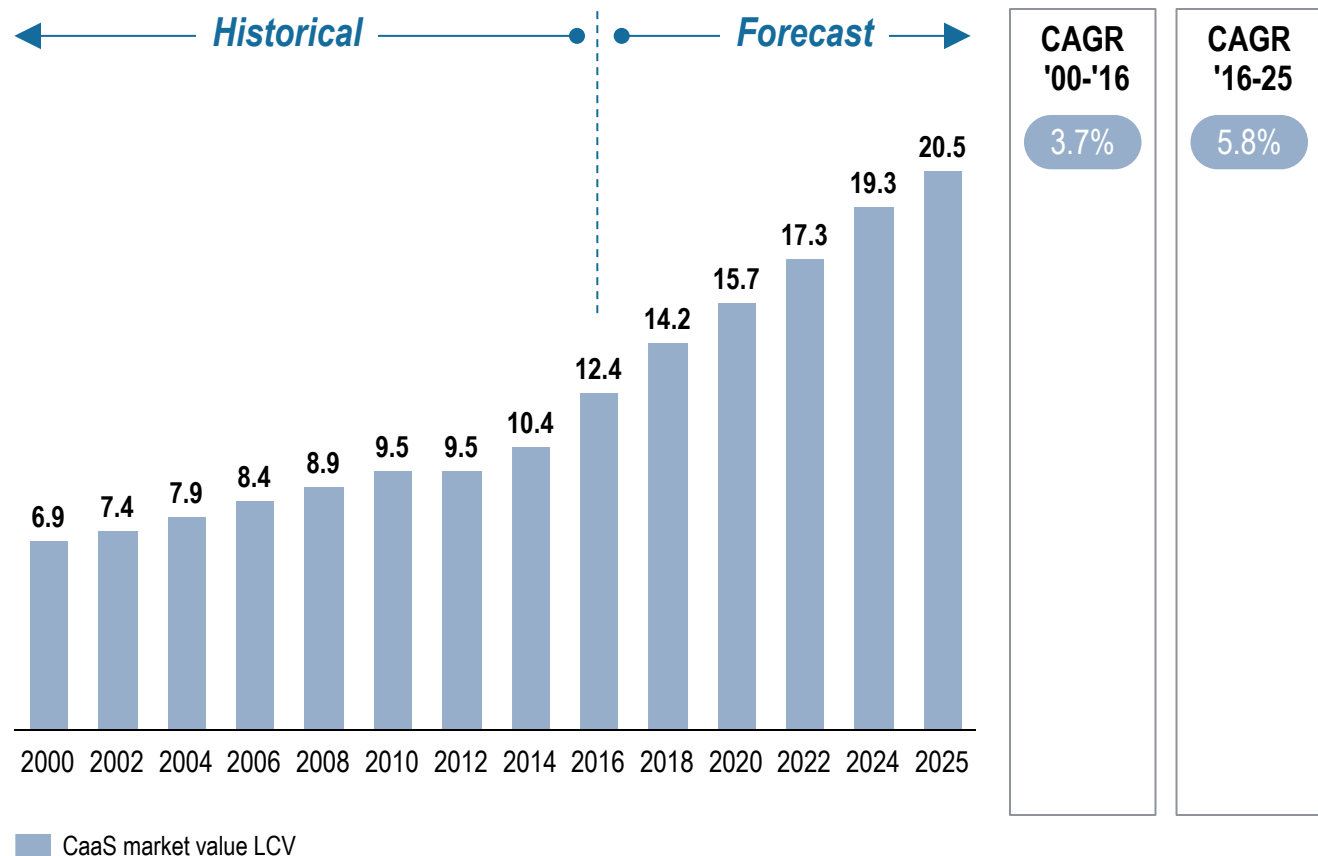
1.6%

0.3%

- > The most important driver of the CaaS market is the overall trend toward the increasing number of services associated with vehicles, reflected in the growing penetration of CaaS units in the overall market
- > Overall growth in last-mile logistics needs and innovative "logistics-as-a-service" trends contribute to the positive development of the LCV CaaS market
- > Total size of car parc has a strong impact on CaaS market development – new vehicle sales will have only a small impact on CaaS development in the future
- > Overall, leasing duration in some markets is longer in the LCV market than it is for PVs

The LCV CaaS market in EU-6 countries amounted to EUR ~12 bn in 2016, which is less than a third the size of the PV CaaS market

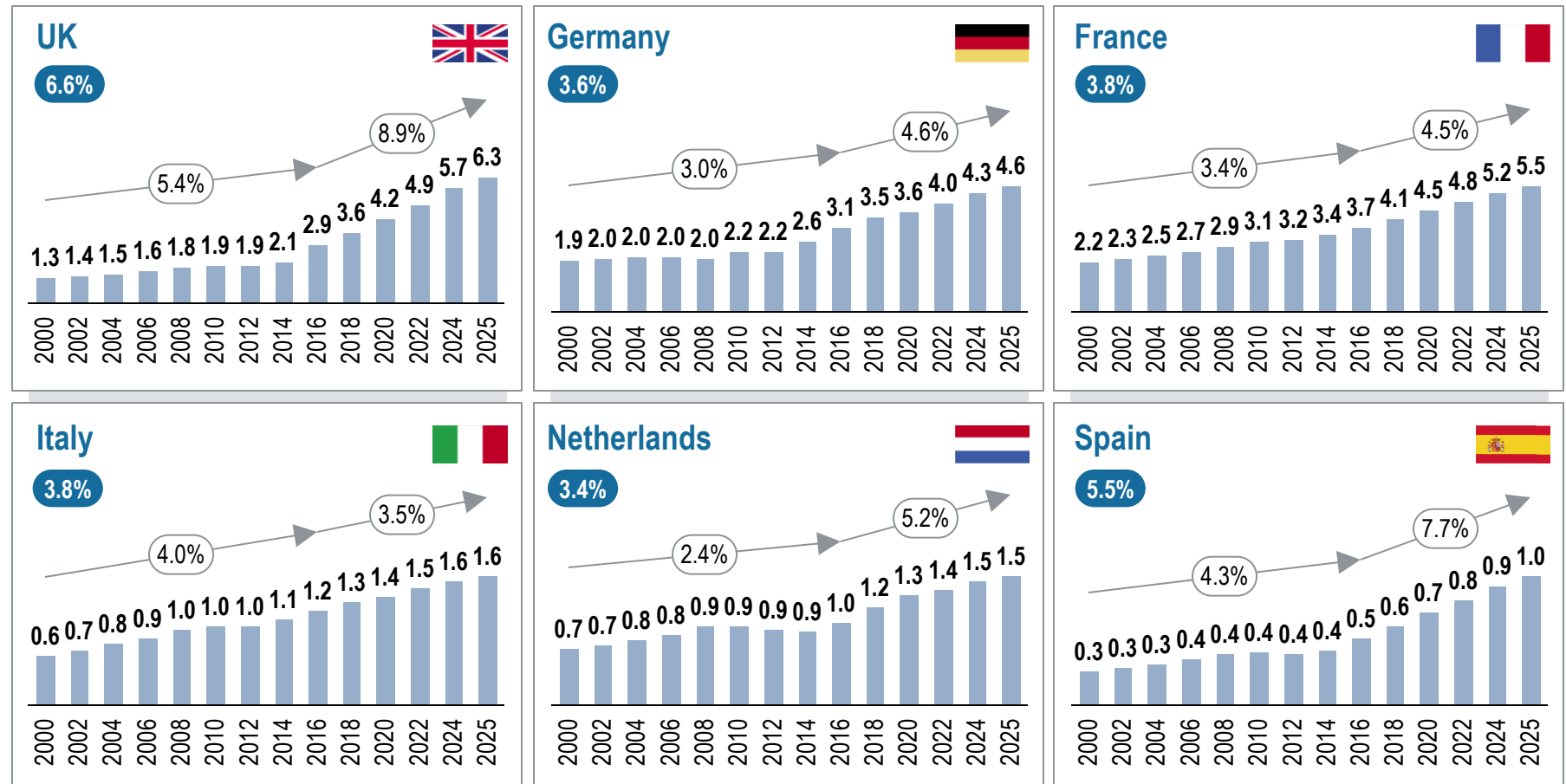
CaaS market value (EU-6), 2000-2025 [EUR bn]



- > LCVs are the largest segment within the commercial vehicles industry, with sales of ~1.5 m vehicles in 2016 accounting for ~85% of total CV sales in EU-6 countries
- > The LCV CaaS car parc is led by corporate customers (~87%)
- > LCVs are also expected to outperform the PV car market value by ~0.5% in terms of growth rate in 2016-2025

Similar to the EU-6 PV CaaS market, the LCV market is projected to show steady growth across all markets through 2025

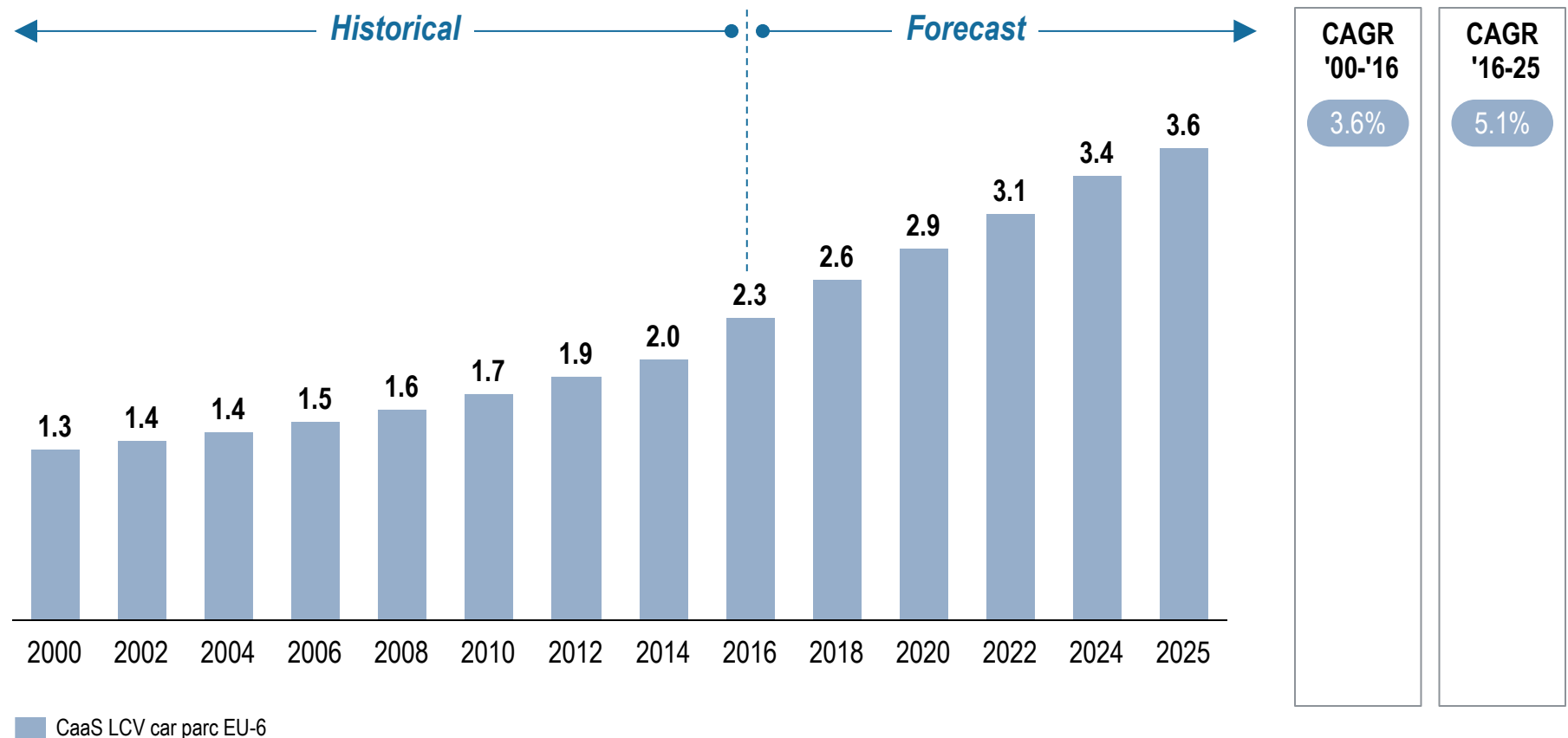
LCV CaaS market, total by country, 2000-2025 [EUR bn]



% CAGR '00-'25

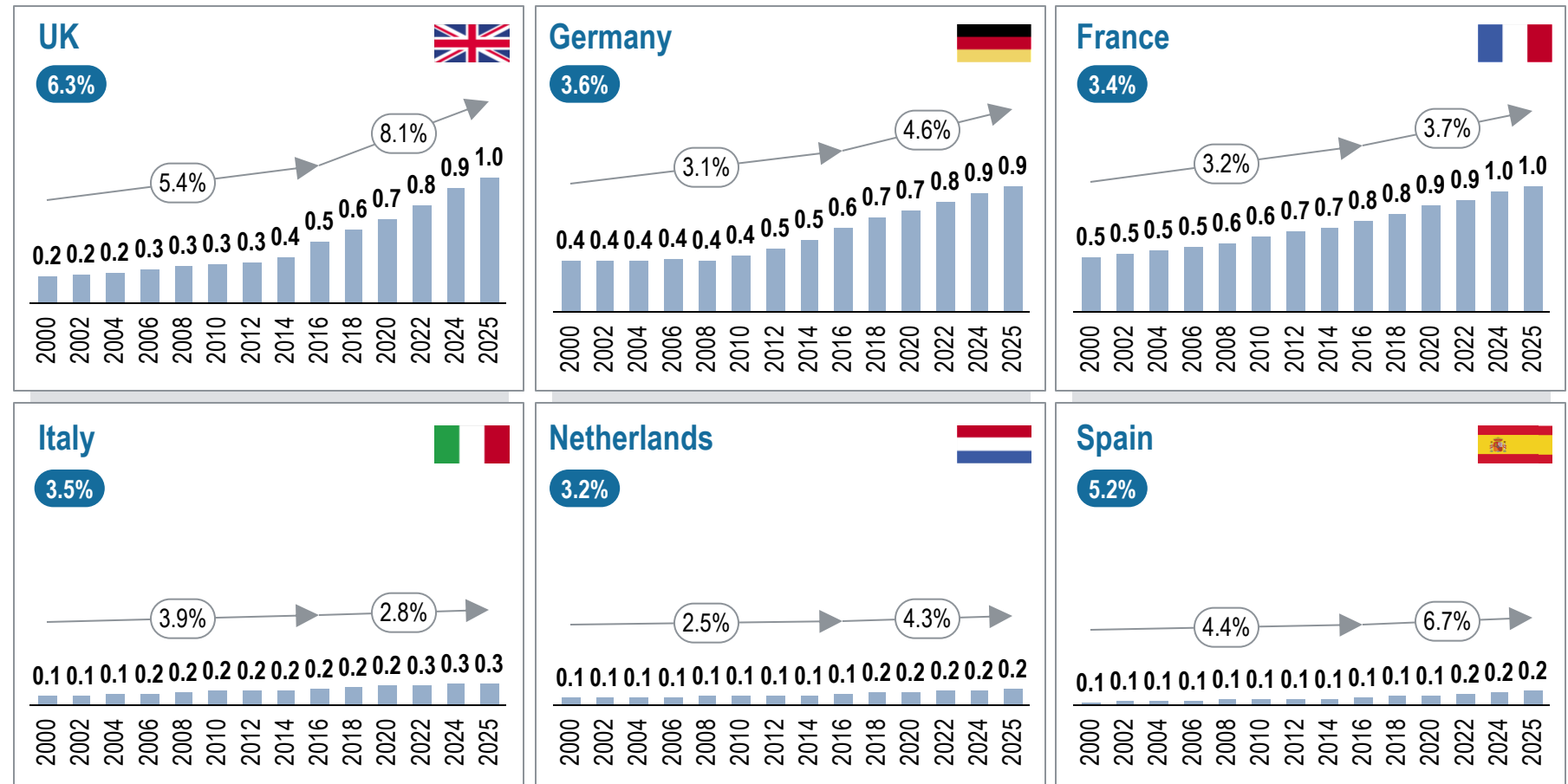
In terms of volume, the LCV car parc in EU-6 countries is expected to comprise ~4 m units in 2025

CaaS distribution in LCV car parc (EU-6), 2000-2025 [m units]



As for PV CaaS, strong growth is projected in the underlying LCV car parc across the EU-6 markets

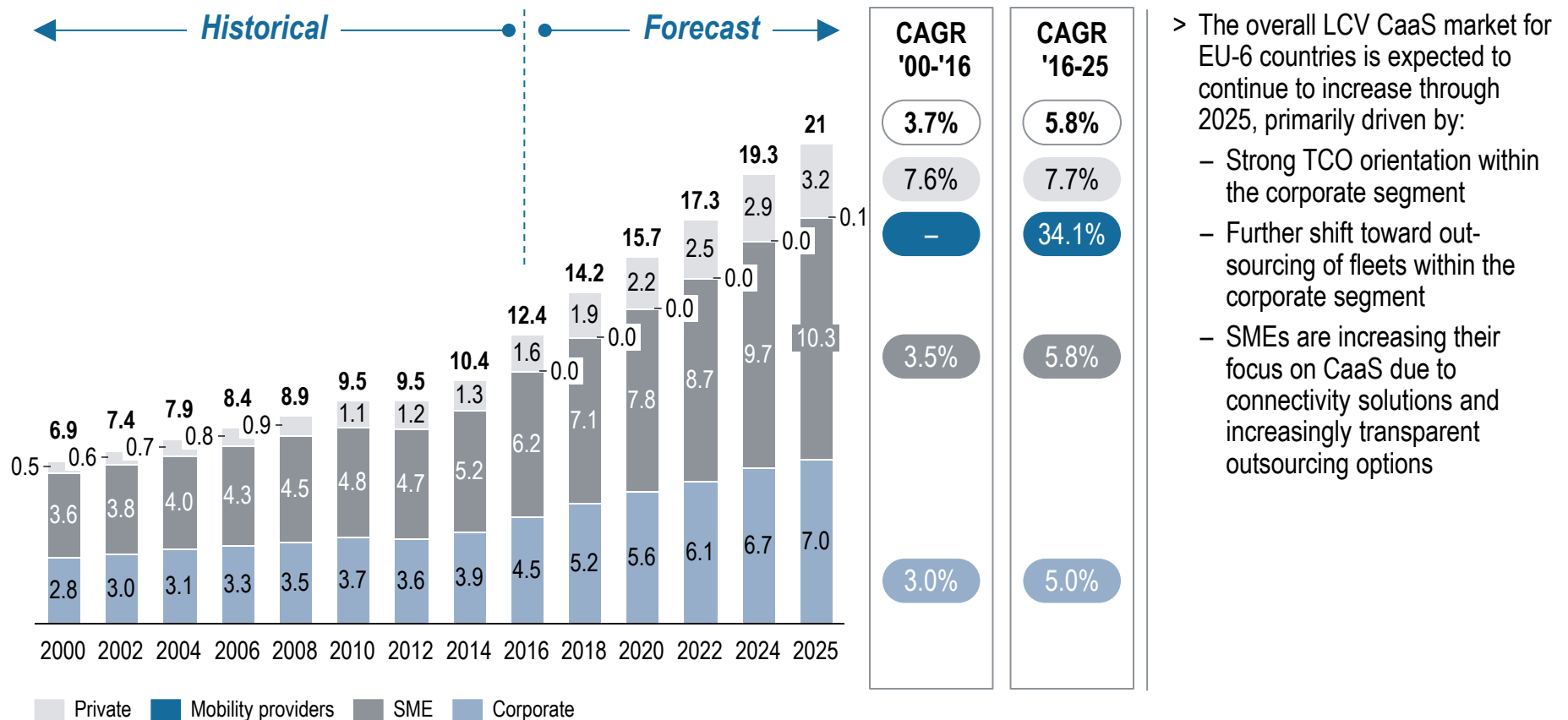
CaaS distribution in LCV car parc (EU-6), 2000-2025 [m units]



% CAGR '00-'25

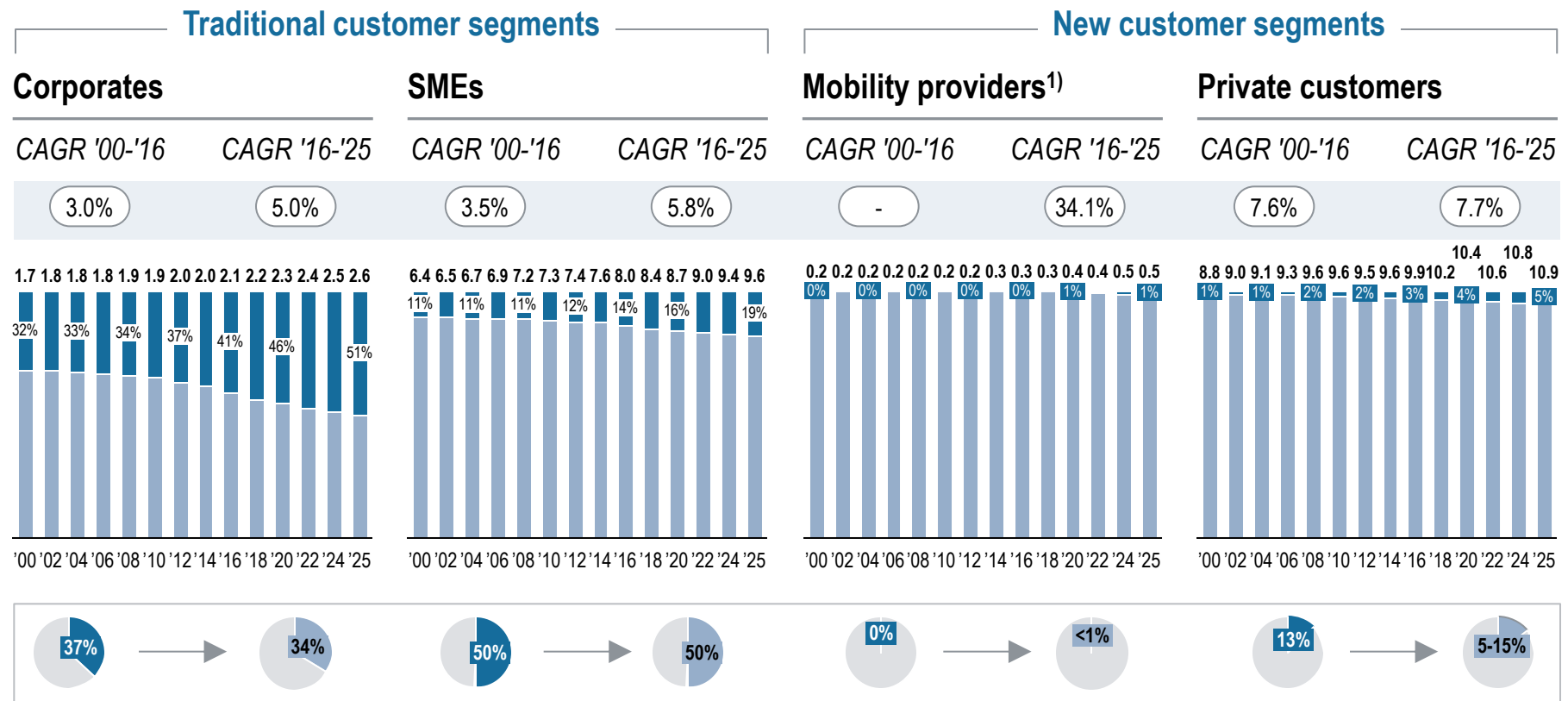
In contrast to the developments in the PV CaaS market, LCV growth is mainly driven by traditional customer segments

LCV CaaS market development by key customer segment (EU-6), 2000-2025 [EUR bn]



In traditional segments, which continue to grow slightly faster than new segments, SME expansion is the major growth driver

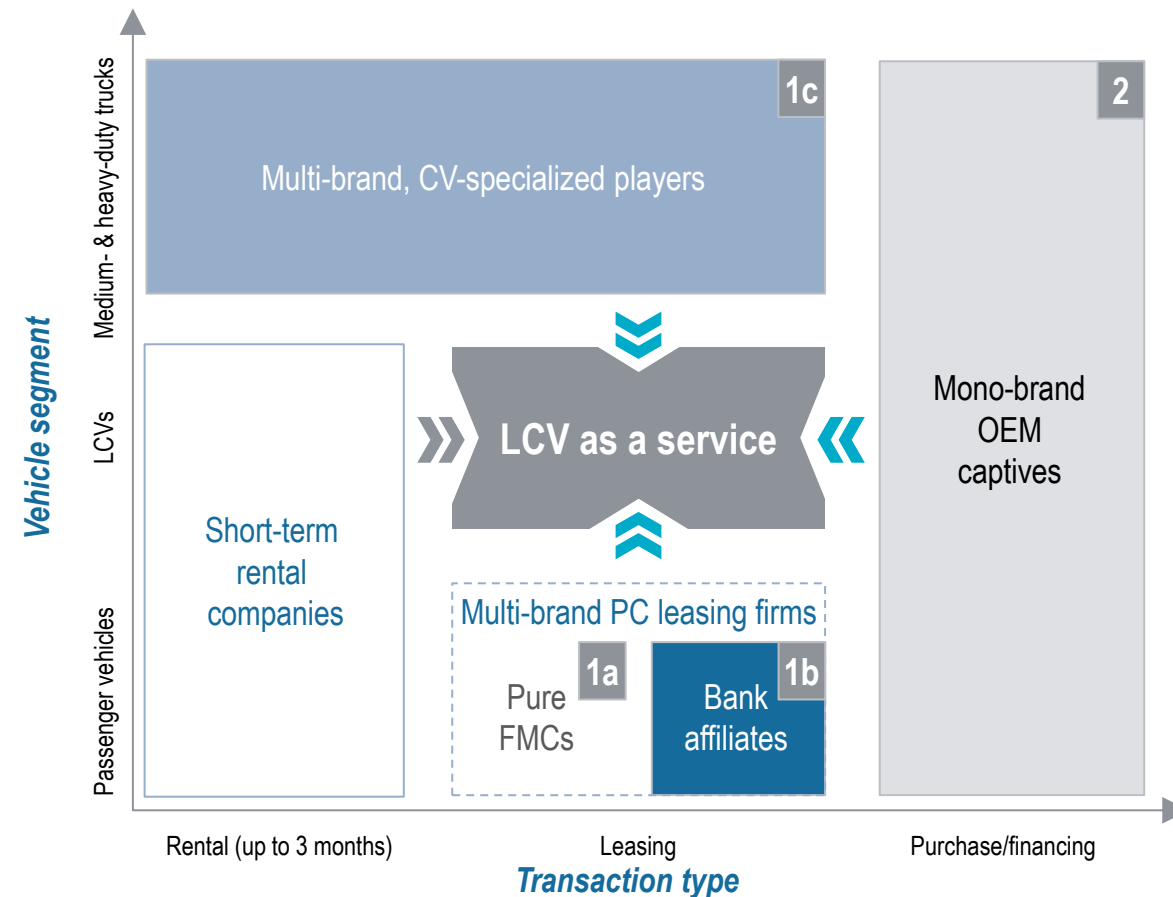
LCV CaaS penetration in overall car parc by cust. segment (EU-6), 2000-25 [m units,%]



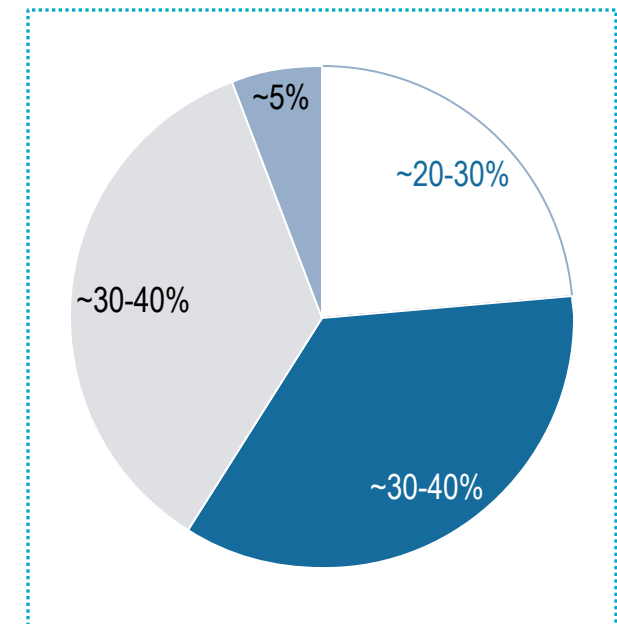
In the LCV CaaS market, a wider variety of players compete but leading players from the PV market control majority shares

Overview – Categories in LCV leasing and market shares

Indicative



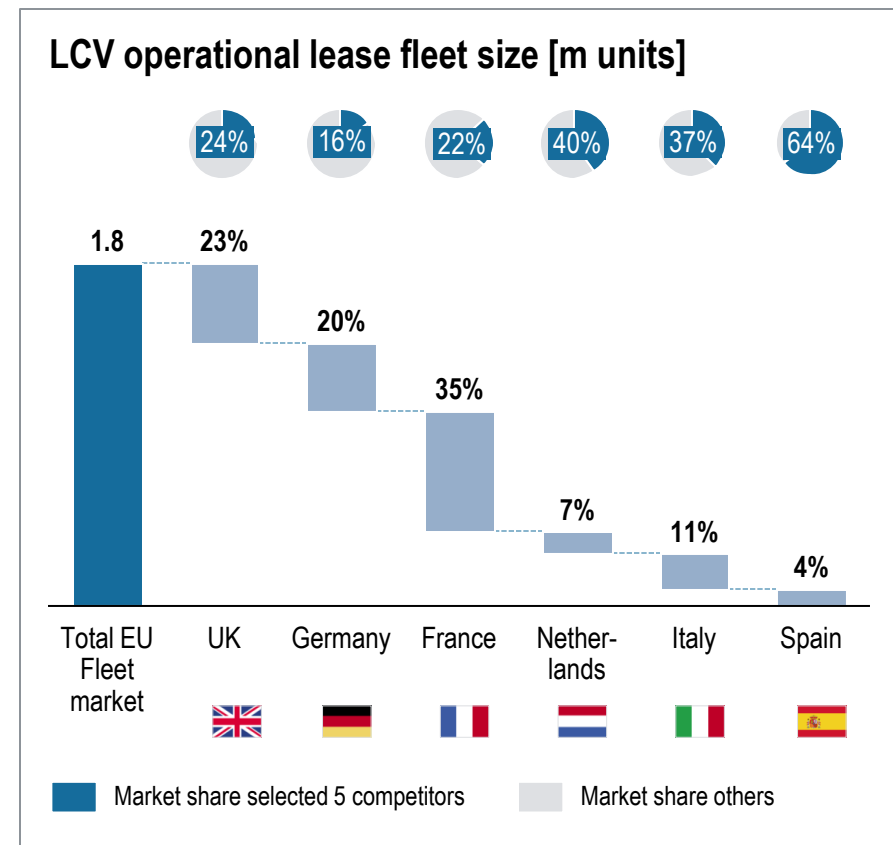
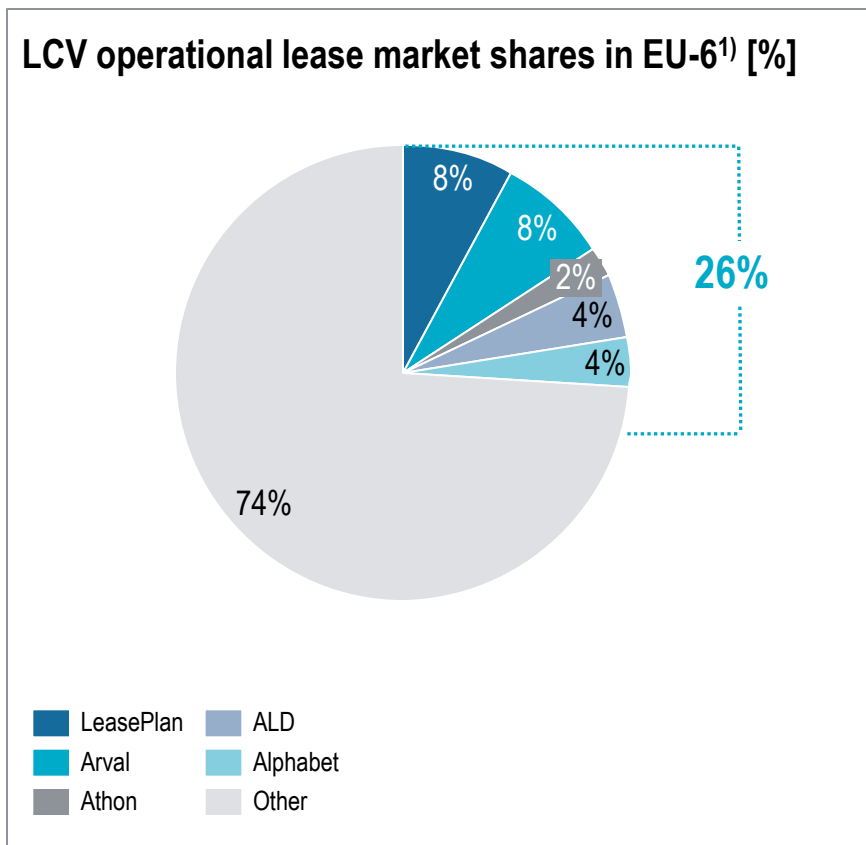
Market shares in EU-6 by category [%]



» Direct competition by offering LCV leasing » Indirect competition by offering substitutes to LCV leasing

The LCV CaaS market within the traditional categories is still very fragmented

Operational lease market LCV (EU-6), 2016



1) Only operational lease, no CaaS financial lease included

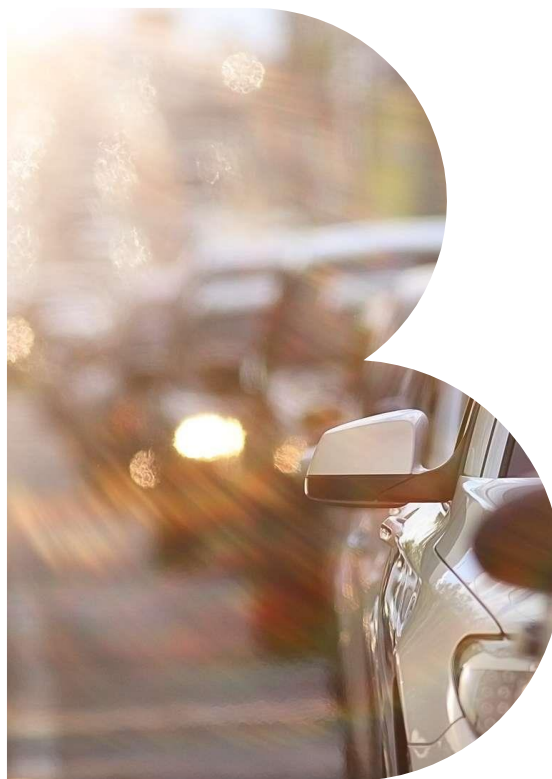
Key competencies of LCV CaaS providers must be configured to increase fleet efficiency and ensure vehicle uptime

Key success factors for B2B LCV CaaS

Indicative

Customer perspective			Business perspective		
Key success factors	Description	Importance	Key success factors	Description	Importance
 Customer support	Speed/quality/convenience of supporting fleet managers in day-to-day management and ad hoc handling of drivers' problems		 Maintenance/supplier network	Density and quality of partner outlets for service and repair	
 Price	Competitive pricing on leasing quotes, concerning both car and service fees		 Economies of scale	Procurement leverage and operational synergies as a function of fleet size	
 Service portfolio	Scope of services offered for ensuring operability of cars		 Service digitization	Digitized functionalities to support users and fleet managers, e.g. emergency apps or analysis tools for fleet data	
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 Car portfolio	Range of OEM brands and car models offered for leasing		 Global reach	Global network of sales and service points as well as customer support organizations	

C. Used cars market development



Contents

Passenger vehicle development in EU-18

A. Overall market development

- > Market value development
- > Volume development
- > Residual value development

B. Competitive landscape in the 3-4-year-old used car market

- > Overview of the used car market value chain
- > Positioning of market players and key success factors

C. Recent developments in the used car market

- > Forward integration
- > Digitization
- > New profit pools

LCV development in EU-6

A. Overall market development

- > Market value development
- > Volume development
- > Residual value development

B. Competitive landscape in the 3-4-year-old used LCV market

- > Overview of the used LCV market value chain
- > Positioning of market players and key success factors

C. Recent developments in the used LCV market

- > Focus of remarketing through B2B channels
- > Impact of fuel type diversification on used LCV RVs
- > E-commerce and logistics growth

The used car PV market is as large as the CaaS PV market and is expected to grow in volume at ~4% p.a. until 2020

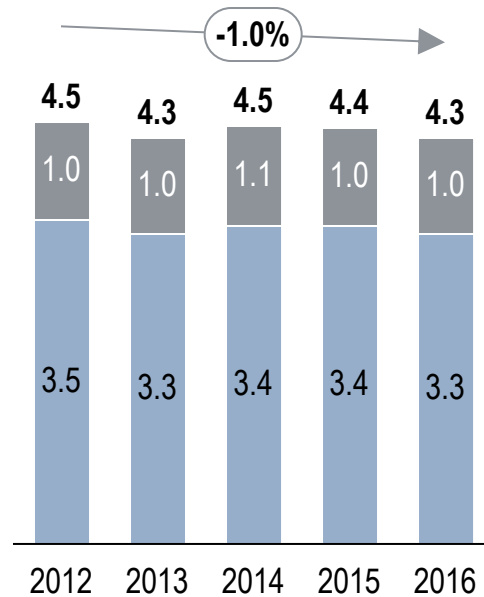
Used passenger vehicles

- The **EU-18 3-4-year-old used car market** was valued at **EUR ~62 bn in 2016** and shows a relatively stable market development overall, with **volumes** being mainly driven by new car volumes and RVs developing stably over time
- The volume of 3-4-year-old cars is **expected to grow** by **4.2% p.a.** in the period 2016-2020, with **stable** short-term **residual value outlooks**. Different maturities regarding leasing penetration rates across countries offer growth opportunities for FMCs
- **Diesel** residual values are exposed to **potential regulatory action**, but the **impact** on 3-4-year-old diesel cars for FMCs is **expected to be limited** as regulations are mainly local and focused on older diesel vehicles and FMCs' fleets are renewed every three to four years. Increasing **electric vehicle penetration** is expected to have **only a minor impact on** the 3-4-year-old used car market until 2025
- **Key recent developments** in the used car market include forward integration and digitization. FMCs are **increasingly forward integrating** in the used car value chain by shifting toward direct B2C sales to improve profit margins, complementing online sales with physical retail stores. The **digitization of the customer journey** has also driven the emergence of multiple **new digital players** in the market
- Additionally, FMCs are increasingly **exploring additional profit pools** by exploiting cross-country arbitrage potential, engaging in used car leasing and offering ancillary services

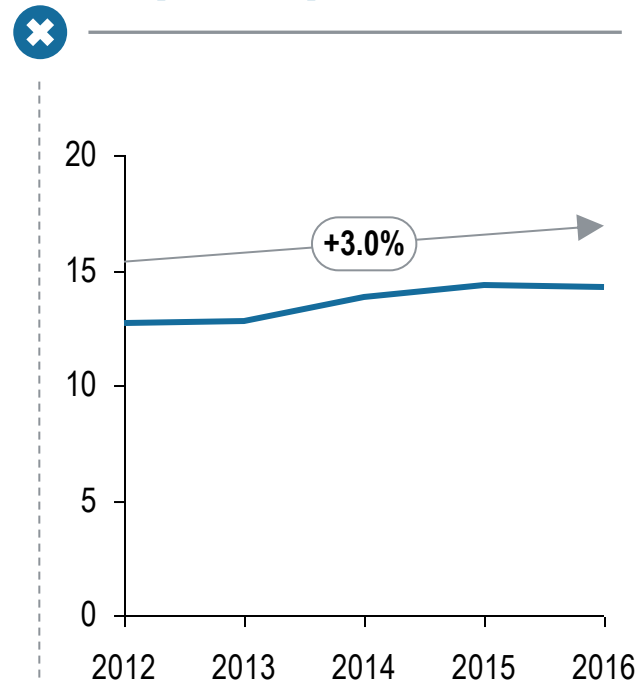
The 3-4-year-old car market in EU-18 countries shows a relatively stable market development in recent years

Market development of 3-4-year-old PVs (EU-18), 2012-2016

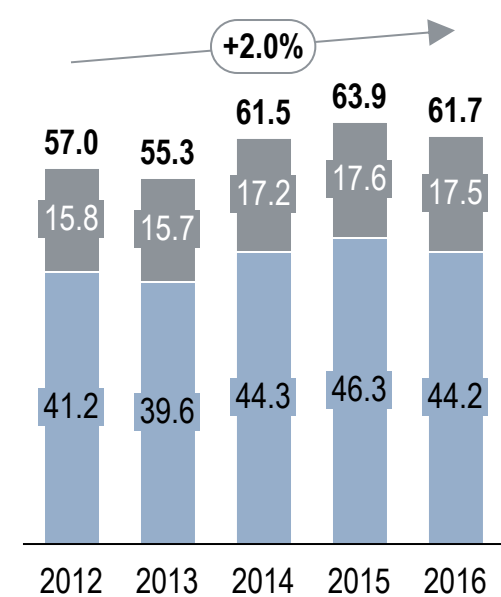
1 Volume [vehicles sold, m]



2 Absolute residual values [EUR '000]¹⁾



3 Market value [EUR bn]

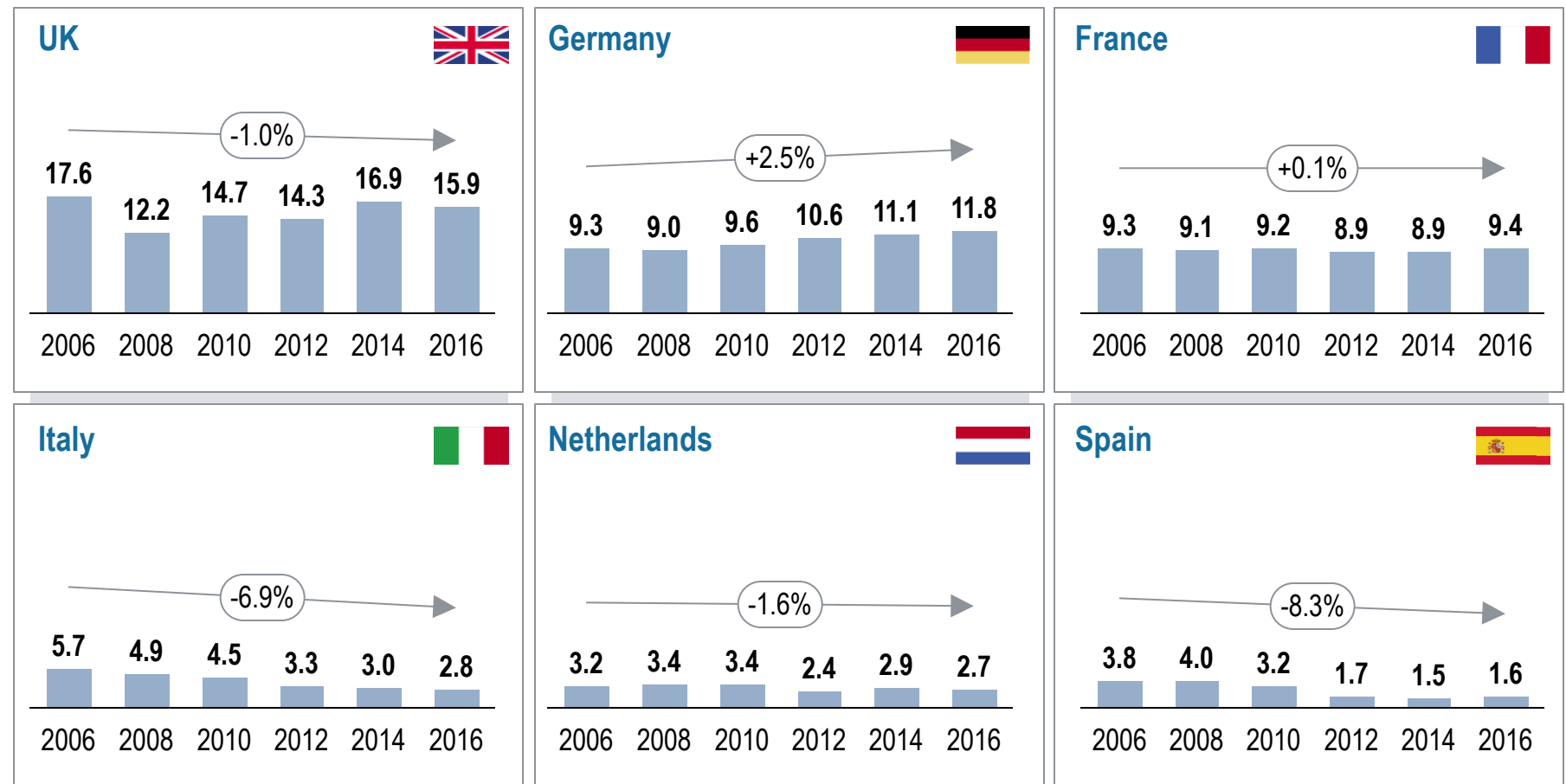


% CAGR ■ EU-12 ■ EU-6

1) Weighted average

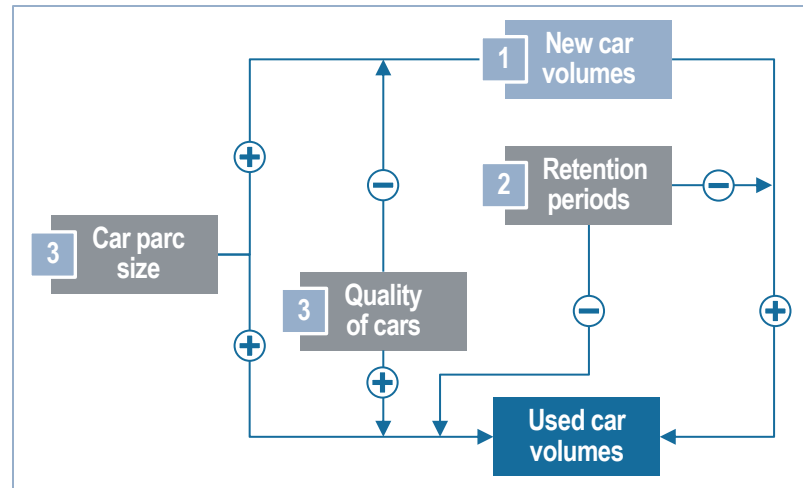
German and French markets are particularly stable over time, while those in the UK, Italy and Spain show susceptibility to different crises

Market development of 3-4-year-old PVs by country [EUR m]



Young used car volumes are mainly driven by new car volumes, while car parc size and retention periods drive the overall market

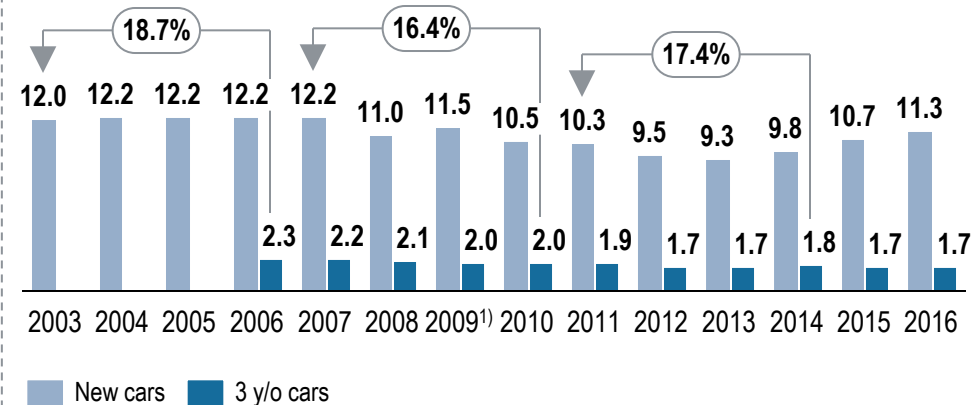
Market drivers for used cars



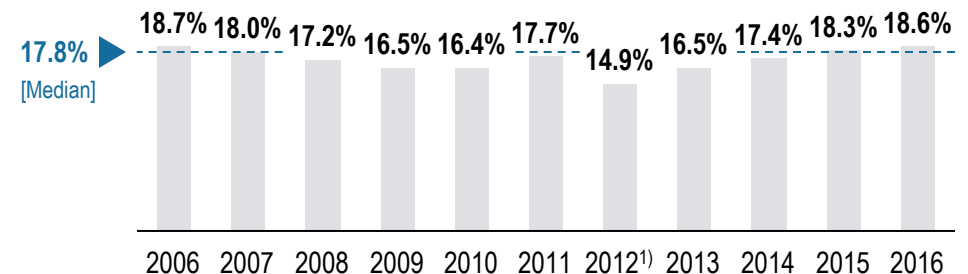
- 1 **New car volumes** directly impact the supply of cars in the used car market, especially in the younger age segments
- 2 **Retention periods** determine when a car is sold for the first time on the used car market (younger age segments) and the number of times a vehicle is sold over its lifetime (older age segments)
- 3 In the long term, the improving **quality of cars** positively impacts the lifecycle of vehicles and **total car parc size**, which fuels used car volumes in the older vehicle age segments

1) Anomaly due to the introduction of scrappage schemes in all EU-6 countries to stimulate new car sales during the crisis

1 Example: New PV and 3-year-old PV volumes (EU-6) [m units]

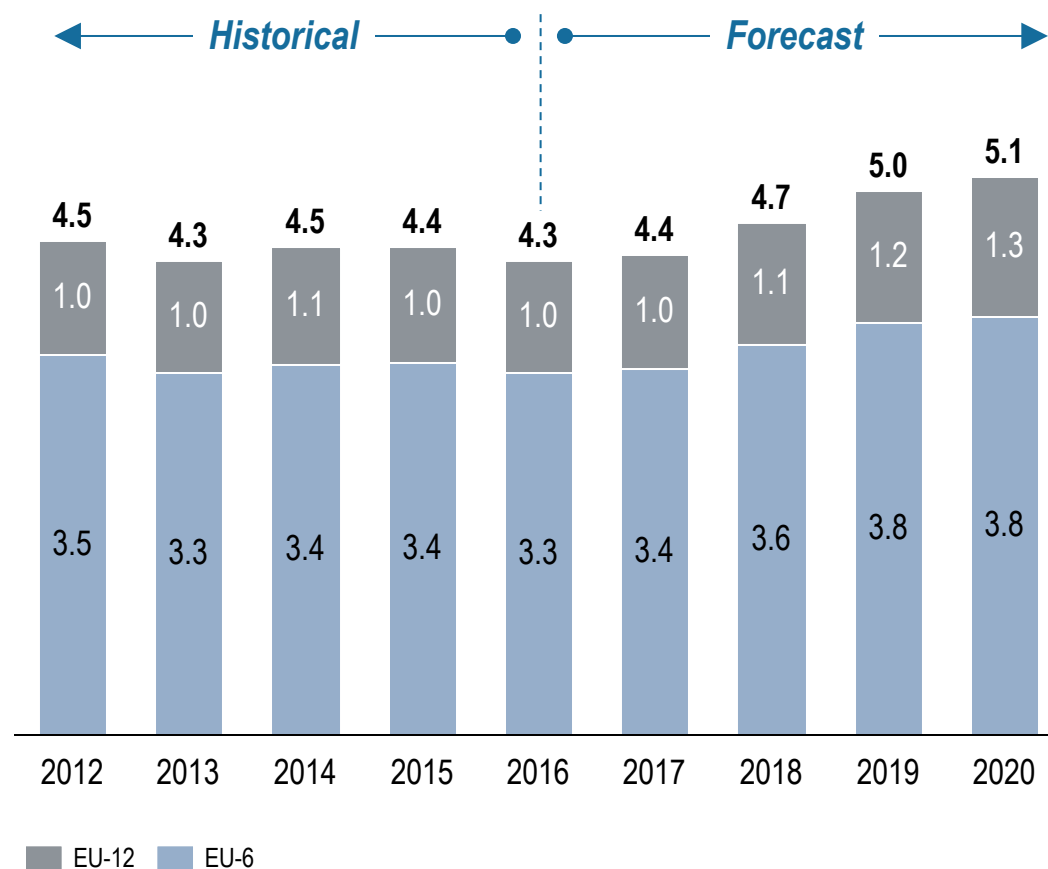


3-year-old PV volumes at t = 0 vs. new PV volumes at t = -3 (EU-6) [%]



Supply of 3-4-year-old cars has been limited due to decreasing new car sales, but is expected to grow again by 4.2% p.a. until 2020

Market volume development of the 3-4-year-old used PV market, EU-18 [m units]

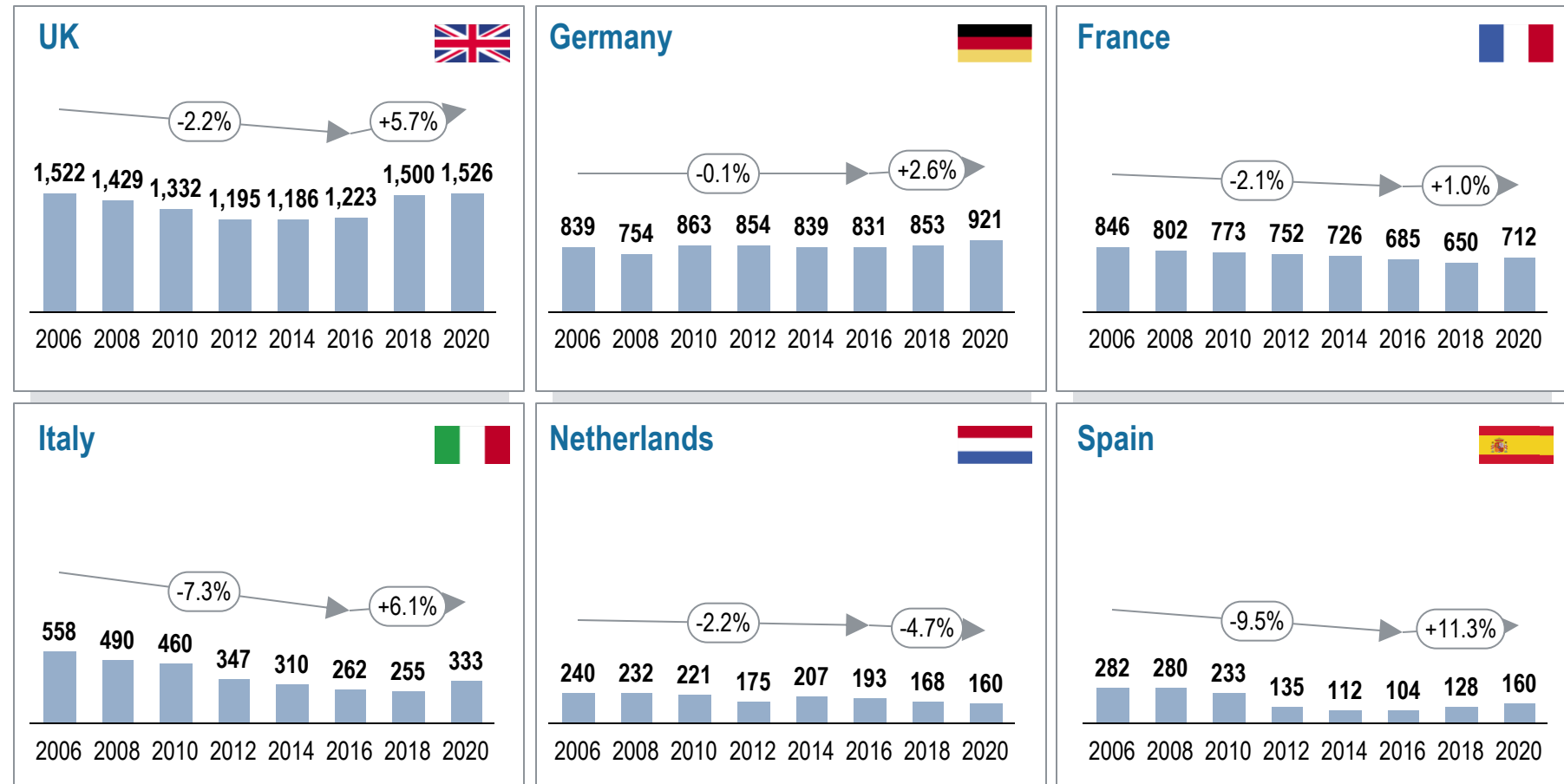


CAGR '12-'16	CAGR '16-'20
-1.0%	4.2%
-0.5%	+5.8%
-1.2%	+3.7%

- > Declining new car sales in the years following the financial and euro crisis resulted in a limited supply of 3-4-year-old cars in the used car market (-1.0% p.a. from 2012-2016)
- > Strong recovery of new car volumes from 2013 onwards is expected to drive supply of 3-4-year-old cars by 4.2% p.a. (2016-2020) in EU-18 countries

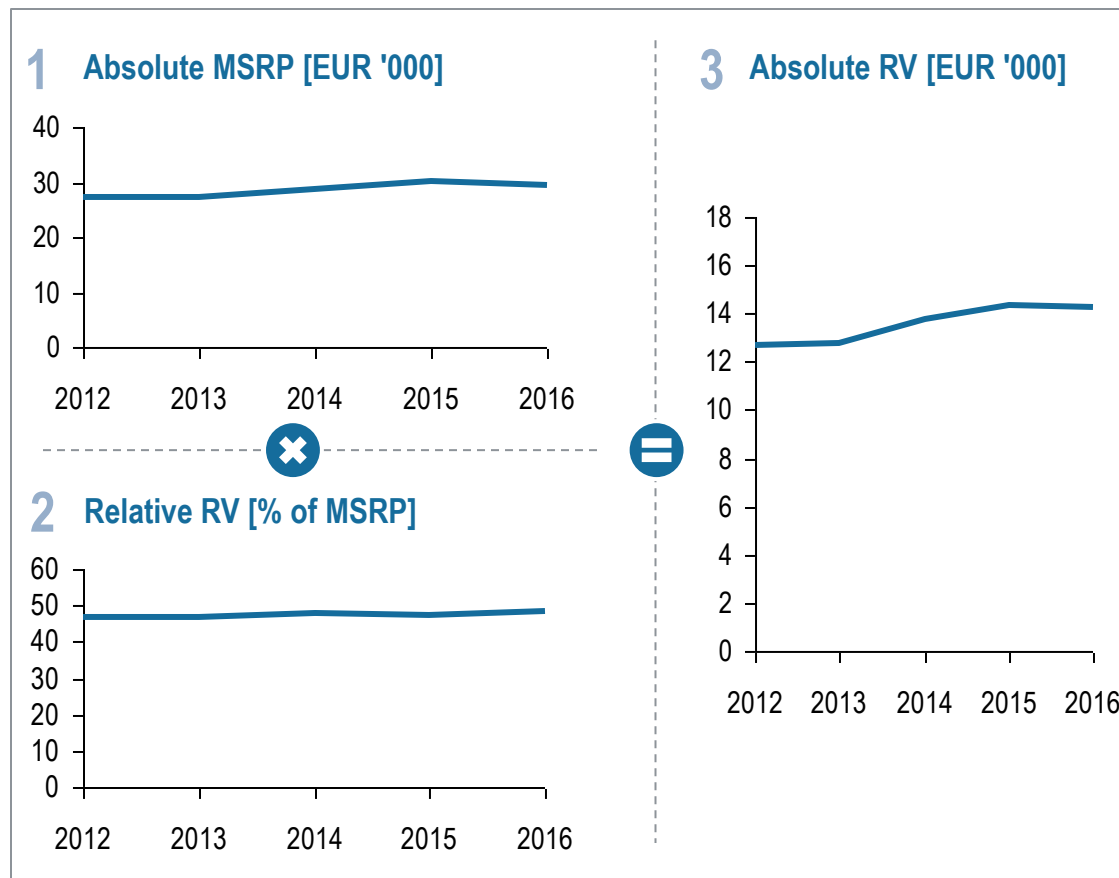
This growth is mainly driven by the UK in the EU-6, with Italy and Spain also displaying an outlook of potential strong volume growth

Market volume development of the 3-4-year-old used PV market by country ['000 units]



Overall, the development of residual values in EU-18 countries has been stable over time and the same goes for the short-term outlook

Residual value development for 3-4-year-old cars (EU-18)¹⁾



Short-term relative RV outlook

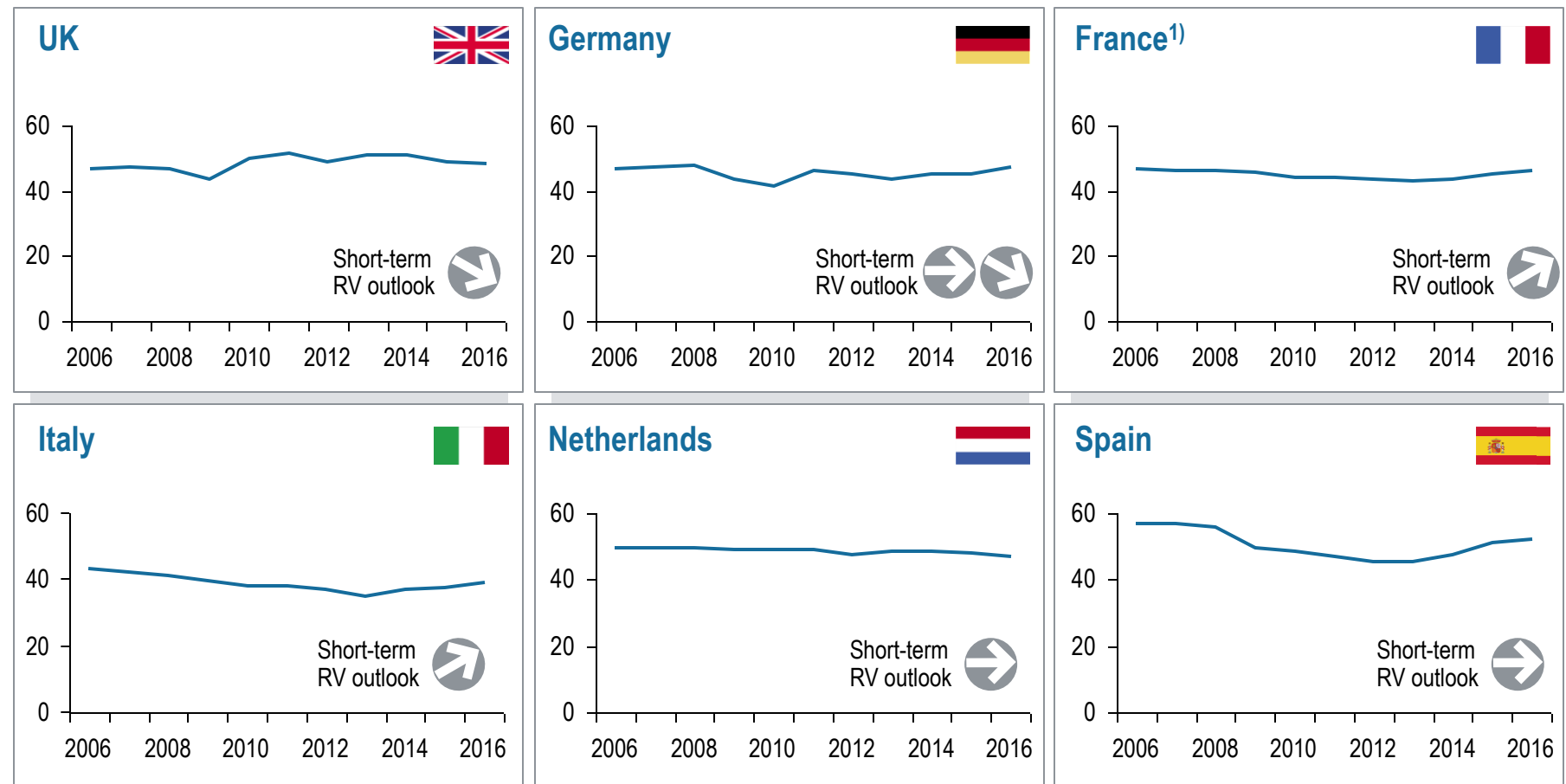


- > In line with recent historical developments, the overall short-term outlook for RVs in the EU-18 is stable
 - Although supply is expected to increase, this is not believed to result in price pressure due to oversupply as 2016 new car volumes are still well below 2007 pre-crisis levels in most EU-18 countries (-12% in EU-18 excl. UK)
- > Specific local market developments do entail some downside risks, however
 - Strong increase in supply and uncertain economic outlook result in a downward RV outlook for the UK
 - Diesel concerns and the associated regulatory risks result in a downward outlook for diesel vehicle RVs in Germany

1) RV development for Norway, Sweden, Finland, Denmark and Greece estimated based on RV development in Germany and Spain, corrected by average price differences

With the exception of some distortions during the crisis, overall development of relative RVs has been stable across largest markets

Development of relative RVs of 3-4-year-old used PVs by country [%]



1) Volume weighting estimated using Italy and Spain used car volume distribution Outlook:  Positive  Stable  Negative

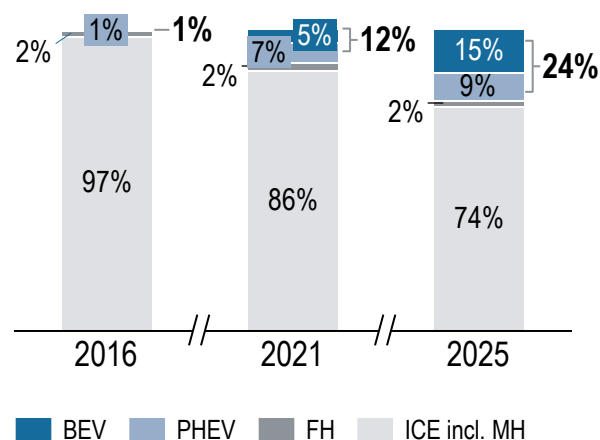
Source: Autovista; IHS; Interviews with market participants

Increasing penetration of electric vehicles is expected to have only a minor impact on the 3-4-year-old car market until 2025

Impact of electric vehicle penetration on 3-4-year-old cars

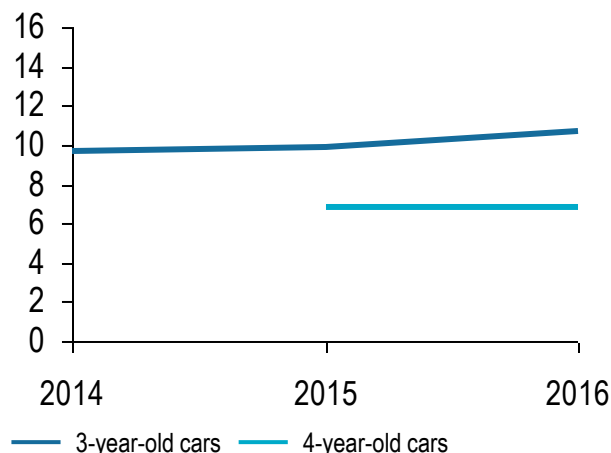
EV penetration in new car sales

New PV and LCV volumes by propulsion (EU-28)



EV residual value development

Absolute RV development (EU-6) [EUR '000]¹⁾



Battery technology focus per OEM/captive



EV residual value drivers

Battery technology development (e.g. higher range, lower cost) ↘

Proximity to end of battery lifecycle (~8-11 years) ↘

Advancements in charging infrastructure ↗

Risk mitigating measures

More flexible/shorter leasing durations for EVs ✓

Reference to extended OEM battery warranty of ~8 years ✓

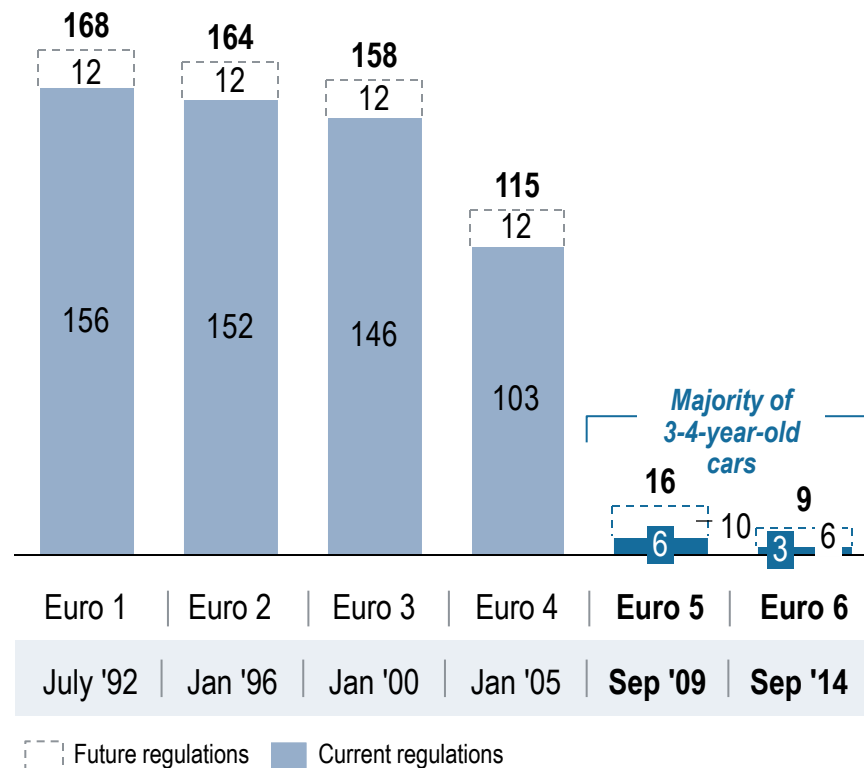
Split leasing between FMC (vehicle) and OEM (battery) ✓

1) Data only available from 2014/2015 as EV new car sales did not gain critical mass before 2010/2011

Residual values of diesel vehicles are exposed to potential regulatory action – However, impact is expected to vary depending on car age

Impact of diesel concerns on 3-4-year-old cars

(U)LEZs¹⁾ for PVs and LCVs by Diesel Euro norm [#] and time of Euro norm introduction [month/year]



- > On a national level, mainly long-term regulatory actions have been announced to meet Paris climate accord targets (e.g. only allowing the sale of zero-emission cars in 20-25 years)
- > On a regional/local level, low-emission zones have been imposed, e.g. imposing restrictions on vehicles based on Euro norms
 - However, impact on 3-4-year-old cars is expected to be limited as the majority of low-emission zones affect Euro 4 diesel cars and older, while the majority of today's 3-4-year-old diesel cars are Euro 6 vehicles
 - Following 'Dieselgate', stricter test conditions have been introduced which have led to the introduction of Euro 6c and Euro6d-TEMP since September 2017. Vehicles that already comply with Euro 6d-TEMP emission test conditions offer the greatest security in the longer term
 - There will be 5 and 1 additional LEZs, respectively, introduced for Euro 5 and 6 by 2020, with 5 additional Euro 6 LEZs to be introduced by 2028
- > As FMCs' fleets typically only consist of latest models and renew their fleet every three to four years, the impact of diesel is expected to be less for FMCs than for the overall market

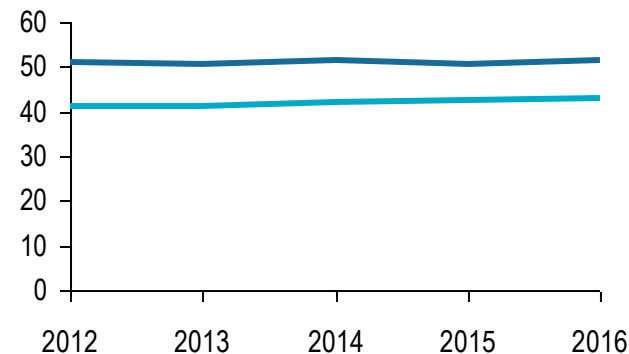
1) (Ultra) Low Emission Zone

Historical absolute diesel RVs are stable and increasing – Short-term relative RV outlook for diesel cars differs across countries

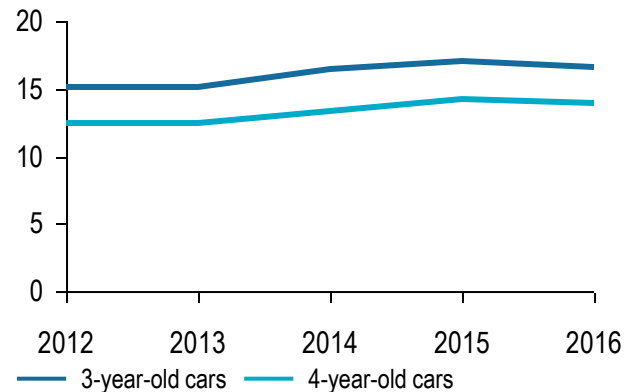
Residual value development for 3-4-year-old diesel cars

Diesel residual value development

Relative RV development (EU-6) [% of MSRP]



Absolute RV development (EU-6) [EUR '000]



Potential impact of regulatory actions



1) Relative residual values

Diesel residual value drivers

Development of subsidies on diesel vehicles leading to TCO advantage



Technical advancements of diesel emission reduction technologies



Development speed of mobility alternatives (e.g., Robocabs)



Technical advancements: other ICEs (e.g., CNG) and alternative fuels (e.g., BEV)



Development of diesel regulations on EU, national and local levels



Negative change regarding diesel in public opinion due to media impact

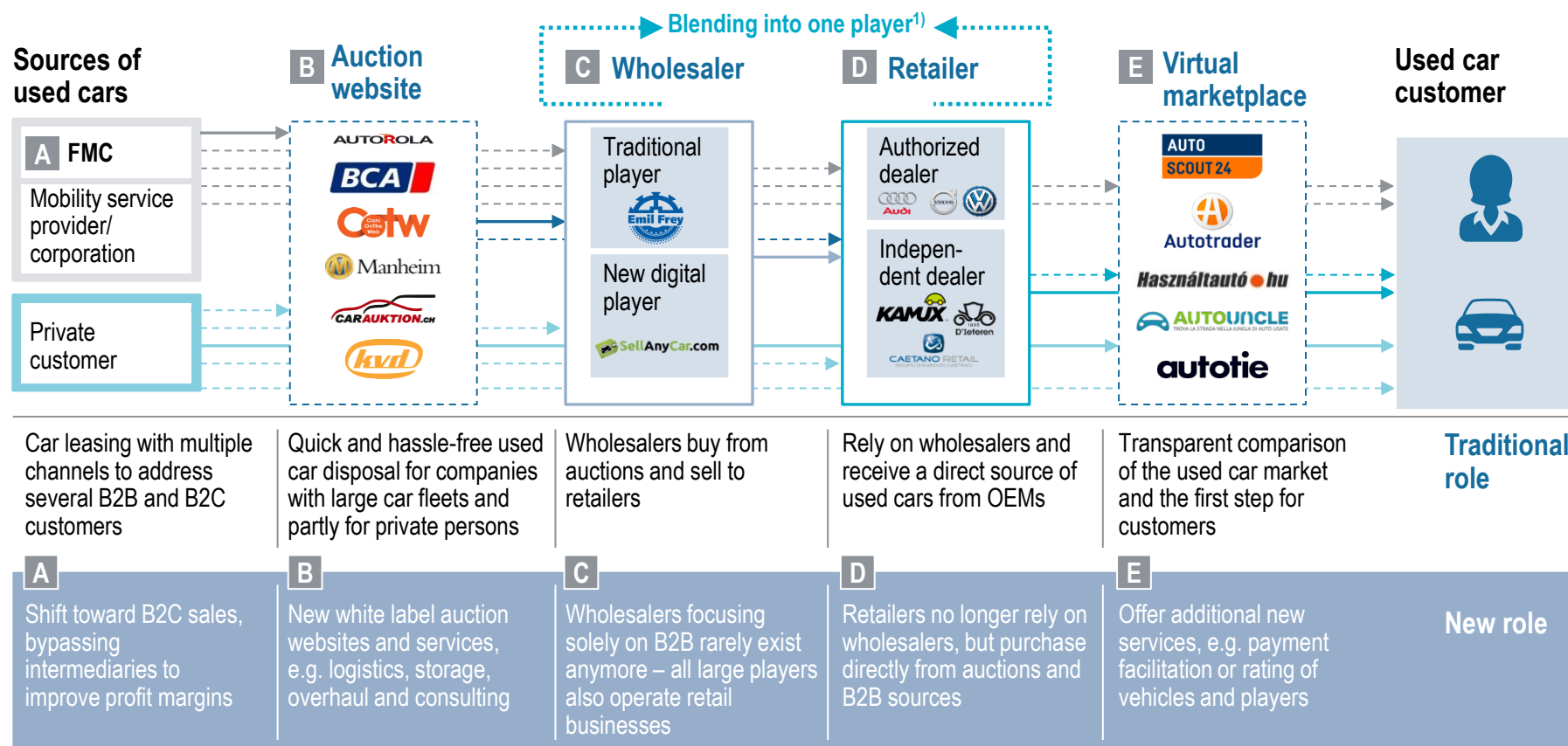


↘ Negative ↗ Positive

The used car market is rather complex, with various players trying to capture their share in the value chain via multiple channels

Used car value chain

Selected examples of market players



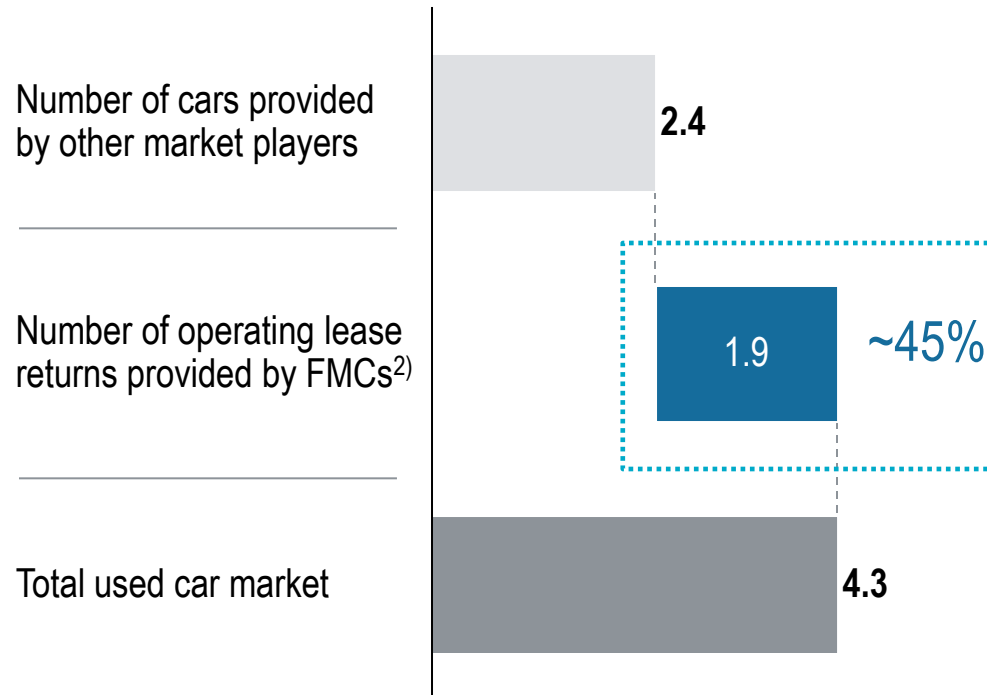
1) Pure wholesalers rarely exist anymore – listed players are large groups with wholesale and retail business

FMCs provide ~45% of 3-4-year-old used cars – Key market players are LeasePlan, ALD, Arval and Alphabet

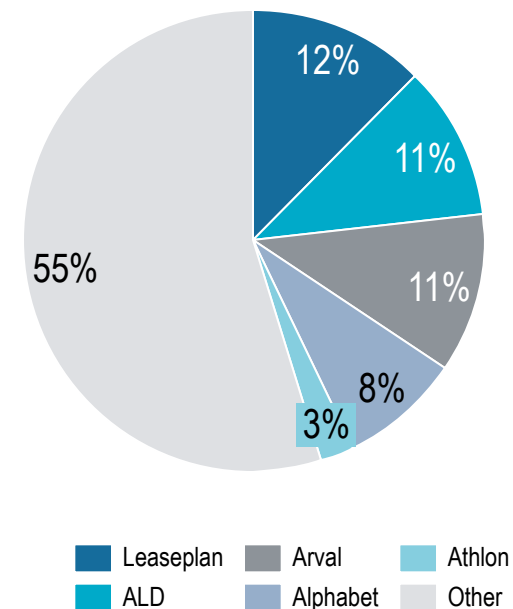
Used PV market volumes in EU-18 countries, 2016

Indicative

3-4-year-old PV market volumes [m units]



Market shares¹⁾



1) Market shares of key market players derived from number of operating leases; 2) Focus on non-captive FMCs with multi-brand strategy that have a high share in operating leases and are selling primarily 3-4-year-old cars

Quality and price appear to be qualifying criteria in the used car market – Differentiation mainly through digitization and portfolio size

Key success factors in the EU-18 used car market – Customer view

Indicative

Key success factors	Importance	Description
 Quality		Quality is most important for trust and long-term success in the used car market – reviews from unsatisfied customers will have an impact on the purchase decision of potential new customers
 Price		The average interested customer is not able to accurately judge the quality of used cars, therefore the price is very important in the market – low prices also result in a high ranking at virtual marketplaces
 Digitization		A majority of customers conduct research on the used car market and choose potential cars for a test drive at virtual marketplaces – the more visible a competitor is online, the more leads it will generate
 Large portfolio of used cars		(Potential) buyers of used cars usually have a certain car brand, model, color as well as other features in mind, therefore a large portfolio of used cars is necessary for a high conversion rate
 Additional services		Since the used car market is very fragmented, customers are increasingly asking for additional services such as extended warranty, maintenance, tire storage, financing solutions, customer services, etc.
 Customer awareness		Customer awareness is important for website traffic and lead generation – high dependency on the structure and origin of the FMC
 Geographic proximity		Proximity of physical stores is important to enable a test drive and a higher sales conversion – willingness of consumers to travel larger distances has been increasing however

● High importance ○ Low importance

Recent key developments are forward integration, digitization and the exploration of new profit pools

Recent market developments



1 Forward integration

- > The traditional method of moving used cars along the value chain via wholesaler and retailer is being used less frequently by FMCs today
- > FMCs shorten the value chain by having their own B2B auctions, direct B2C marketplace listings and targeting end customers directly



2 Digitization

- > In the future of used car sales, a physical location is expected to be required only for test driving and vehicle handover
- > Many steps in the used car value chain are being digitized by online entrants while the number of traditional dealers is falling



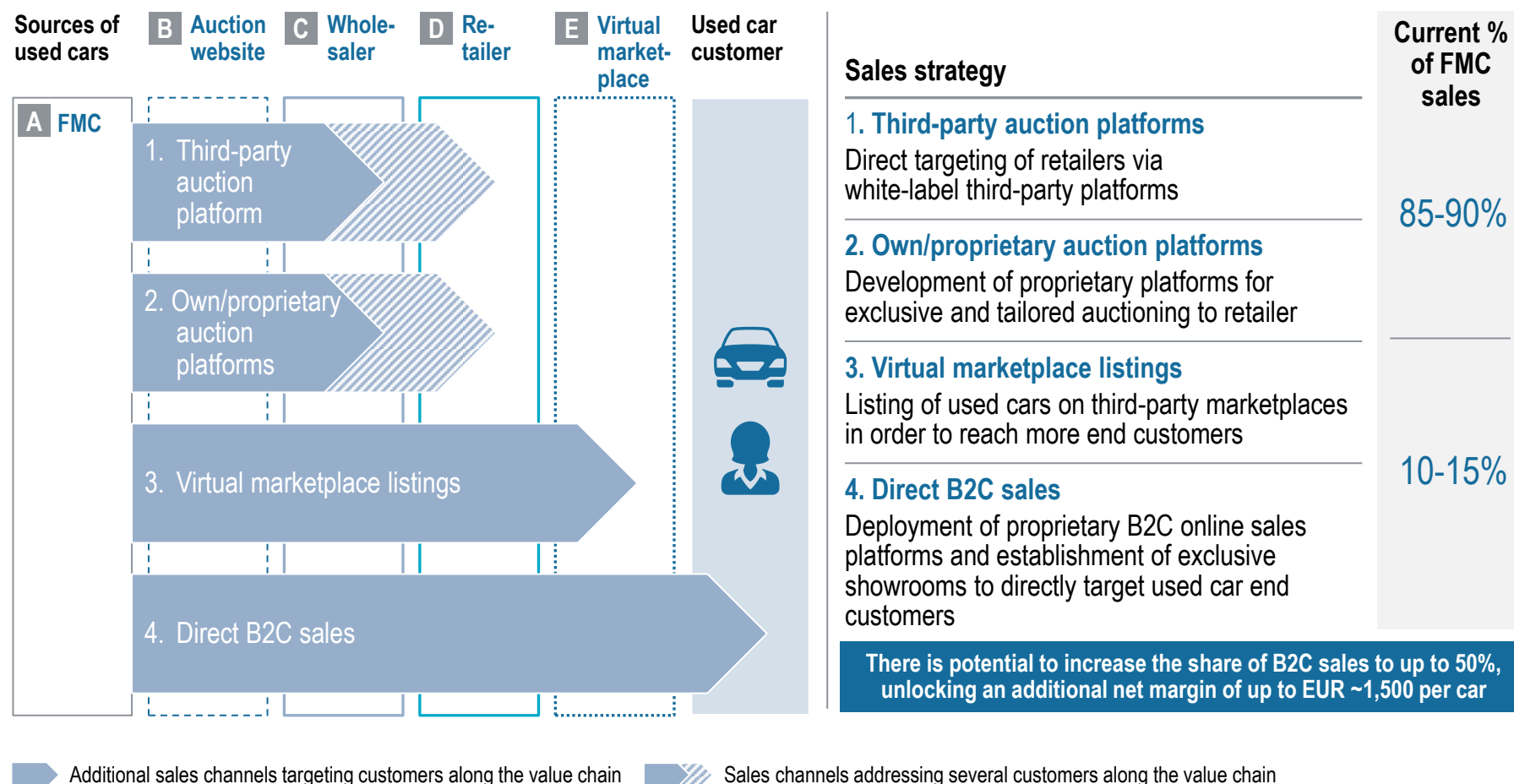
3 New profit pools

- > In addition to the sale of used cars, new value-added services have been identified:
 - Conversion-supporting services (e.g. test drive)
 - Profitability-increasing services (e.g. warranty)
- > An increasing number of market players offer used car leasing options
- > Cross-country arbitrage brings the potential to further increase the sales value of a car

FMCs are increasingly forward integrating in order to take out intermediaries and capture additional profitability

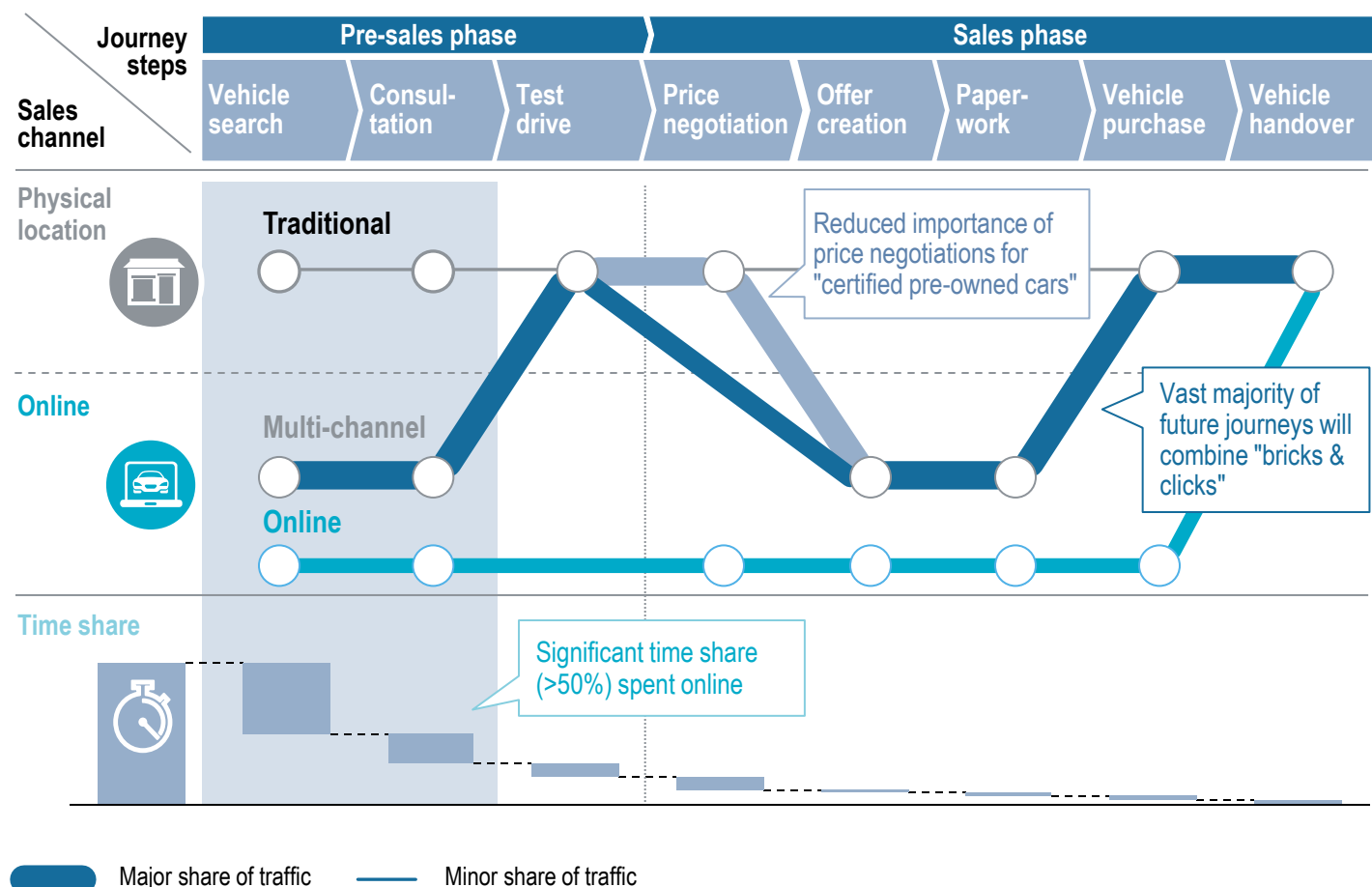
Forward integration of FMCs

Selected examples



In the future, used car sales will take place increasingly online with select physical channels to support sales conversion

Future customer journeys of used cars – Illustrative



- > Consumers increasingly use online channels during their journey to purchase a car: 85-90% of consumers research online, 30% make the purchasing decision online
- > Strong shift to online is expected, however customers still prefer certain steps, such as the test drive and handover, to be done offline
- > Combining online channels with a selective stationary footprint will support sales conversion by accommodating this customer preference

With the increasing importance of online, a number of new digital players targeting different steps in the value chain have emerged

New digital B2B and B2C players – Definition

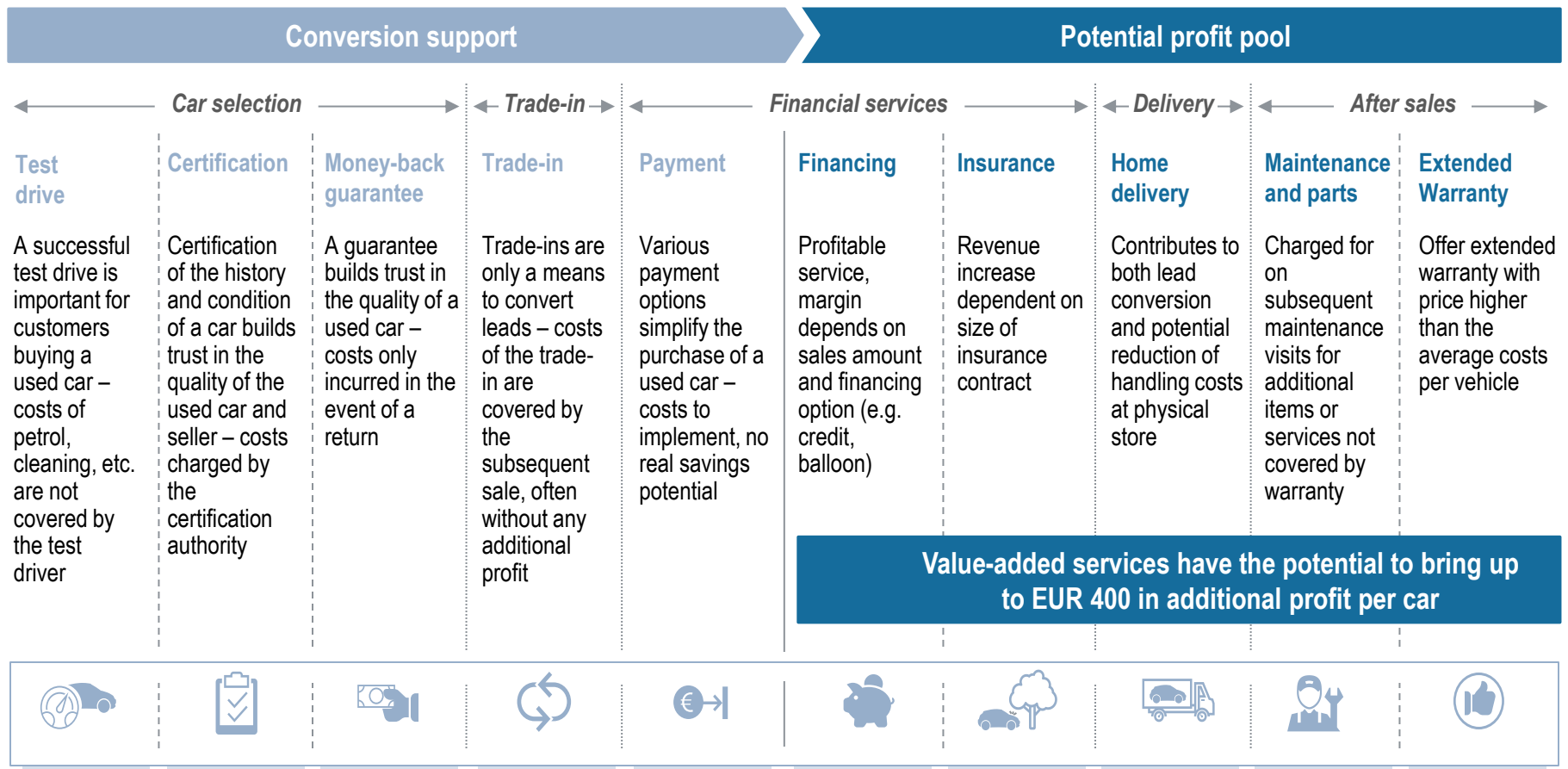
 Auction websites	 Online wholesalers	 Online retailers	 Virtual marketplaces
> Act as intermediary in the B2B and B2C segment, without taking ownership of the cars > Offer closed auctions to large sellers (e.g. fleet owners), in which the selling party can decide which buyers are allowed to participate > Offer functionality of their own auction platform to other B2B used car sellers/forwarders and offer remarketing services such as logistics and storage	> Buy and sell used cars from/to various B2B market players > Achieve highest efficiency by controlling most parts of their operational value chain > Make use of cross-country arbitrage when buying/selling cars > Achieve low purchase prices through volume discounts	> Focus on full end-to-end service along the sales process for increased customer convenience > Platform operators own the car, whereas virtual marketplaces do not > Create new forms of direct competition for traditional dealers > Online retailers have a thin cost structure, and avoid complex sales processes, which enables them to offer competitive pricing	> Control platform and offer retail partners and online sales channel incl. support functionalities > Seller pays a mediation commission to the operator > While some intermediaries route customers to the dealer for the actual purchase, others offer integrated "buy now" functionality via participating retailers > Other revenue streams include subscription fees or affiliate marketing



FMCs offer additional services to increase consumer convenience – Some support conversion, while others contribute to the profit pool

Value-added services – Profitability

Indicative



Besides selling used cars, an increasing number of market players offer used car leasing options

Used car leasing

- > Used car leasing has become increasingly available in the market over the past years
- > Besides traditional players such as large FMCs, startups have entered the market as well, US-based Fair being one of the most recent
 - Operating completely online, Fair offers a zero-term¹⁾ subscription based model that allows consumers to lease (certified) pre-owned cars of up to six years old
 - Fair listed used cars from partnering dealerships on their website and buys this vehicle once a consumer has selected it. After returning the vehicle, Fair either sells it back to the dealer, resells it through its own platform or puts it up for auction

Market players offering used car leasing options (selection)



Advantages for consumers

- ★ Lower monthly leasing fees
- ★ Lower insurance costs
- ★ Lower end-of-lease buyback prices
- ★ Shorter leasing periods

Advantages for FMCs

- ★ Lower depreciation risks
- ★ Larger profit pool opportunities
- ★ Additional remarketing channel

1) Consumers are allowed to return a vehicle at any time with a five days' notice

Contents

Passenger vehicle development in EU-18

A. Overall market development

- > Market value development
- > Volume development
- > Residual value development

B. Competitive landscape in the 3-4-year-old used car market

- > Overview of the used car market value chain
- > Positioning of market players and key success factors

C. Recent developments in the used car market

- > Forward integration
- > Digitization
- > New profit pools

LCV development in EU-6

A. Overall market development

- > Market value development
- > Volume development
- > Residual value development

B. Competitive landscape in the 3-4-year-old used LCV market

- > Overview of the used LCV market value chain
- > Positioning of market players and key success factors

C. Recent developments in the used LCV market

- > Focus of remarketing through B2B channels
- > Impact of fuel type diversification on used LCV RVs
- > E-commerce and logistics growth

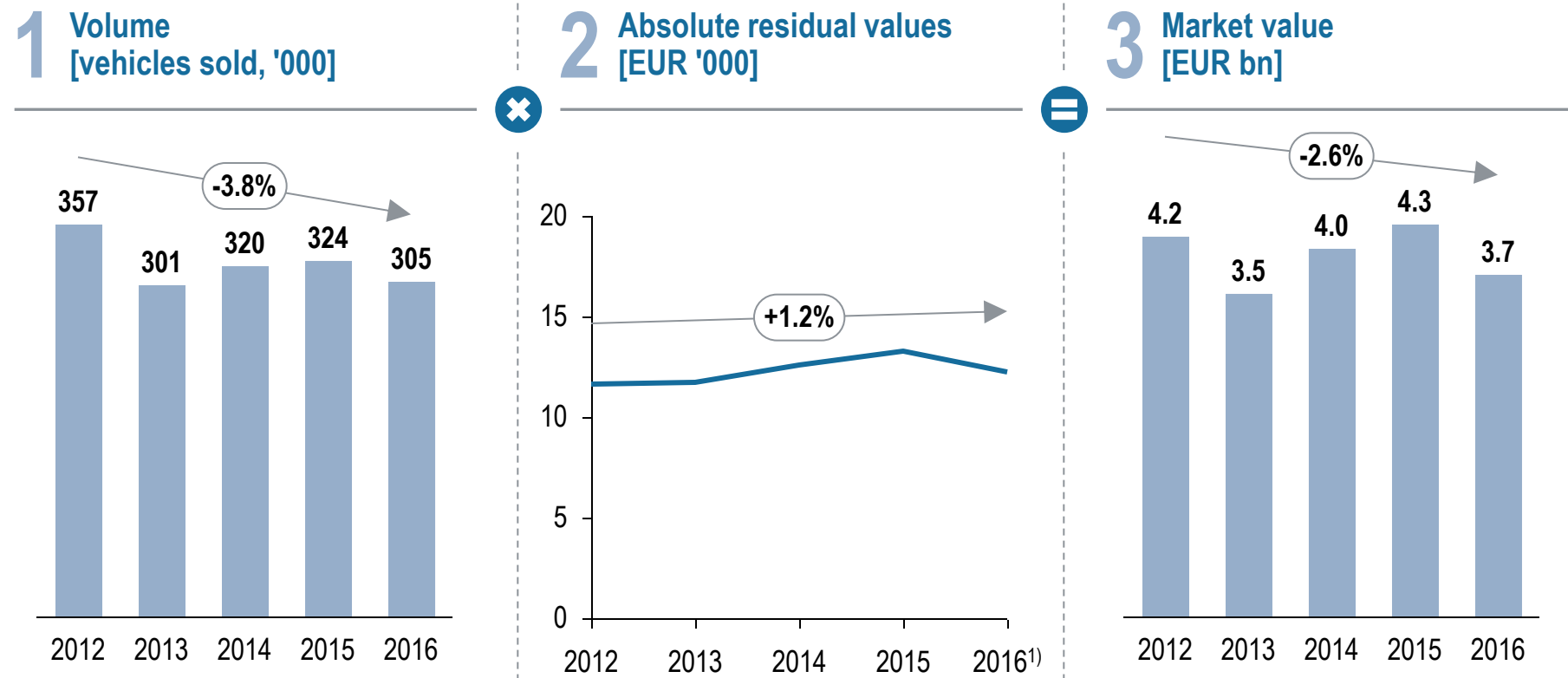
Strong new LCV sales and promising e-commerce growth are expected to drive the used LCV market at ~8% p.a. until 2020

Used light commercial vehicles

- The **EU-6 3-4-year-old LCV market** was valued at **EUR ~3.7 bn in 2016**, showing a decline in recent years due to falling new LCV sales following the economic crisis
- Although 3-4-year-old LCV volumes declined in the past, they are **expected to grow by 8.1% p.a. (2016-2020)** following growing new LCV sales in recent years, while **residual values** are expected to see **stable to positive** development in the short term. The main growth is expected **to come from the e-commerce** and construction sectors, both of which have promising outlooks for the near future
- The LCV market is highly **fragmented**, displaying **similar disintermediation trends** as the passenger vehicle market. In contrast to the PV market, **direct B2C sales** attempts have so far been **unsuccessful**
- **Diesel** is the **predominant fuel type** for LCVs and is expected to remain so in the coming years. TCOs of new **EVs** are not expected to become lower than diesel **before 2022**. Increasing emission regulations and high fuel costs are driving the **replacement of HCVs with LCVs**, which especially applies to **"last-mile delivery"** to customers in city centers

Since 2012 the used LCV market has experienced no growth due to falling LCV sales in the aftermath of the financial crisis

3-4-year-old used LCV market in the EU-6, 2012-2016

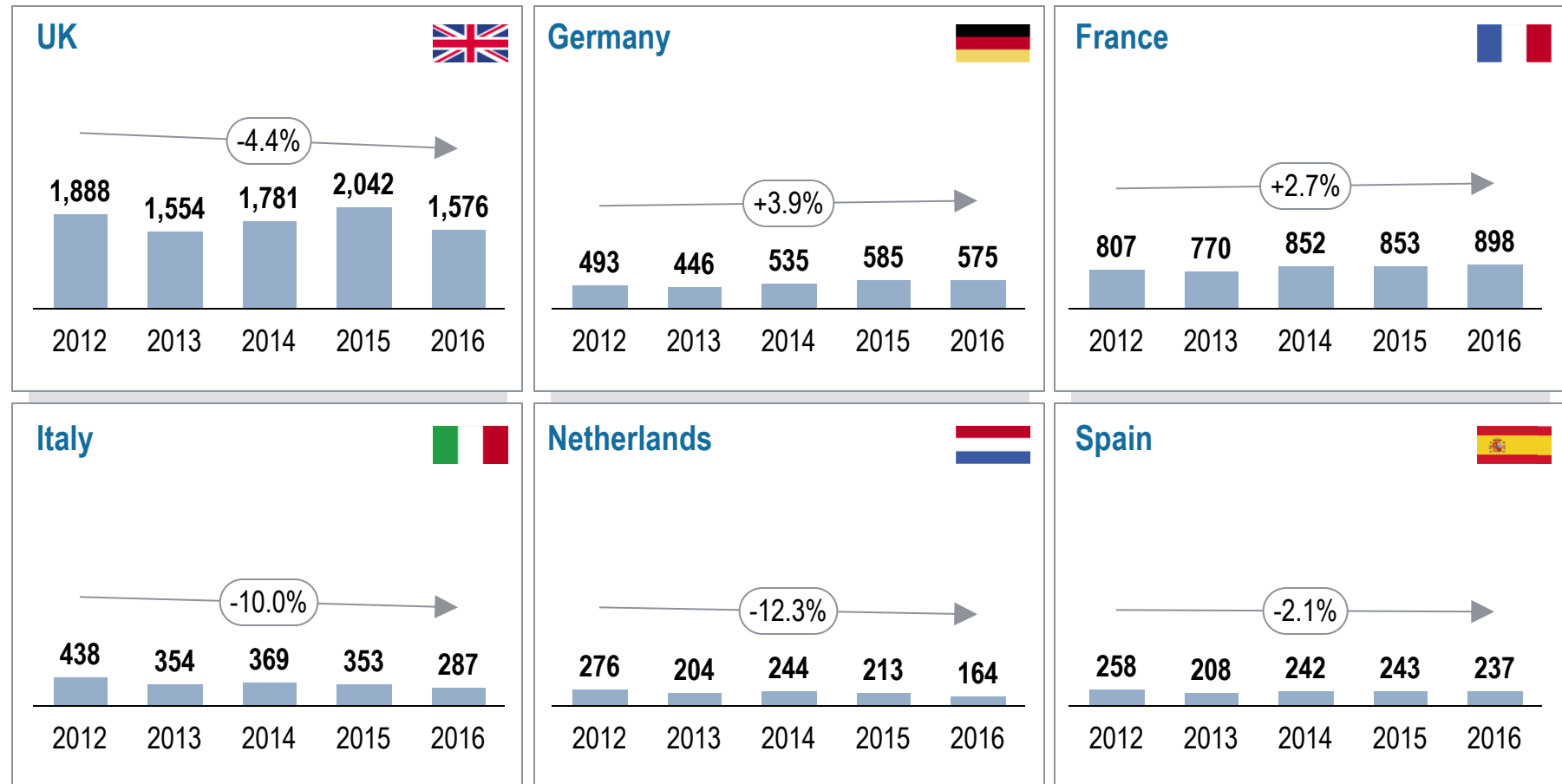


% CAGR

1) Decline in absolute RVs is mainly driven by the UK market (combination of exchange rate and relative RV development)

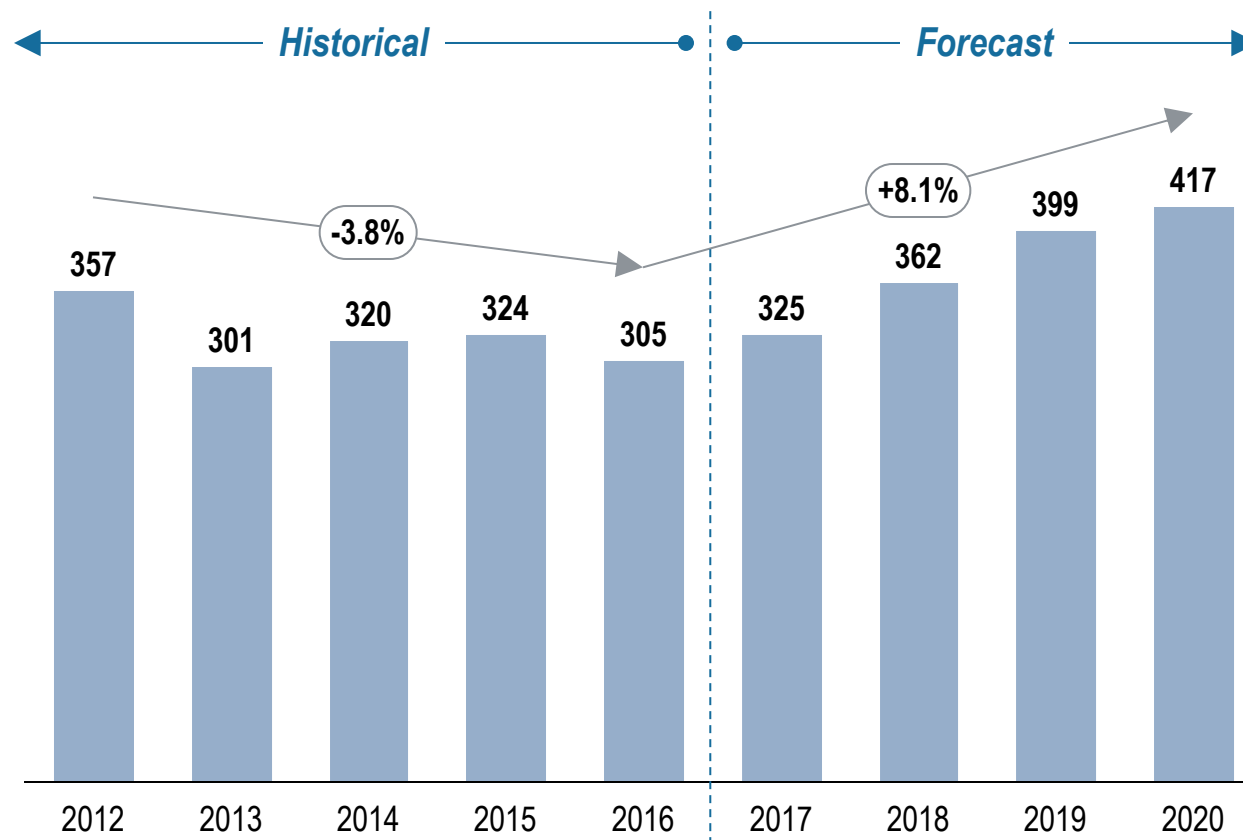
Recent setback in EU-6 market growth due mainly to UK performance; German and French markets show stable growth in recent years

Market development of 3-4-year-old LCVs by country [EUR m]



The volume of 3-4-year-old LCVs in the EU-6 declined in the past, but is expected to grow in the future by 8.1% p.a. (2016-2020)

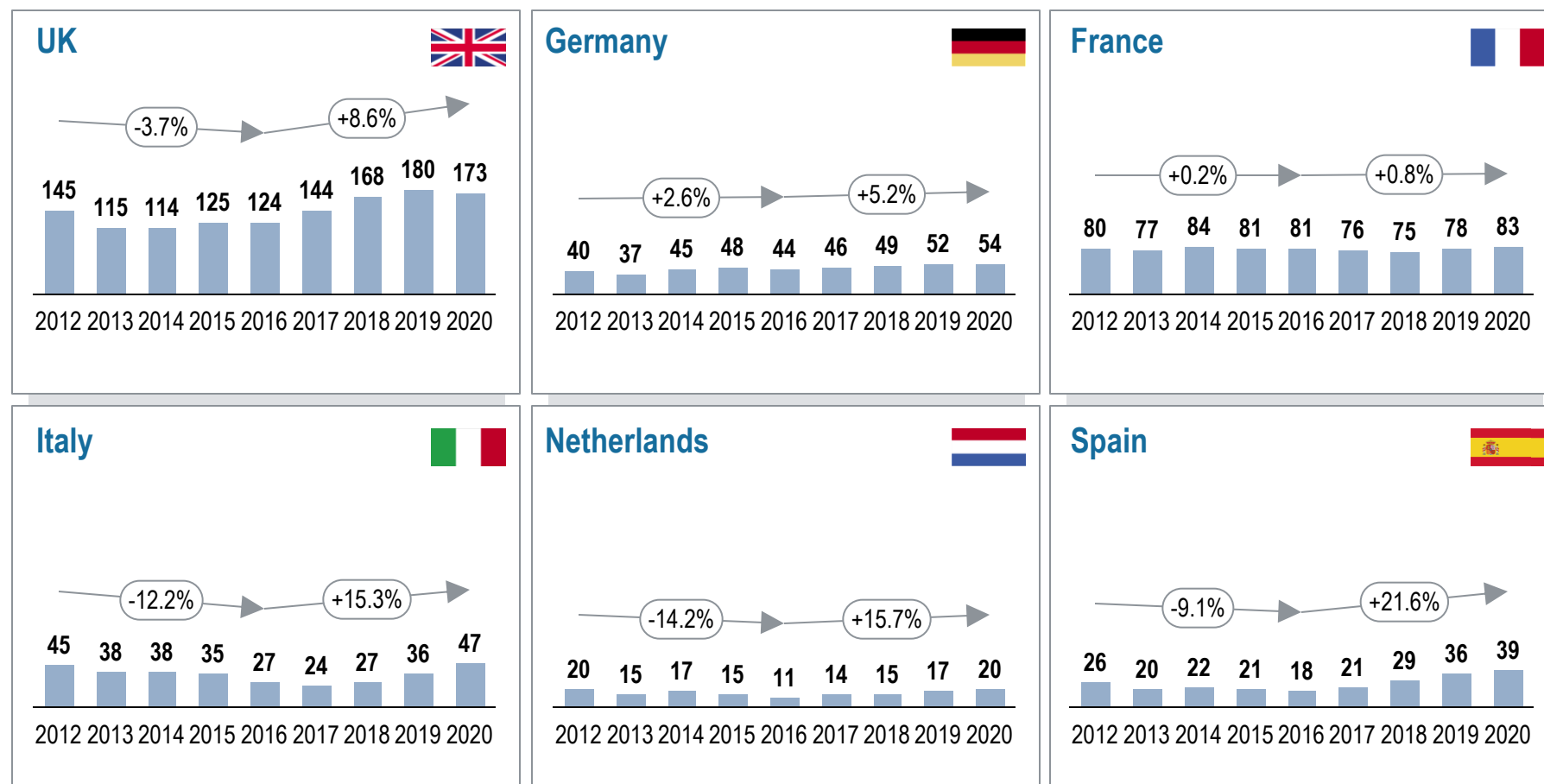
Development of market volume of 3-4-year-old used LCV market in EU-6 ['000 units]



- > Volume of EU-6 3-4-year-old markets declined by -3.8% p.a. in the recent past (2012-2016), as a result of a strong decline in new LCV sales following the financial crisis (-7.9% p.a. from 2008-2012)
- > High historical growth of new car volume (+10.9% p.a. from 2013-2016) is expected to drive supply of 3-4-year-old used cars in the EU-6 by 8.1% p.a. in the coming years (2016-2020)

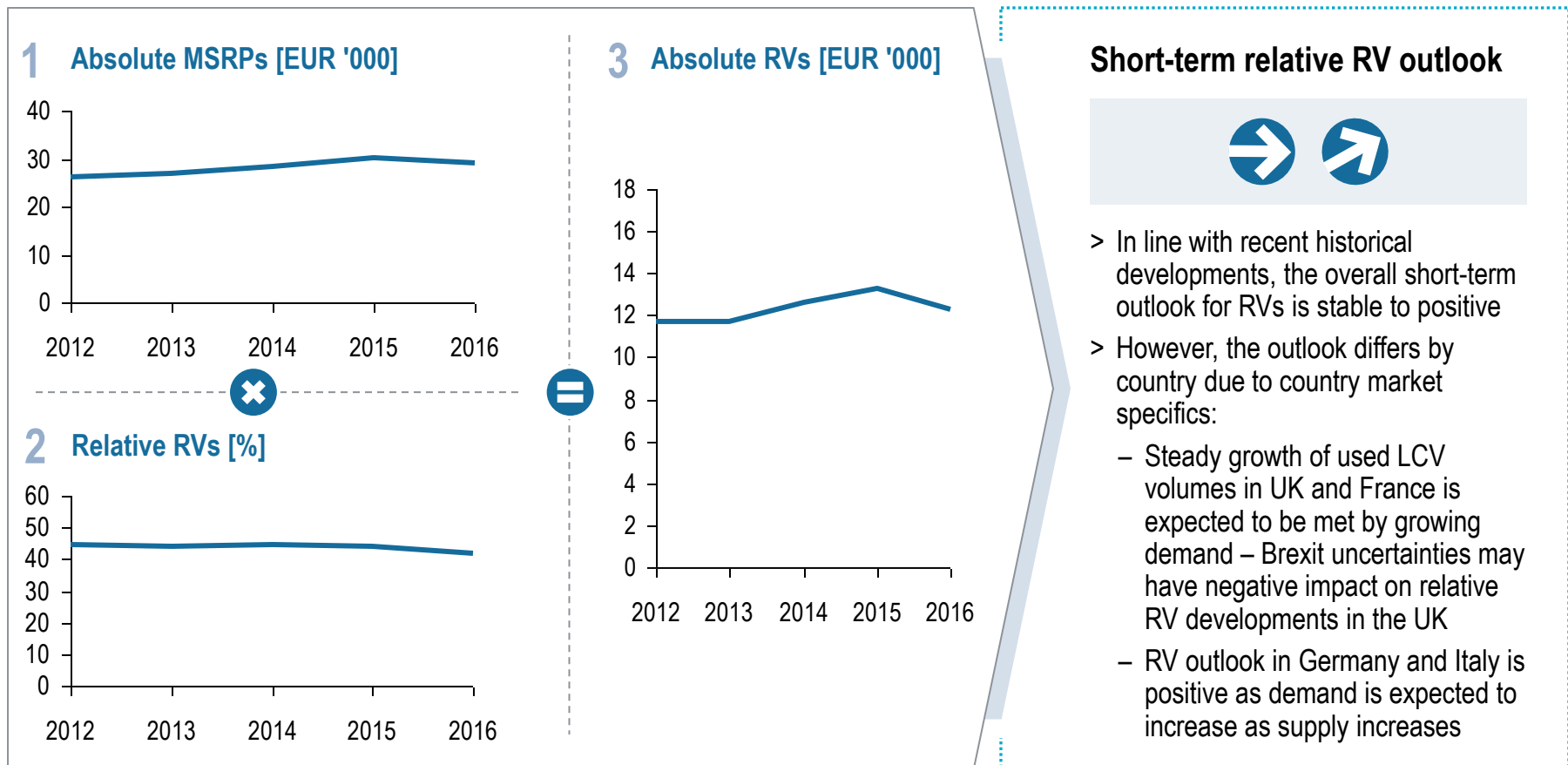
Strong volume growth is expected across almost all EU-6 countries

Development of market volume of 3-4-year-old used LCV by EU-6 country ['000 units]



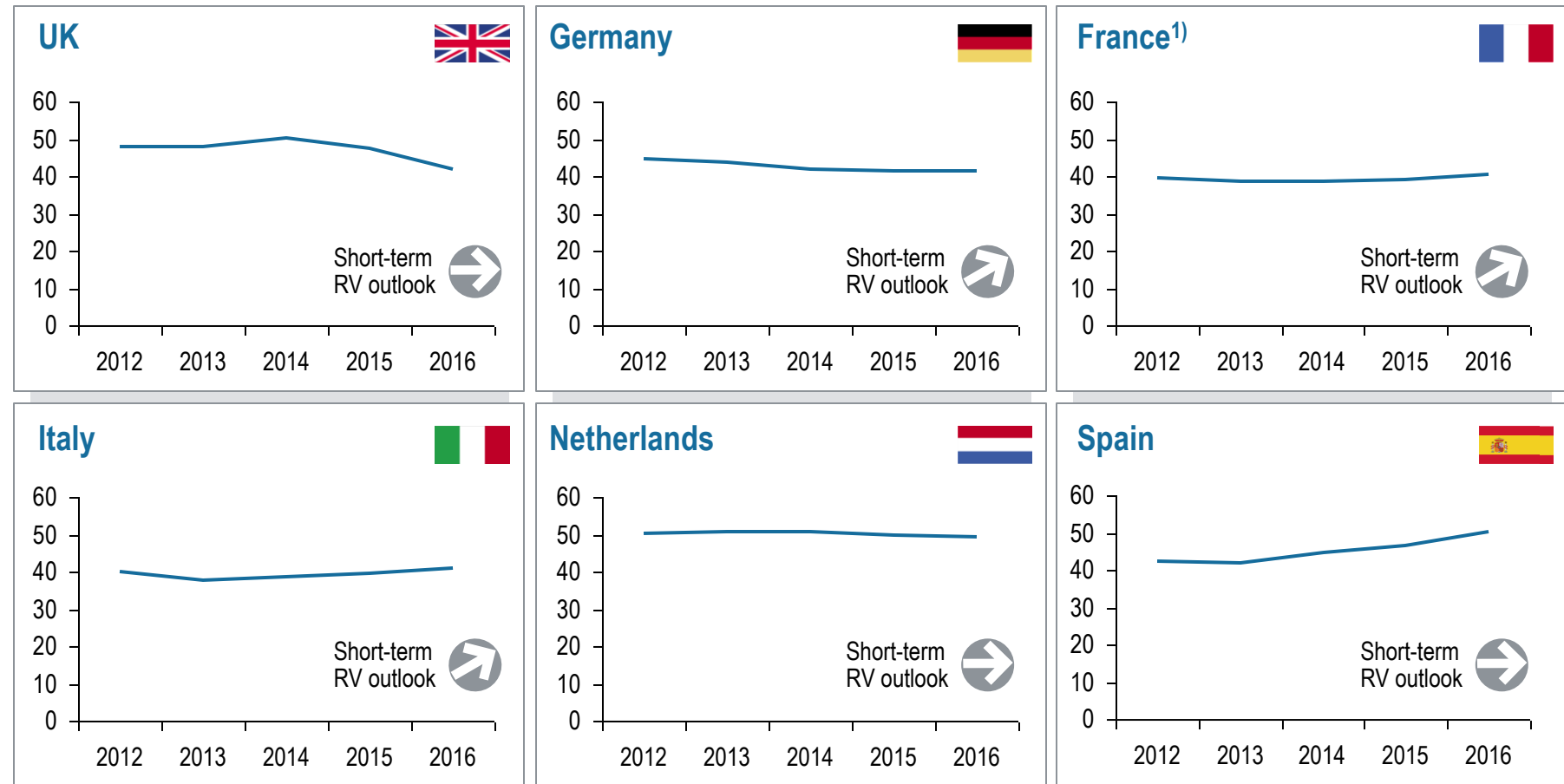
LCV residual values have developed steadily over time with the UK as the exception – Overall outlook is stable to positive

Residual value development for 3-4-year-old LCVs (EU-6)



LCV RVs have developed steadily across all countries; exceptions are the UK (strong decline) and Spain (strong growth)

Development of relative RVs of 3-4-year-old used LCVs by country [%]



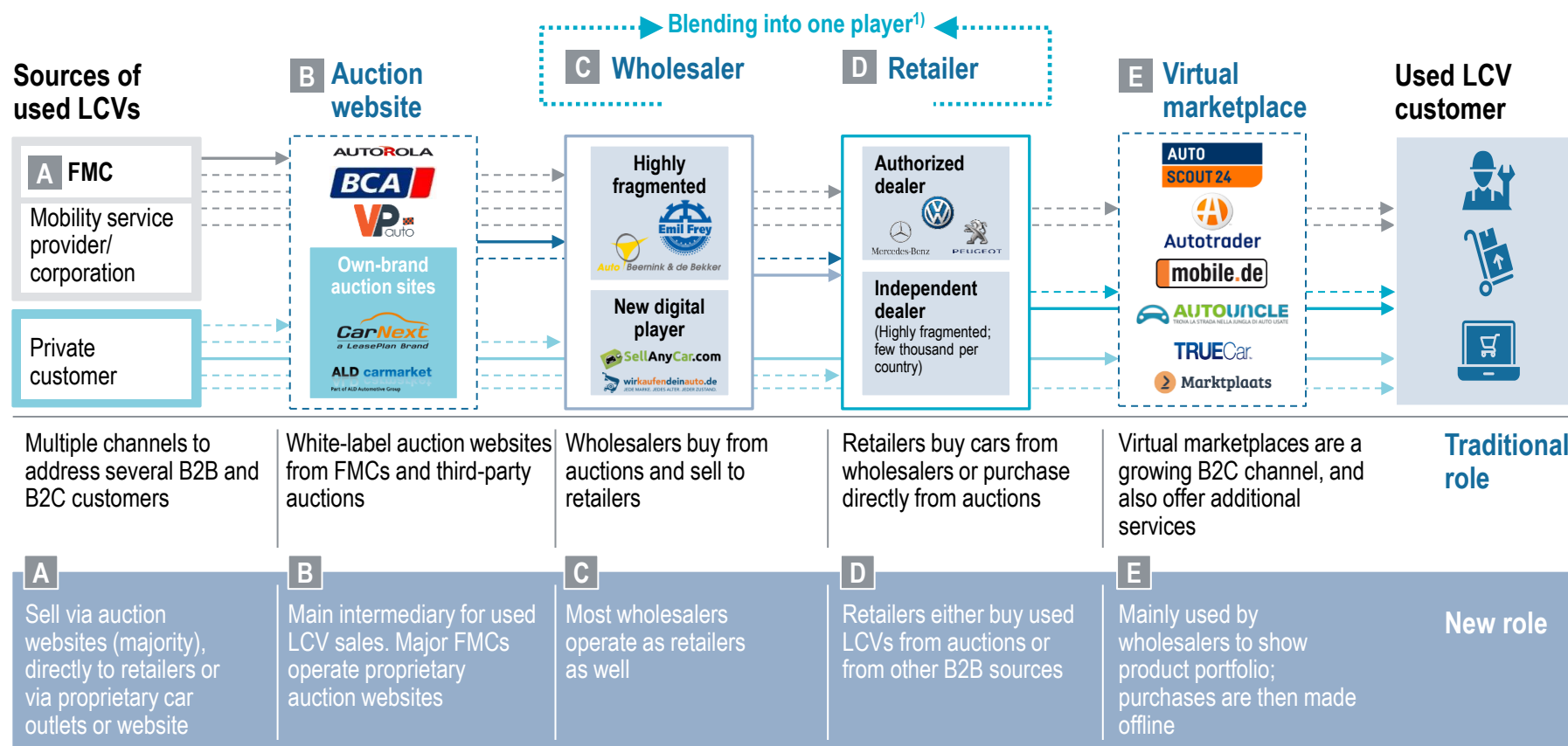
1) Volume weighting estimated using Italy and Spain used car volume distribution Outlook: Positive Stable Negative

Source: Autovista; IHS; Interviews with market participants

The used LCV market is highly fragmented – FMCs try to increase market share by using multiple sales channels for remarketing

Used LCV value chain

Selected examples of market players



→ Primary sales channel - - - - - Secondary sales channel Sales channels include online and offline

1) Pure wholesalers rarely exist anymore – listed players are large groups with wholesale and retail business

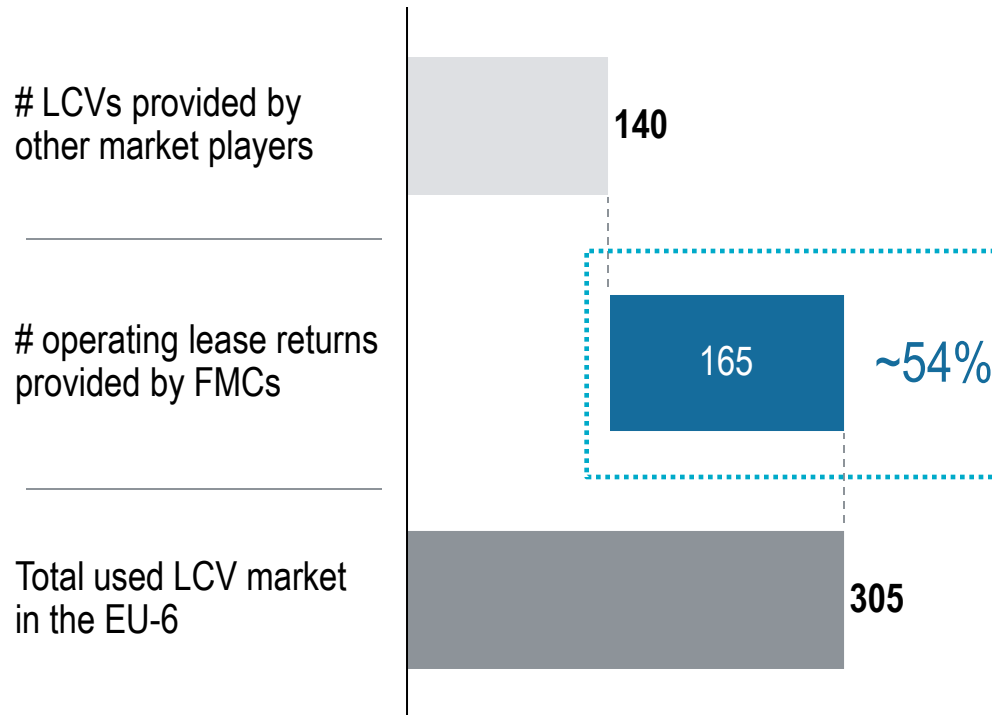
Source: Interviews with market participants

FMCs make up about half of the market for 3-4-year-old, with LeasePlan and Arval being the biggest players

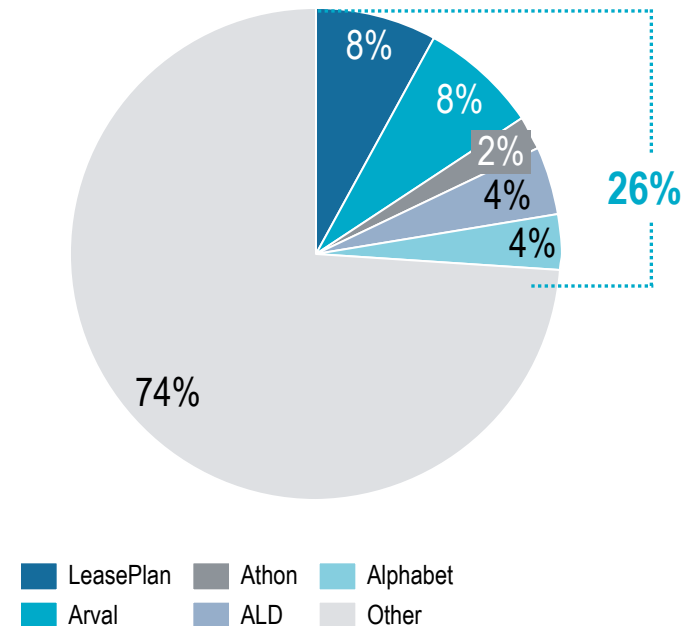
Used LCV market volumes in EU-6 countries, 2016

Indicative

3-4-year-old LCV market volumes ['000 units]



Market shares¹⁾



1) Calculated by multiplying total used 3-4-year-old LCV volumes with estimated share of LCVs provided by FMCs (operational lease LCVs as proportion of used LCV sales)

Used LCV buyers are looking for best value for money: key success factors are vehicle configuration, condition and TCO

Key success factors in the used LCV market in the EU-6

Indicative

Key success factors	Importance	Description
 Configuration and specification		Customers need to fit the LCV to their business needs: flexibility of use is preferable (e.g. modular systems, sliding doors, etc.) and certain items are a prerequisite (e.g. Bluetooth, air-con, etc.)
 TCO/price		Used LCV customers are tradespersons, professional services providers or other SMEs, and the vehicle is usually a sizeable business cost; therefore, minimization of this cost is a priority to users
 Condition		Mileage will affect the reliability of the engine and other components, while vehicle condition including damage may reduce useful life and worsen SME image
 Large portfolio of used LCVs		Large portfolio of used LCVs necessary for high conversion rate; brands are not as important, but outward appearance of LCV is important (e.g. clients prefer LCVs in white or metallic colors without stickers)
 Maintenance options		Dealer network coverage is important to improve access to spare parts and service quality; this is especially true in France where PSA/Renault are more attractive than other brands
 Propulsion (engine) type		Increasingly, the engine type is important to customers as regulations around certain engine types will reduce the applicability of older diesel vans
 Geographic proximity		Proximity of physical stores will increase the likelihood of a customer inspecting the vehicle in order to make the purchase

● High importance ○ Low importance

The LCV trends: Refocus on B2B sales, fuel type diversification and promising growth in the e-commerce and construction sector

Recent market developments

1 Focus of remarketing through B2B channels



Two trends affecting the profitability of FMCs:

1. FMCs are increasing the share of online auctions of used LCVs through their own-brand auction websites
2. Attempts to sell used LCVs via car outlets of FMCs have been found to be unattractive due to risks and costs: Many countries have to offer warranties on used LCVs when selling B2C; High costs for labor and lease on building

2 Fuel type diversification



Trends impacting RV developments of current LCV fleet:

1. Improved BEV technology and decreasing price of EV LCVs and their TCO
2. Regulatory uncertainties due to potential diesel bans
3. Fast technological innovation in EV LCVs: new vehicle technology supersedes recent technology

3 Growing e-commerce & construction sectors

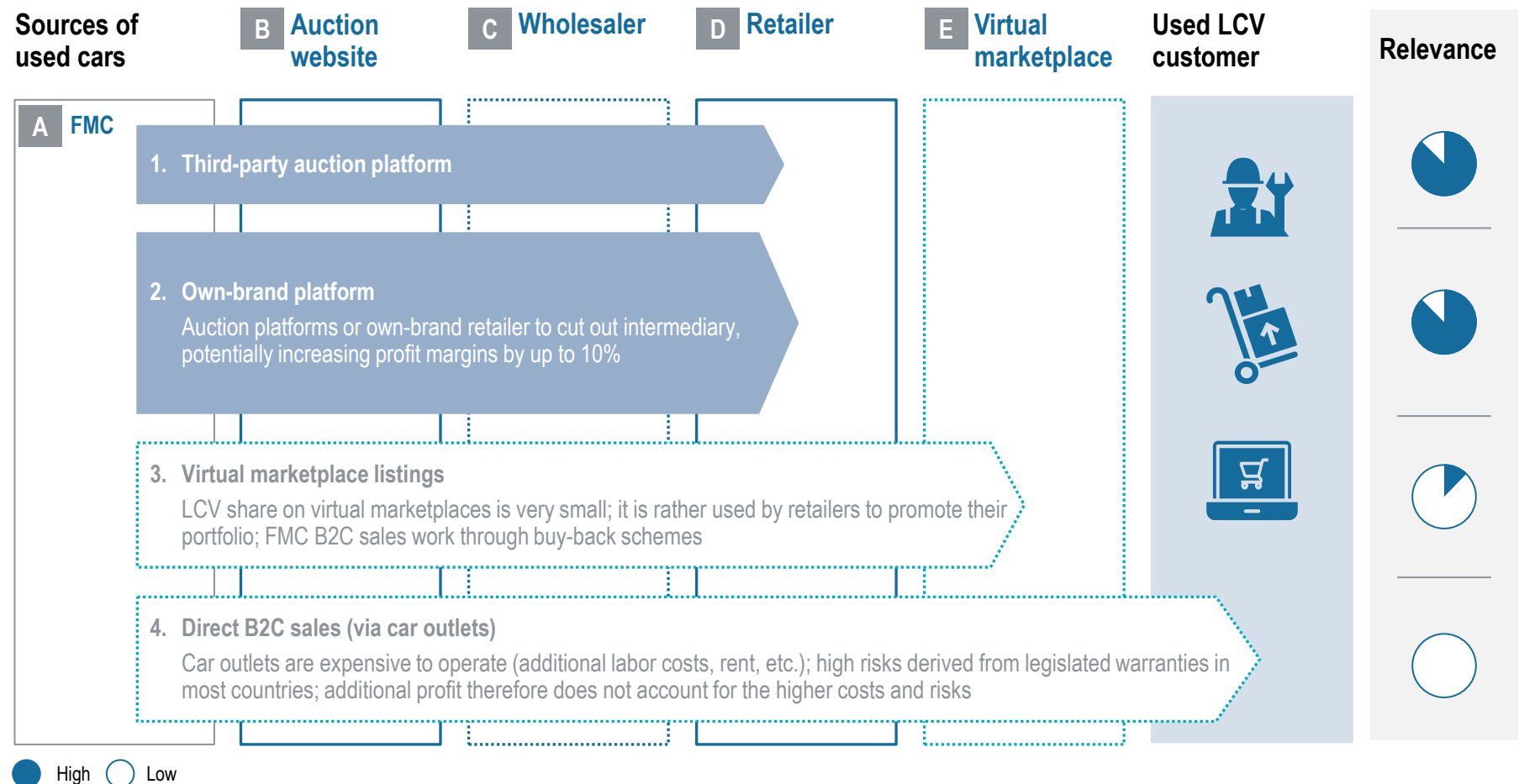


Trends driving up (new and) used LCV volumes:

1. Increase of SME activity in construction and e-commerce industries, increasing demand for used LCVs
2. Replacement of HCVs with LCVs for transport in cities, driving up new LCV volumes and increasing demand for used LCVs in medium to long term

FMCs bypass wholesalers by selling directly to retailers via proprietary auction sites – B2C attempts have been unsuccessful

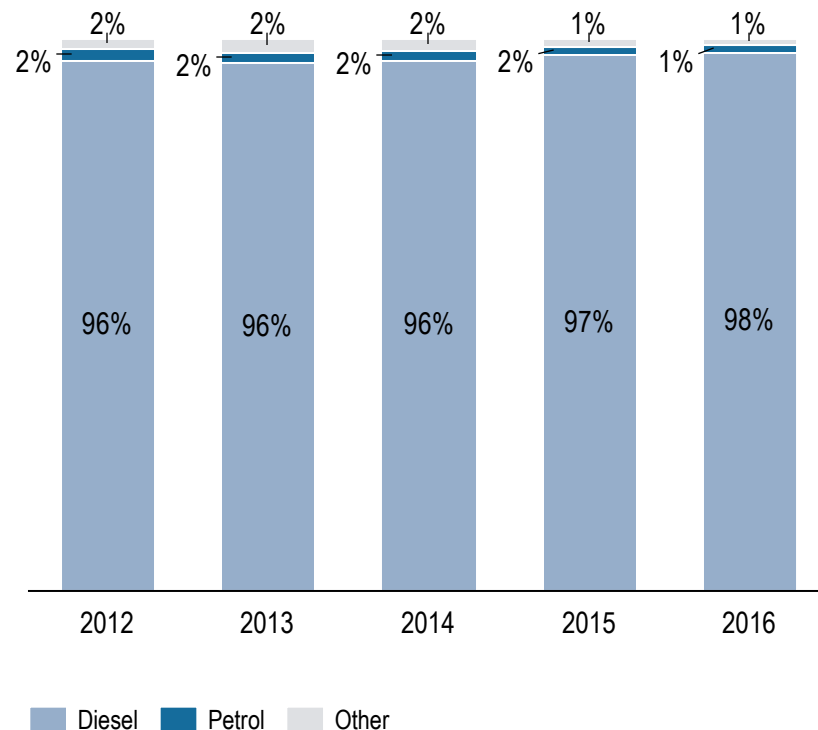
Forward integration of FMCs in value chain



Diesel is the predominant fuel type for LCVs today, but EV penetration rates are expected to increase

Fuel type developments of 3-4-year-old LCVs

3-4-year-old used LCV by fuel type (EU-6) [% of volume]



Used LCV volumes by fuel type

- > The vast majority of used LCVs are fueled by diesel (>95%)
- > In the short-term, market participants are not expecting significant changes in the EU-6. However, some major fleet operators are starting to exchange small parts of their diesel-powered LCV fleet with new EV LCVs
- > Those EV LCVs will likely enter the used market after 2020, thus increasing the used EV LCV share in some countries – especially those with more stringent regulations on diesel vehicles (e.g. low-emission zones)

TCO of electric vehicles vs. conventional diesel

- > At present the TCO of electric vehicle is ~25% higher than that of conventional diesel LCVs
- > The TCO of new BEVs is only expected to be lower than the TCO of new diesel ICEs after 2022, and that of used diesel ICEs after 2027
- > Therefore BEV LCVs are not expected to affect the LCV fleet significantly in the near future

In key European countries, e-commerce and construction industries are growing strongly, thus increasing demand for new & used LCVs

Business trends that drive demand for used LCVs [EU-6]

1

SME growth in construction and e-commerce

- > The construction sector (consisting of >95% SMEs) is picking up again in several EU-6 countries
- > In addition, in most EU-6 countries e-commerce (with home delivery) is also growing strongly

2

Shift in logistics routes

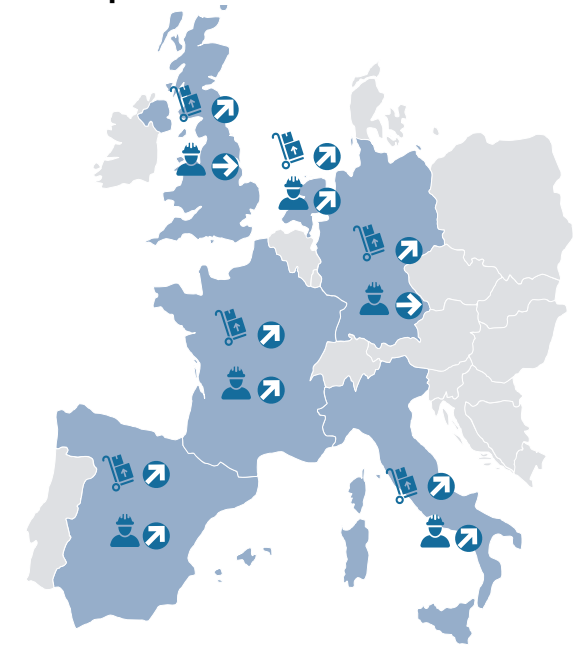
- > Logistics and online retail businesses register increasing demand
- > Road infrastructure within West and Central EU as well as connecting infrastructure to Eastern EU is enhanced
- > This increases new sales in HCV, but also in the LCV segment

3

Replacement of HCV with LCVs

- > Due to increasing emission regulations and high fuel costs, businesses that operate in or between major cities are replacing their HCVs with LCVs
- > This especially applies to the "last mile delivery": HCVs deliver goods outside cities, LCVs deliver to the end consumer

Expected sector development



Growth expectations

 Positive  Stable  Negative

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E. Appendix



The EU-6 and the US markets differ fundamentally with regard to market structure of CaaS and used cars, and customer behavior

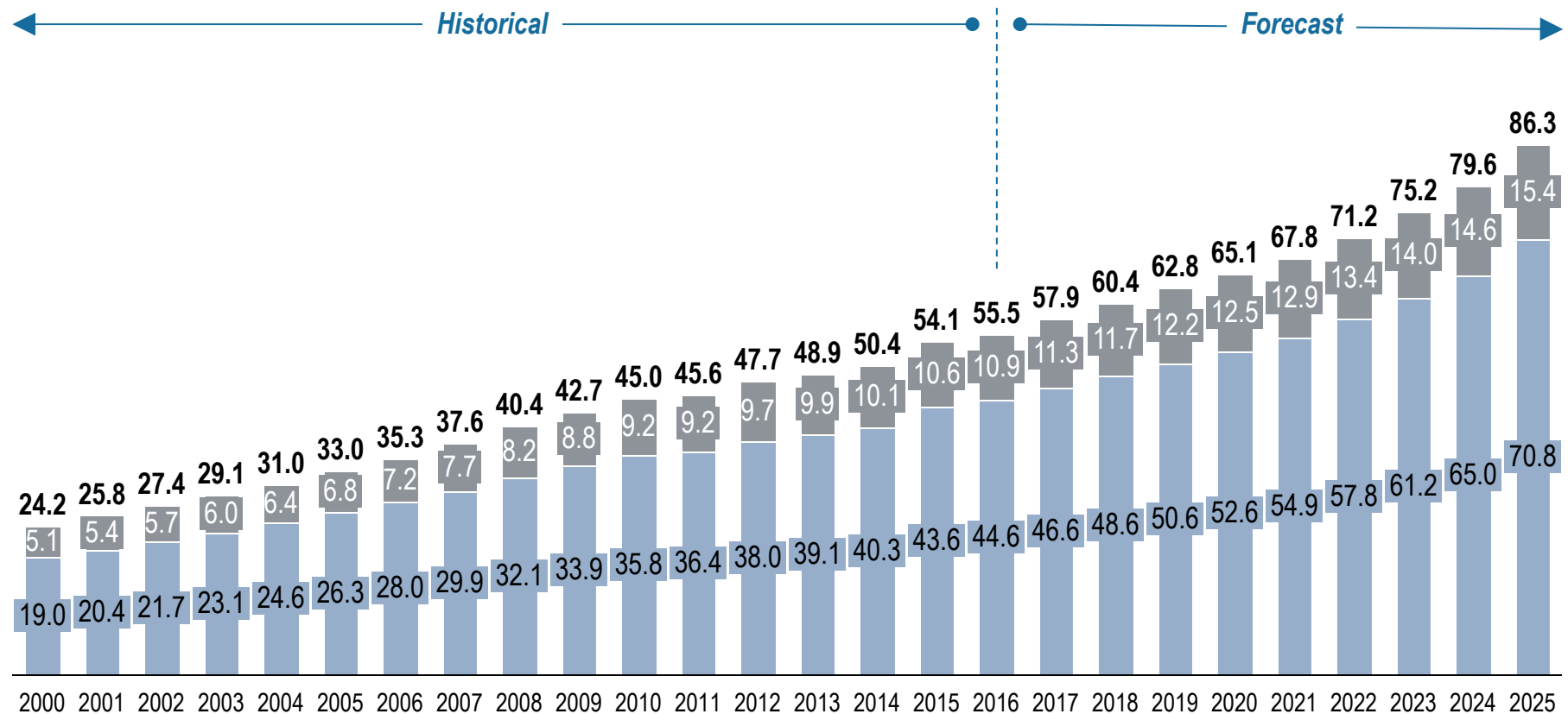
EU-6 and US CaaS and used car market characteristics

		EU-6 countries 	US 
General	Market structure	Higher share of operating leases (~63%) than finance leasing (~37%)	FMC offering for corporate customers primarily consists of open-end (finance) leasing (>90%) that are not standard bundled with additional services
	Residual value risk/benefit	Overall, lessor has higher exposure due to the significant share of operational leasing	Exposure primarily lies with lessee due to the nature of high share of open-end leasing contracts
	Regulatory impact	Accounting change (IFRS-16) ¹⁾ will mandate transfer of operationally leased assets on the balance sheet of lessees	Regulations require private customers to go through OEM franchised dealers for leases
CaaS	CaaS customer focus (lessee)	Major customer segments are corporations (corporates and SMEs) with about 73% of companies in EU-18 countries offering some sort of car benefits to non-mgmt. employees; Mobility providers and private customers also important	CaaS almost exclusively relevant for corporate customers although car benefit policies are less important than in Europe; CaaS demand by private customers nascent (subscription models), mobility provider purchase vehicles
	Penetration of corporate segment in car parc	Overall average penetration rate of ca. 14% driven by favorable car policies in European companies	Overall average penetration rate of ~2% due to restrictive car policies (at most paying for fuel) and no direct support
Used cars	Remarketing structure	Incentive to maximize transaction prices as remarketing profits of operating lease vehicles stay with lessor	Limited benefit of maximizing transaction prices for lessor as remarketing usually is based on fixed commissions
	Customer segments	Increasing share of direct B2C sales of FMCs that are focusing on cross-channel sales approaches, diversifying their customer portfolio	Most FMCs still exclusively remarket via B2B auctioning platforms leaving the end-customer segment unaddressed
	Diesel risks	High share of diesel vehicles overall (~50%) and in particular within fleets of FMCs results in a comparably higher exposure to potential RV risks	Very low share (<2%) of diesel vehicles in the US limits the effect of potential negative impacts on residual values

1) Implementation subject to approval by European Commission – dates of implementation across countries still under negotiation

In total, the PV market in EU-18 countries amounted to EUR ~56 bn in 2016, mainly driven by the core EU-6¹⁾ countries

CaaS market value (EU-18), 2000-2025 [EUR bn]



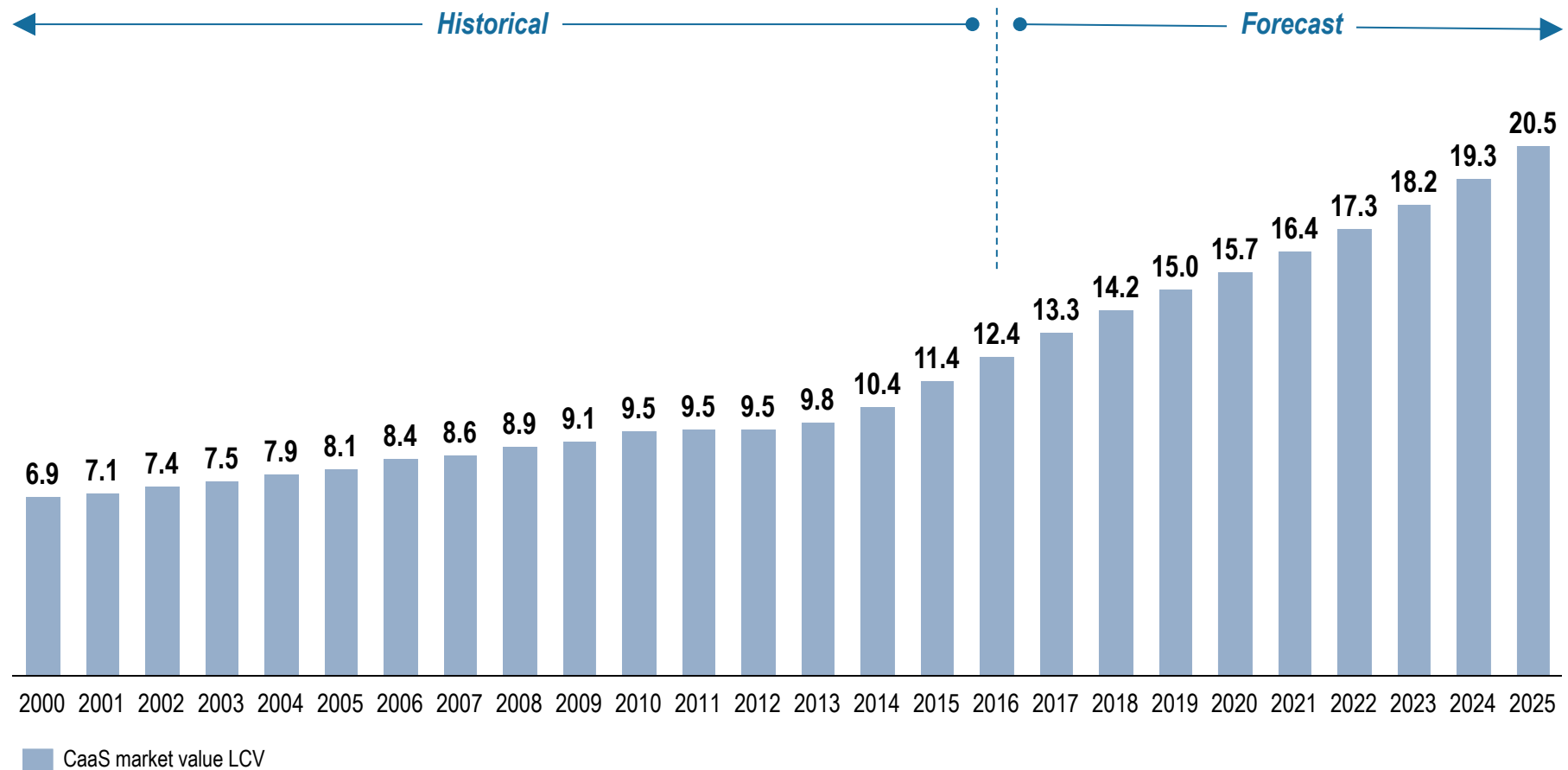
■ CaaS market value EU-12²⁾ ■ CaaS market value EU-6¹⁾

1) Including France, Germany, Italy, Spain, Netherlands, the UK; 2) Including Austria, Belgium, the Czech Republic, Denmark, Finland, Greece, Hungary, Norway, Poland, Portugal, Sweden, Switzerland

Source: IHS; Frost & Sullivan; Profit pool analysis; Interviews with market participants

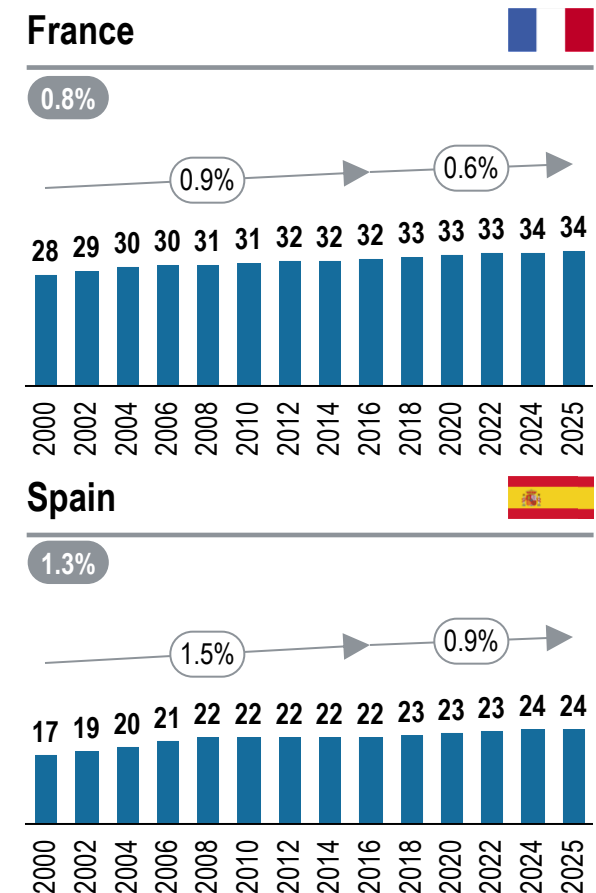
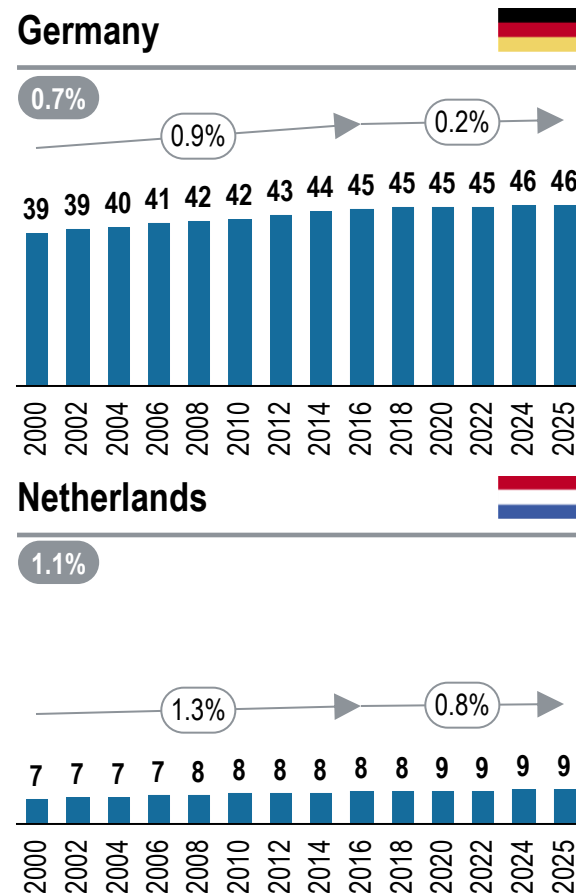
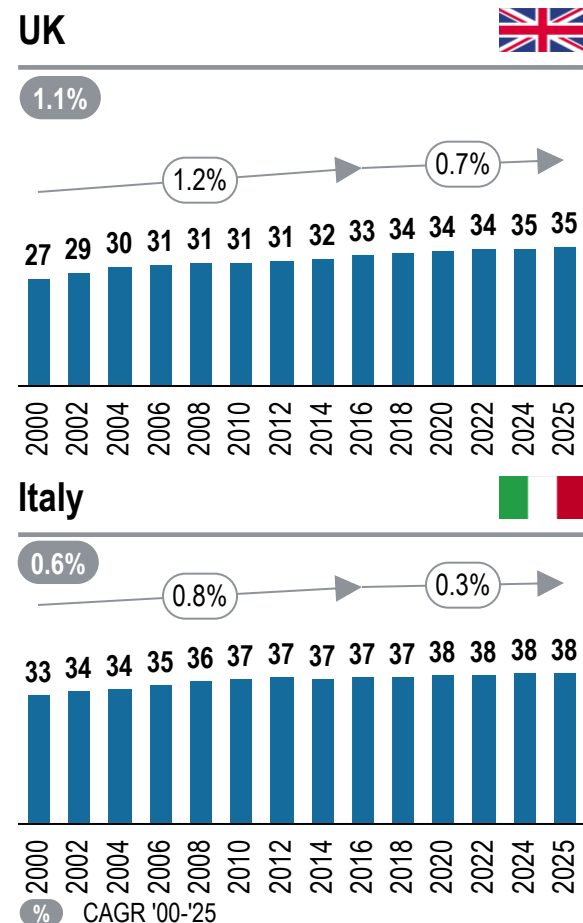
The LCV CaaS market in EU-6 countries amounted to EUR ~12 bn in 2016, which is less than a third the size of the PV CaaS market

CaaS market value (EU-6), 2000-2025 [EUR bn]



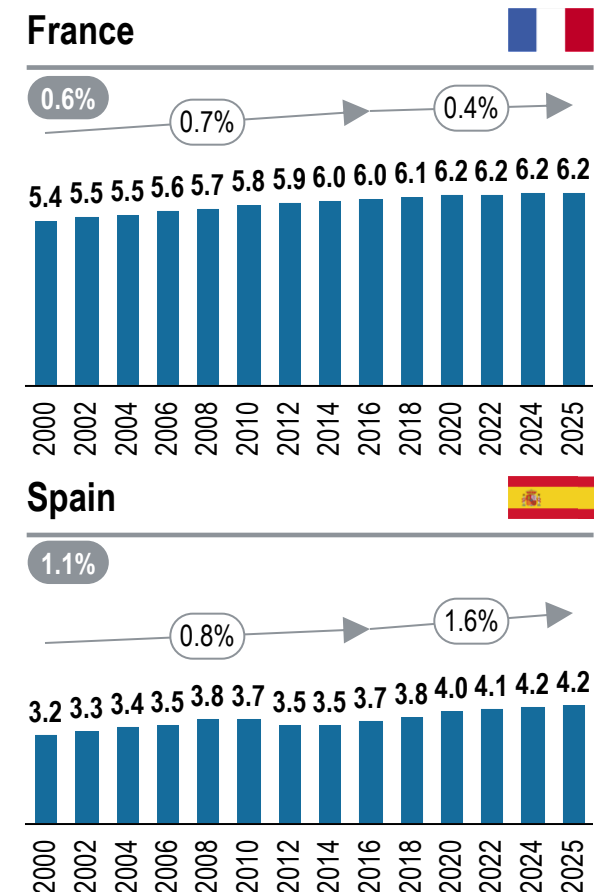
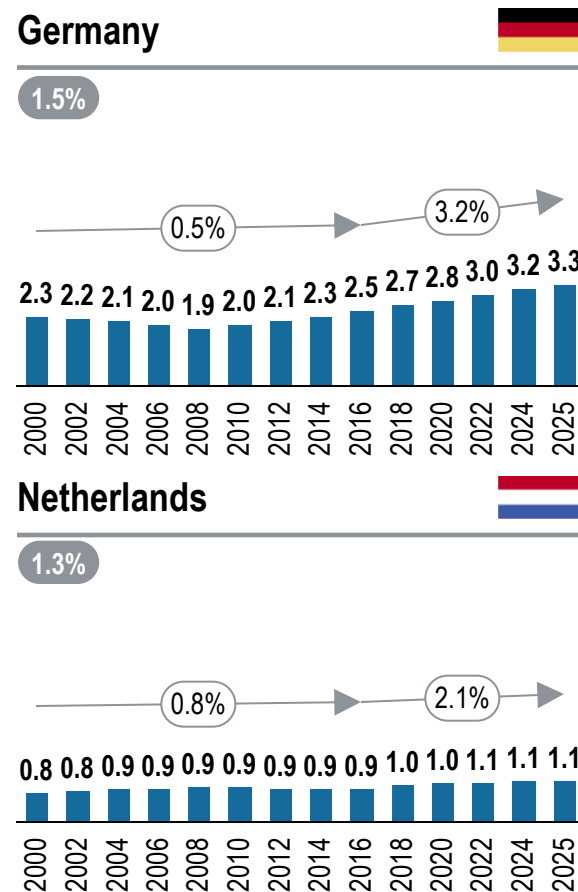
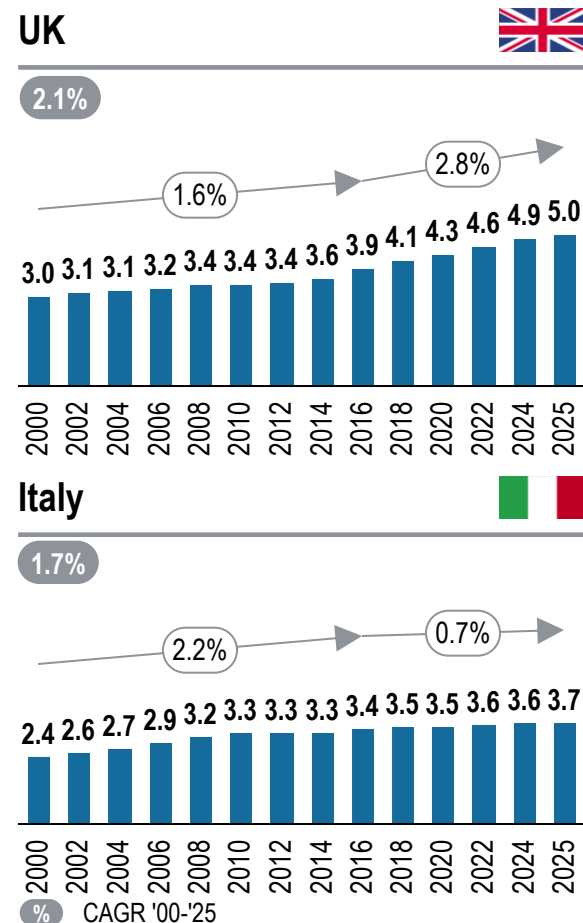
The total PV car parc of all EU-6 countries has been roughly stable in the past and coming years with a CAGR 2000-2025 of 0.9% p.a.

Total PV car parc by country (EU-6), 2000-2025 [m units]



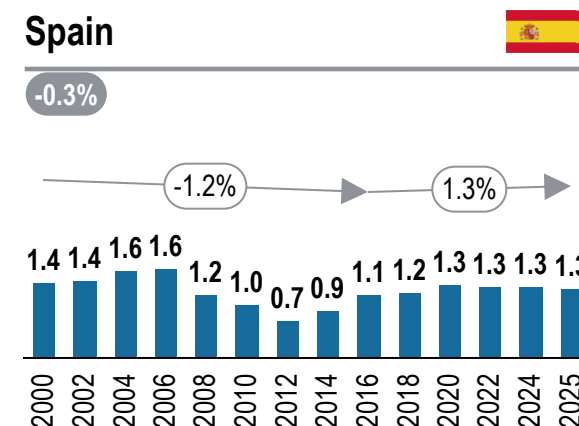
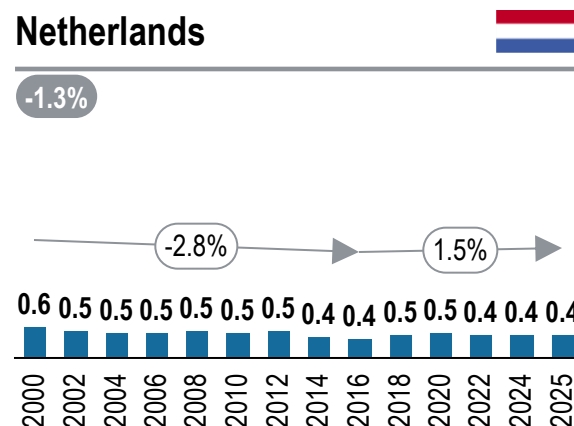
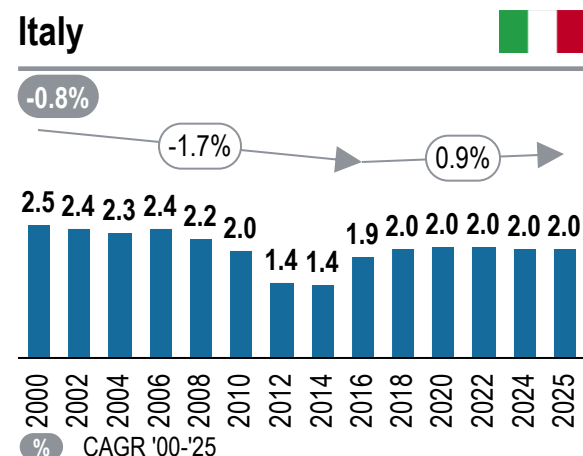
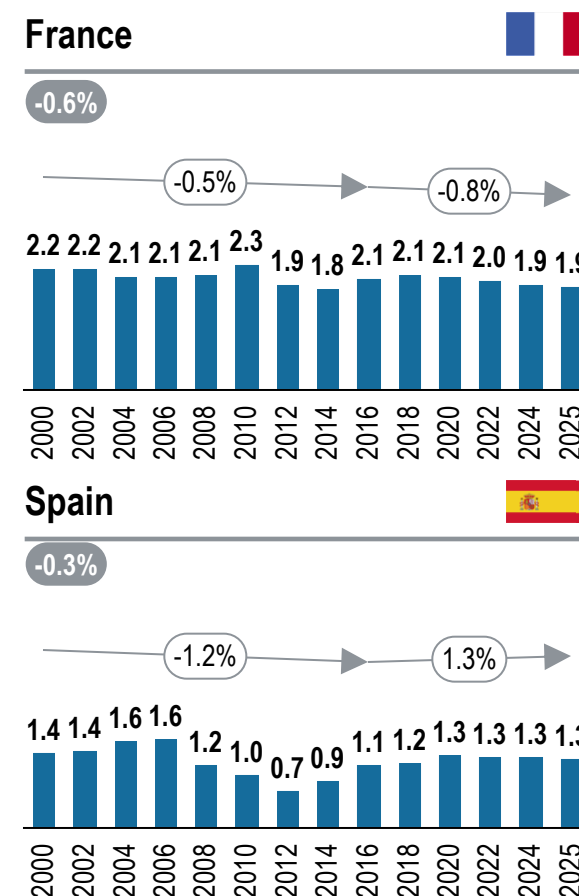
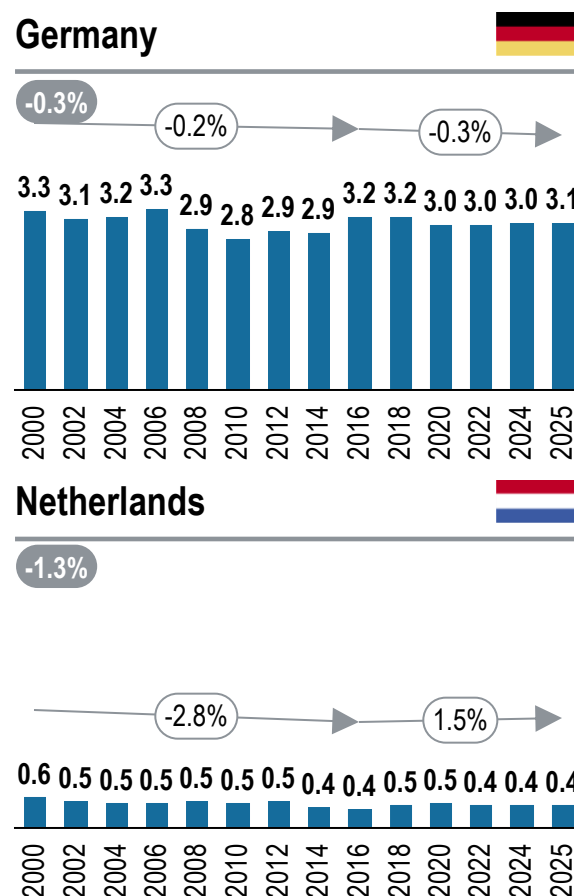
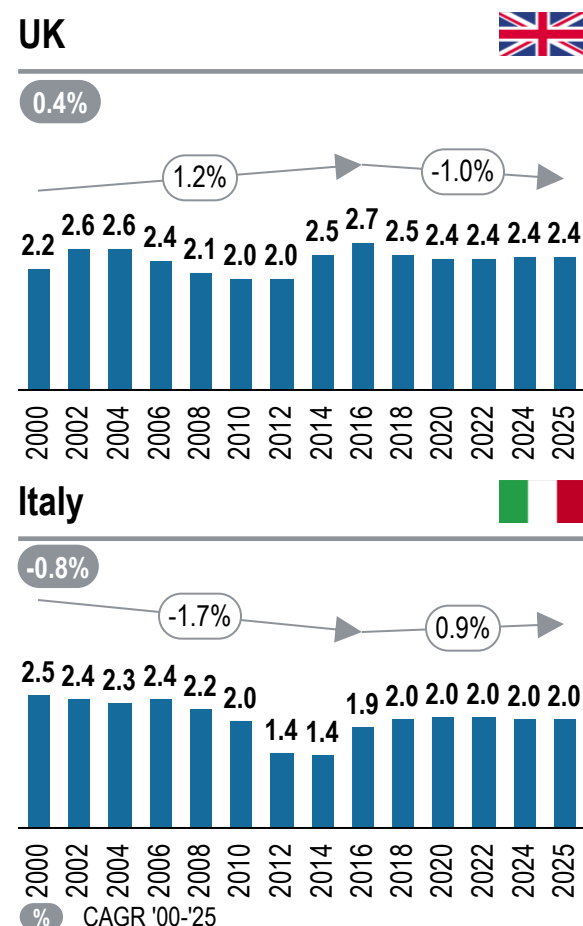
The same goes for the total LCV car parc of all EU-6 countries with a CAGR 2000-2025 of 1.3% p.a.

Total LCV car parc by country (EU-6), 2000-2025 [m units]



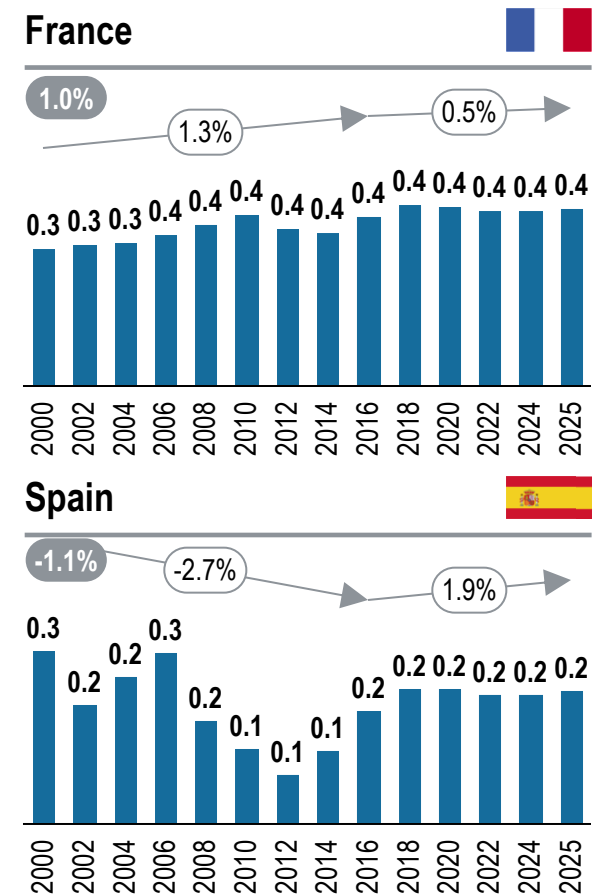
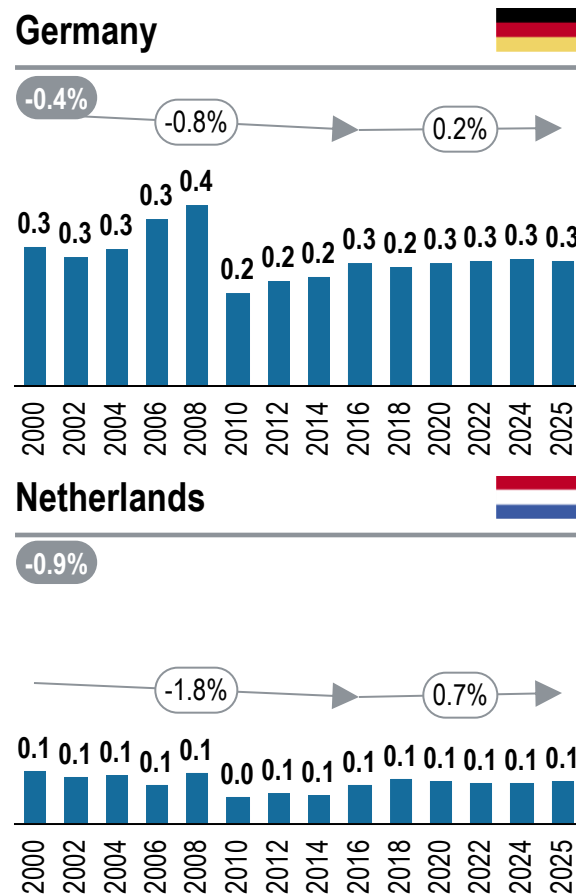
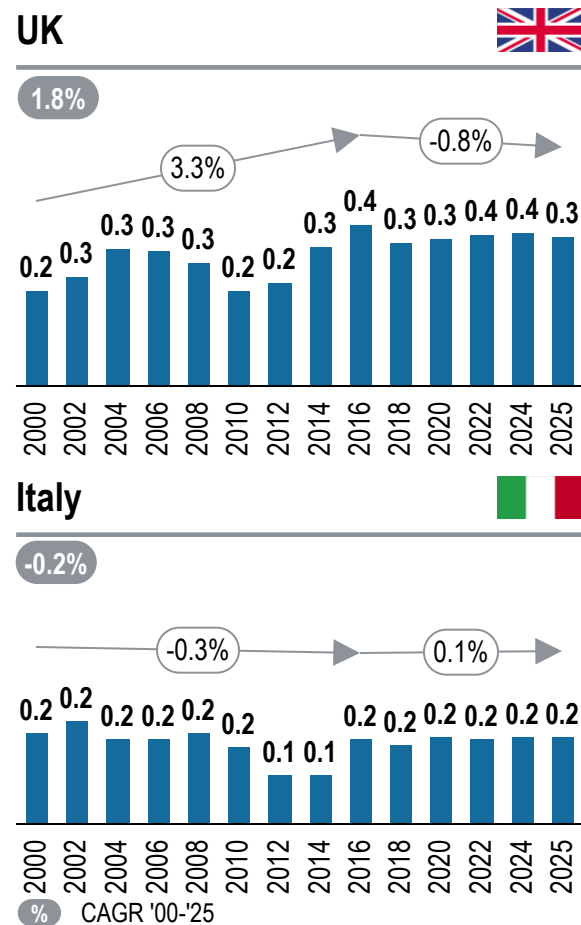
The crisis significantly impacted new car sales in most of EU-6, with only UK showing new car volumes above pre-crisis levels in 2016

New PV sales by country (EU-6), 2000-2025 [m units]



The crisis also significantly impacted new LCV sales in most of the EU-6, showing large declines in most countries

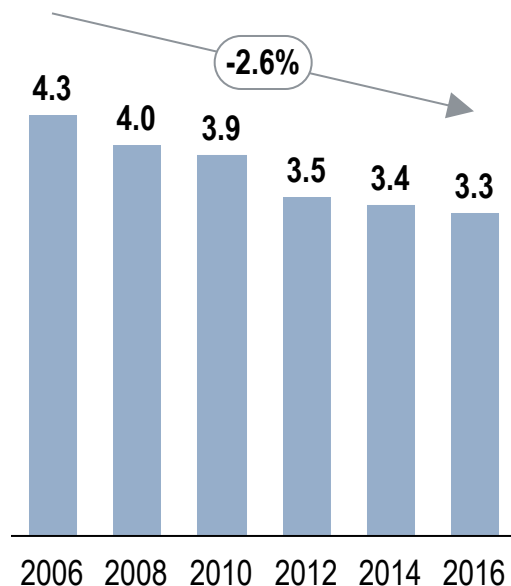
New LCV sales by country (EU-6), 2000-2025 [m units]



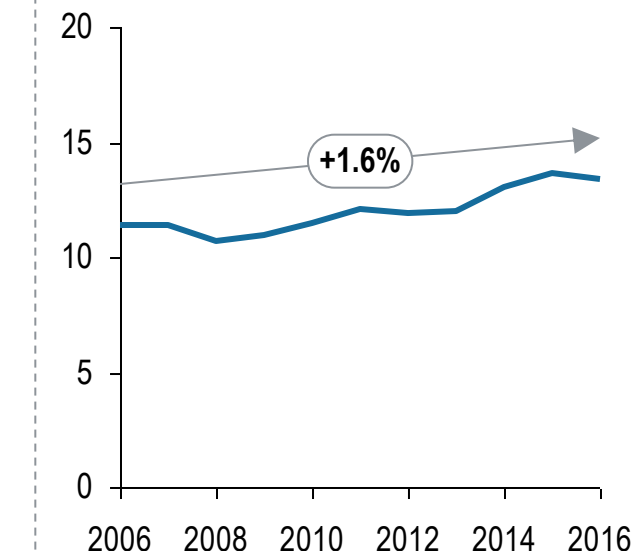
Declining volumes coupled with increasing absolute residual values shows a relatively stable market development in the last ten years

Market development of 3-4-year-old PVs (EU-6), 2006-2016

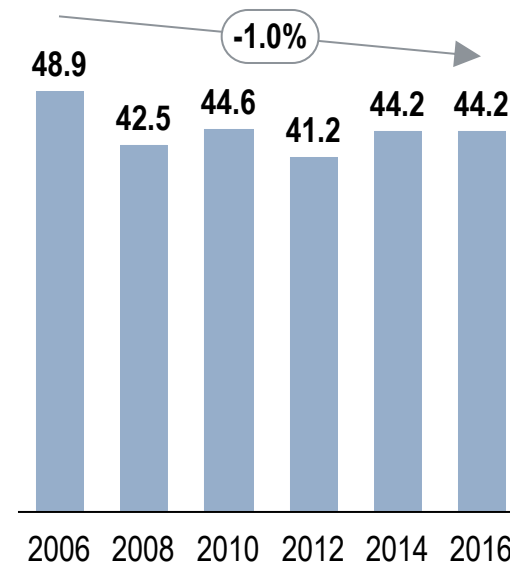
1 Volume [vehicles sold, m]



2 Absolute residual values [EUR '000]



3 Market value [EUR bn]

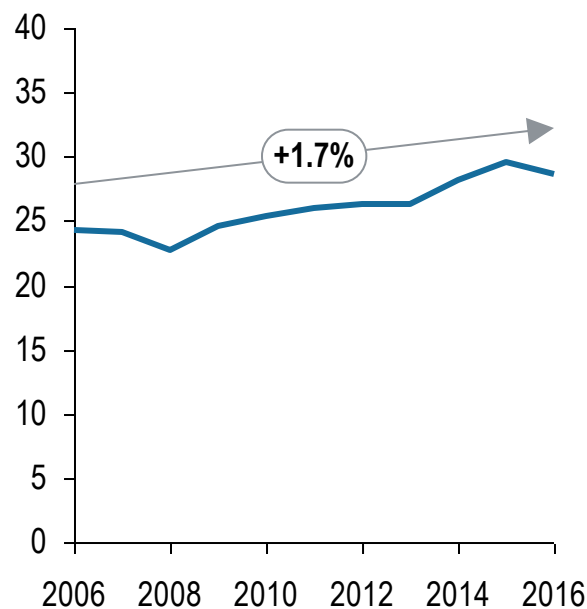


% CAGR

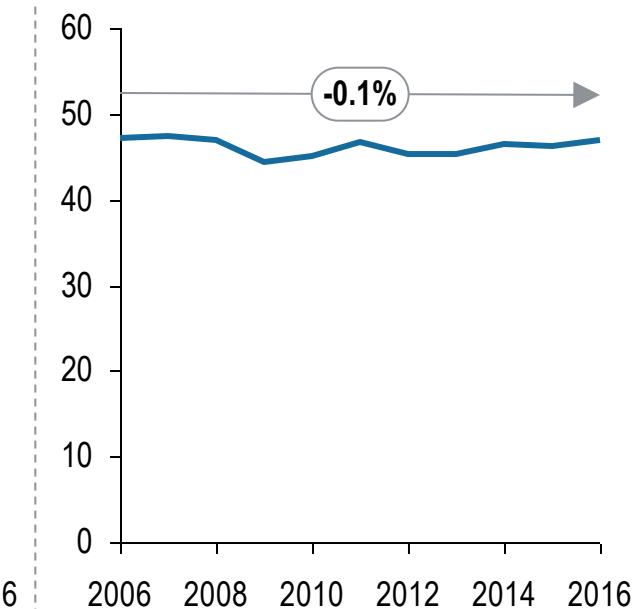
Increasing MSRPs have fueled the rise in absolute residual values – Relative RVs have been relatively stable over the years

Residual value development of 3-4-year-old PVs (EU-6), 2006-2016

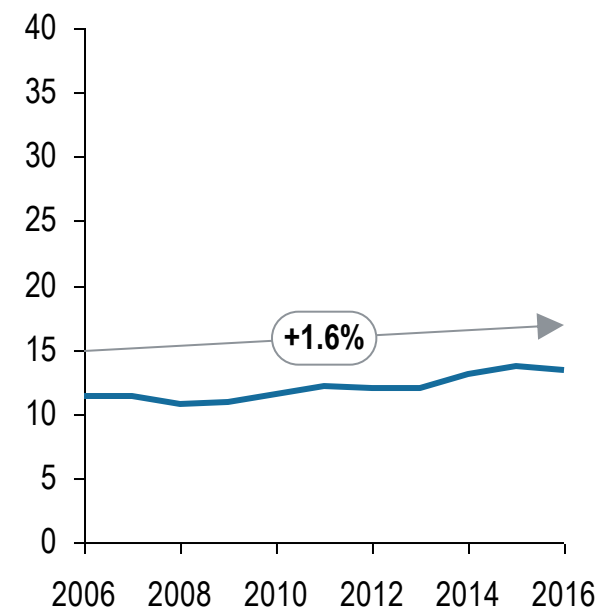
1 Absolute MSRPs [EUR '000]



2 Relative residual values [% of MSRP]



3 Absolute residual values [EUR '000]



% CAGR

The market report contains numerous abbreviations commonly used in automotive market reports

Index of abbreviations (1/2)

Abbreviation Meaning

AV	Autonomous vehicles
BEV	Battery electric vehicle
CaaS	Car-as-a-Service
CAFE	Corporate Average Fuel Economy
CAGR	Compound Annual Growth Rate
CARB	California Air Resources Board
EC	European Commission
EEA	European Economic Area
EU-28	All 28 EU countries
EU-6	Germany, France, Italy, Netherlands, Spain & UK
EU-12	Austria, Belgium, Czech, Denmark, Finland, Greece, Hungary, Norway, Poland, Portugal, Sweden, Switzerland
EU-18	EU-6 and EU-12 countries
EV	Electric vehicle
LCV	Light commercial vehicle

Abbreviation Meaning

LEZ	Low emission zone
MSRP	Manufacturer's suggested retail price
OECD	Organization for Economic Co-operation & Development
OEM	Original equipment manufacturer
OL	Operating lease
p.a.	Per annum
PHEV	Plug-in hybrid electric vehicle
PV	Passenger vehicles
RMT	Repair, maintenance and tires
RV	Residual value
SME	Small and medium-sized enterprise
TCO	Total cost of ownership
ULEZ	Ultra low emission zone
VAT	Value-added tax

The market report contains numerous abbreviations commonly used in automotive market reports

Index of abbreviations (2/2)

Abbreviation	Meaning
xEV	Electric vehicles (e.g. full-hybrid, plug-ins, battery)
Y-o-y	Year on year
YTD	Year to date
ZEV	Zero-emission vehicle