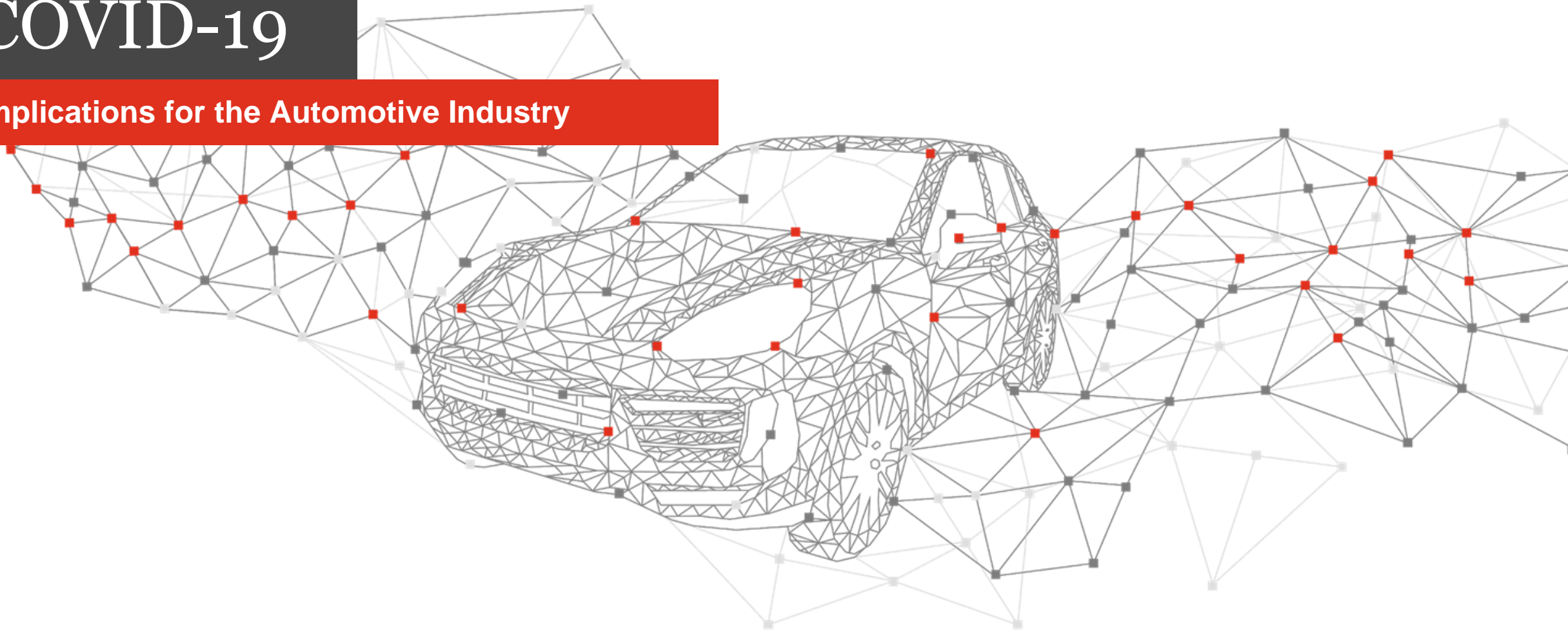


COVID-19

Implications for the Automotive Industry



Agenda

1. Implications of COVID-19 for the automotive industry
2. Overview of expectation range and assumptions
3. Global: Sales
4. Europe: Sales – Double Dip
5. Germany: Sales – Double Dip
6. Europe: Production – Double Dip
7. USA: Sales
8. China: Sales
9. Recovery Paths
10. Version Control



Executive Summary

After severe COVID effects in the first two quarters of 2020, recovery to normal sales levels has set in - but a second wave is impacting Europe

COVID-19 has caused a global crisis for the automotive industry, both on the demand and production side. We expect PV* sales of 64.6m (-13.8%) and production of 59.6m (-18.9%) units for the year 2020 (vs. 2019).

Governments have taken extensive financial support measures to cushion the negative economic effects. Globally strong focus on electric vehicles, but slow overall demand requires high discounts by OEMs.

Regions show different paces of market recovery in Q3 2020 with only China catching up losses from Q1. In total, sales grew 32% over Q2, while production recovered 59% globally, but still lagged behind 2019.

Uncertainty about the global 4th Quarter 2020 is returning due to renewed pandemic and economic impacts. Bandwidth of quarterly sales outlook is between +4.5% and -7.9%, production +1.9% and -13.7% vs. 2019.

Double-dip scenario with second-wave infections-based lockdowns is now the base case for Europe. In that case, European sales could decline -28.0%, and production -26.9% against 2019 for the full year.

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

Structural analysis

The automotive industry is undergoing an intense stress test due to the COVID-19 pandemic and finds established structures challenged

Phase 1

Shutting down and closing

Market

Stop of sales

Sudden and complete drop in new car sales due to social restrictions and a lack of sales and registration staff

OEMs

Plant closures

Synchronous, complete shutdown to minimize variable costs - Avoiding permanent layoffs and closures as much as possible

Suppliers

Interrupted production

Extensive lack of demand impairs the production of suppliers in all regions and requires dedicated coordination

Finances

Cash flow effects

Lack of sales impairs the inflow of liquidity, while structural costs remain largely unchanged. Selling stock vehicles requires high discounts.

Phase 2

Restart and recovery

Lack of demand

Economic uncertainty and lack of confidence are inhibiting demand for new vehicles, electric vehicles are experiencing extremely high demand and production

Ramp-up of production

Multiple, parallel restarts pose great challenges, made even more difficult by the implementation of COVID-19 related requirements

Supply Chain recovery

The demolition of the logistics chains leads to supply bottlenecks; failed suppliers must be replaced

Impact on metrics

Lack of revenues and cash inflows means that profitability is lost at all levels of the automotive value chain. State aids help with credit funding, but overburden balance sheets

Phase 3

Restructuring and transformation

Decentralized marketing/ sales

Integration of digital and local marketing and sales processes in addition to stationary customer care

New product portfolios

New orientation of investment planning to offer competitive products and services, including the elimination of obsolete offers

De-globalized value creation

Reassessing production networks to meet demand locally, and unbundling global supply chains

Aligning structures

Optimization and adjustment of value-added areas through restructuring, spin-offs and acquisitions.

The year 2020 up to October

After some relief over summer, ongoing economic weakness and second-wave infection measures show increasingly serious effects

Country	Sales*	vs. YTD	Production**	vs. YTD	Comment
West Europe	-3,843,835	-28.5%	-3,718,435	-28.4%	After weak September (+0,4% vs. 2019), October sales fell back further (-13.2%); production -5%
Germany	-708,346	-23.4%	-1,051,968	-27.7%	Oct decreased (-4%) after misleadingly strong sales (+8%) in Sept ['WLTP effect']; Prod. +1%
Spain	-478,059	-41.7%	-431,769	-23.5%	Weak sales in October (-21%) in anticipation of incentive scheme, Prod. -4%
France	-488,253	-26.7%	-690,207	-49.7%	Sales in October further decreased (-19%); Showrooms close in November; Prod. -27%
UK	-620,908	-31.0%	-394,075	-35.0%	Weakest October on record (-1.6% by SMMT); Showrooms shut down in November; Prod. -24%
Italy	-510,371	-31.3%	-132,470	-27.9%	Sales in Oct fall back (-0.4%) because of new COVID-19 cases; Prod. +12%
Rest WE	-1,037,899	-27.0%	-1,017,946	-22.6%	Production in October +1% after catch-up effects in September (+6%); Outlook critical
North America	-2,516,847	-18.9%	-2,517,521	-24.3%	October negative (-10%) due to strongly increasing COVID-19 cases in the US; production -2%
USA	-1,969,035	-17.6%	-1,317,837	-20.9%	Sales decline in October (-9%) vs. August (+6%), production +7% compared to 2019
Rest NA	-547,813	-25.3%	-1,199,684	-29.6%	October sales strongly decreased to -16% (YoY); production approx. -16% vs. 2019
China	-1,467,807	-8.7%	-1,833,107	-11.2%	Strong catch-up effects in October with +6%; production approx. -4% compared to 2019
Japan	-543,204	-14.7%	-1,260,772	-18.3%	Strong Sales in Oct (+31%) as result of the sales tax distortion in Oct 2019 (-26%); Prod. +11%
South Korea	56,912	4.7%	-433,505	-14.5%	Sales in October (+4%) on growth path after slump in August (-21% vs. 2019)
Turkey	196,407	73.1%	-106,680	-14.1%	Almost doubled sales in October due to sales promotions and very low previous year
RoW	-2,370,748	-18.4%	-3,715,976	-34.5%	Estimated production loss in September -8% vs. 2019 with positive outlook subdued
Total	-10,488,060	-17.0%	-13,585,996	-22.2%	Global Production is still failing to recover lost volumes from Q2

Source: local statistics *partly estimated **estimated

The global sales **expectation range** until the end of 2020 depends mainly on the development of infection rates and consumer confidence

Analysis	Lower limit of the bandwidth	PwC Analysis	Upper limit of the bandwidth	Europe: Double-Dip/ Second wave
Assumptions for demand	Further weakness of sales, with varying degrees of decline globally. Harsh economic effects lead to a further weakening of consumer confidence and are accompanied by a sharp drop in demand. Independent retail structures limit the impact of social restrictions.	Economic impacts are severe but company defaults and increasing unemployment contained by government bail-outs and support programs. State subsidies for electrified cars and infrastructure effective in spurring for customer interest, while conventional vehicles require high price incentives.	Economic recovery Global economic stimulus measures are proving effective and are supported by purchase incentives for electric vehicles, allowing demand to return to originally expected levels, but still failing to catch up sales within the year.	A second wave of infection from late October onwards initially weakens consumer confidence and from early November onwards requires renewed countermeasures and restrictions on social contacts. Based on the experiences of the first wave, consumers change their behavior in advance and temporarily suspend purchase of vehicles, even when registration offices are open.
Assumptions for production	Wide-ranging economic decline and supply-chain disruptions impact vehicle production. Possible closure of plants dependent on the course of demand, government regulations and/or economic constraints of the countries involved. Supply chains and logistics are strongly affected.	Capacity utilization varies greatly between brands, segments and model lines. Hygienic measures of OEMs and suppliers show clear effect and allow for supply chain operations and vehicle production with only minor restrictions.	Production at originally planned level despite continued hygiene measures by OEMs and suppliers. Supply chains and logistics function smoothly and secure production despite rapid structural changes in favor of EVs.	Due to uncontrollable infection clusters, restrictions are imposed in selected plants, which severely restrict production for several days at a time. Border closures and quarantine regulations have a significant impact on logistics and supplies, impacting regular production and deliveries. Company failures technically suspended into after 2020.
Effects 2021	As a result of a deep economic crisis, overall industries are recovering only slowly. Short-term support measures are hardly effective to support individual companies and value chain. The subsequent economic weakness extends beyond 2021.	An only moderate economic crisis as well as capacity adjustments lead to a steady recovery of overall demand. Short-term support measures lead to advancing demand into 2020 and possibly weaken the recovery in 2021.	A medium economic crisis as well as effective capacity adjustments lead to a rapid recovery in overall volumes. Short-term support measures reinforce catch-up effects and support a speedy recovery in 2021.	The second wave of closures damages the financial health of numerous suppliers and dealers so severely that bankruptcies are increasingly occurring and operations have to be shut down, which will greatly weigh on demand and production in 2021 and beyond.

Incentive programs

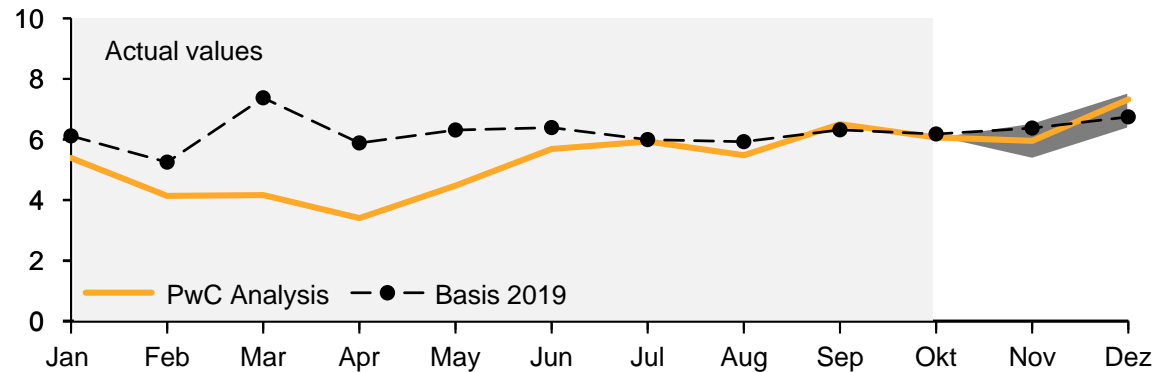
Government support measures increase sales of electric vehicles – high price incentives required to support demand for conventional vehicles

Country	Tax Benefits*	Purchase Incentives*
Germany	Acquisition: 1 Jul – 31 Dec 2020, VAT reduction from 19% to 16%; Company Cars: Reduction of benefit-in-kind on BEVs and PHEVs from 1% to 0.5%, for BEV ≤ €60,000 from 1% to 0.25%; Ownership: 10 y. exemption for BEV, FCEV until 31 Dec 2030	Until 31 Dec 2021, the 'innovation bonus' increases the environmental bonus: Car net list price ≤ €40,000: €9,000 for BEVs and FCEVs, €6,750 for PHEVs Car net list price > €40,000: €7,500 for BEVs and FCEVs, €5,625 for PHEVs
Spain	Acquisition: Exemption from 'special tax' for cars ≤ 120g CO ₂ /km; Canary Islands: VAT exemption partially; Ownership: 75% on BEVs in Spain main cities (e.g. Barcelona)	MOVES Plan (starting Oct 22): BEVs €4,000 - €5,000, PHEVs €1,900 - €2,600 for private Individuals for scrapping a vehicle > 7 years; Vans: €4,000 - €6,000 for priv.
France	Acquisition: Regions provide a tax exemption (total or 50%) for alternative-powered vehicles (e.g. BEV, PHEV, CNG, LPG, E85); Company Cars: Exemption for CO ₂ -based tax components ('TVS') for vehicles emitting less than 20g CO ₂ /km	≤ 20g CO ₂ /km: if car net list price ≤ €45,000: €7,000 households, €5,000 legal person; if car net list price €45,000 - €60,000: €3,000 households and legal person; ≤ 50g CO ₂ /km: if car net list price ≤ €60,000: €5,000 households, €2,500 legal person <i>From Jan 2021 annual reduction of the bonus and tightening of the malus penalties</i>
UK	Acquisition tax, company Cars: Exemption for BEV and PHEV; Ownership: Minimum rate for zero-emission vehicles: 2020-2021:0%, 2021-2022: 1%, 2022-2025: 2%	Government grants (through dealers) for cars with net list price ≤ £50,000 up to £3,000
Italy	Ownership: Five-year exemption for electric vehicles from the date of first registration; After this period, 75% reduction of the tax rate applied to equivalent petrol vehicles	Bonus: Up to €10,000 for BEVs (Until Dec 2020); Up to €6,500 for PHEV with 60g-21g CO ₂ /km, min. range 50km. Malus: Up to €2,500 cars emitting >250g CO ₂ /km
USA	Acquisition: All federal taxes that depend on fuel consumption are eliminated for EV. Tax credit of up to \$7,500 for EV. As soon as manufacturer sales reach 200k, subsidy expires.	In addition to national tax credits, federal states subsidize electric cars differently. For BEV , subsidies range from \$1,500 to \$2,500, PHEV: up to \$1,500
China	Acquisition: Tax exemption (10%) for electric vehicles until the end of 2022. Reduction of VAT on used car sales from 2.0% to 0.5% until Dec 2023	New incentive scheme from 22 July 2020: Vehicles with base price ≤ 300,000 Yuan (~40k€) Subsidy in 2020: ¥17,000 - ¥24,000 for EV; Relaxation of registration restrictions
Japan	Acquisition: Purchase tax is abolished for private (3%) and business cars (2%) in favor for a tax, based on fuel efficiency and environmental criteria.	Purchase subsidy depends on fully electric range. For each kilometer the state pays 1000 Yen (~ € 7.40). For BEV, ~ ¥ 365k is granted, for PHEV ~ ¥ 183k
South Korea	Acquisition: Reduction of VAT for new vehicle sales from 5% to 1.5% (March – June 2020), price reduction equivalent to ₩ 1,468,842 (~ € 1,076)	BEV purchase subsidy: ₩ 7,920,528 (~ € 5,800) FCEV purchase subsidy: ₩ 22,324,185 <i>Extension of subsidy period: Originally planned until Dec 2022; New: Dec 2025</i>
Turkey	Registration tax (ÖTV) waiver: BEVs 3%-15% (ICE up to 160%)	Low-interest loan package for individual, corporate customers on new and used cars

Global analyses conceal the strongly varying developments within regions, but show that customer demand is the key industry driver

Passenger Vehicle Sales*: Expected range for 2020

(in million units, Global)



Analysis	Sales (M)	Effect	Result
2019	75		Basis of comparison
Upper limit of the bandwidth	65.4	-12.7%	+4.5% in Q4 vs. 2019
PwC Analysis	64.6	-13.8%	+0.2% in Q4 vs. 2019
Lower limit of the bandwidth	63.0	-15.9%	-7.9% in Q4 vs. 2019

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

Key insights:

Global demand is expected to continue to recover globally in the 4th quarter of 2020, but with regionally varying development paths. The main drivers of returning demand are catch-up effects in China.

Bottlenecks in **production** due to further waves of infection and the resulting logistical and financial constraints are determining the recovery of manufacturers and suppliers.

Current situation and effects:

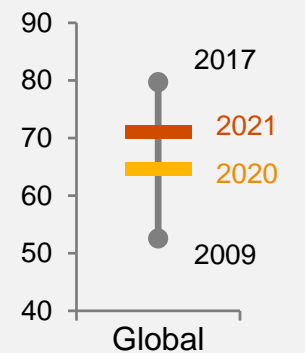
China: With another strong recovery in October (+11.4% vs. 2019), the Chinese car market is showing uninterrupted momentum and catch-up effects. Due to the short lockdown, an economic crisis was avoided.

Europe/ Double Dip: Continuing the recovery from Q1 and Q2, September equaled the weak level of the previous year (+0.4% vs. 2019), while October came in on long-term average rates. However, the incentives for EV/ PHEVs may only achieve minor direct market effects.

USA: The US market improved significantly in September (+6%) compared to previous months, but stalled in October. Political and economic uncertainties are reflected in the full-year sales expectation.

Vehicle Sales* - Variance

(in million units, Global, 2009-21)



Comparison over 10-year period:

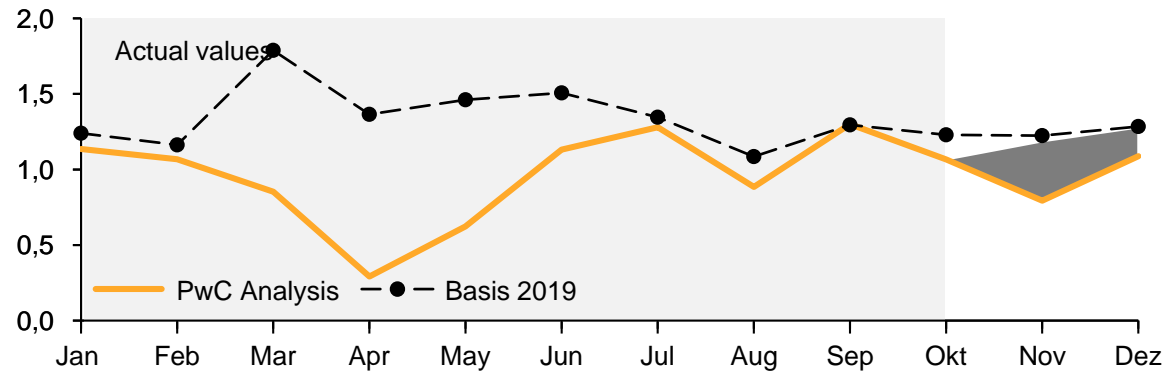
Global demand has been on a downward trend after a peak in 2017 (~80 million units), mainly driven by a two-year decline in China. Compared to the record year 2017, a gap of -19% is expected for this year. Expected sales in 2020 roughly correspond to the global sales in 2012 (65.4 million units), but are still higher than in the last crisis year 2009. 2021 is expected to see a recovery of +11% compared to 2020.

Focus Europe: Sales

Second-wave COVID-19 impacts slow down customer demand and require strong sales push

Passenger Vehicle Sales*: Expected range for 2020

(in million units, Europe)



Analysis	Sales (M)	Effect	Result
2019	15.9		Basis of comparison
Upper limit of the bandwidth	12.1	-24.3%	-5.5% in Q4 vs. 2019
PwC Analysis	11.5	-28.0%	-21.1% in Q4 vs. 2019
Lower limit of the bandwidth	11.5	-28.0%	-21.1% in Q4 vs. 2019

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

PwC

Key insights:

Accelerating in October, a **second wave** of COVID-19 infections has impacted customer sentiment and prompted governments to renew containment measures over November. Selected catch-up effects, volume adjustments, process adjustments and supply-chain problems determine the output of **production** until year-end.

Current situation and effects – Double Dip

October sales are estimated 13% lower than the already low previous-year month, while consumer sentiment is likely to turn to negative due to new lock-down and containment.

UK: New lockdown measures will force showrooms in England to close from Thursday until Dec. 2. Factories are allowed to continue operating. **France:** Dealerships will be closed to walk-in customers during a new lockdown that will last until Dec. 1. Dealerships can still service cars and deliver new vehicles. **Italy:** New-car sales in Italy declined 0.2 percent in October as gains from a government incentive program introduced in August slowed because of a resurgence in COVID-19 cases. Dealerships will remain open for business. **Spain:** The new-car market plunged 21 percent in October. A government scrapping package called Plan Renove became fully effective on Oct. 20, until Dec. 31.

Comparison over 10-year period:

European demand plummeted after reaching its peak in 2019 (~16 million units). Sales in 2020 are below the very low European sales in 2012 (12.6 million units), the lowest level in the period under review since 2009. 2021 is expected to see a recovery of +11% compared to 2020, which would still mean a rather weak result.

Vehicle Sales* - Variance (in million units, Europe, 2009-21)



2020/11/11

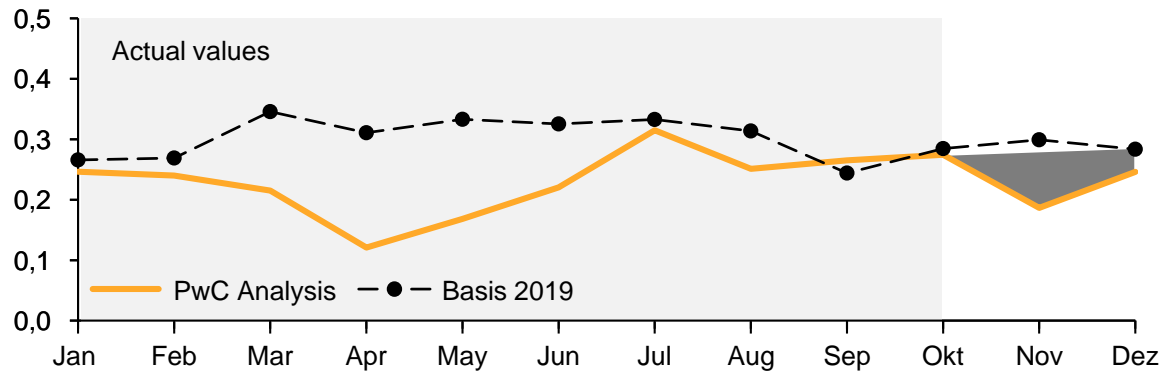
9

Focus Germany: Sales

Increasing availability and growth of battery and plug-in vehicles leads to a record share

Passenger Vehicle Sales*: Expected range for 2020

(in million units, Germany)



Analysis	Sales (M)	Effect	Result
2019	3.6		Basis of comparison
Upper limit of the bandwidth	2.9	-20.1%	-3.1% in Q4 vs. 2019
PwC Analysis	2.7	-23.8%	-18.5% in Q4 vs. 2019
Lower limit of the bandwidth	2.7	-23.8%	-18.5% in Q4 vs. 2019

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

PwC

Key insights:

The development of **demand** in the fourth quarter of 2020 will be impacted by a “soft lockdown” in November while incentives and economic stimulus continue to be effective. A renewed shutdown of **production** by the end of the year is not expected, but short-term capacity adjustments will remain necessary.

Current situation and effects – Double Dip:

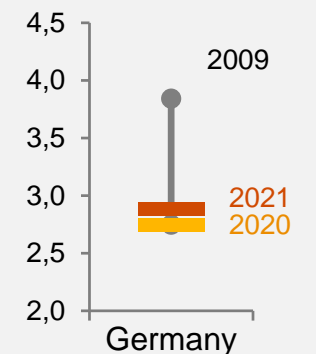
Demand: After exponential growth of COVID-19 infections in October, the government agreed on nation-wide but limited lock-down measures mainly for all social and private activities, sparing shops, factories, schools and administration offices. However, we expect measures to weigh on consumer confidence and reduce demand, and in turn sales. Non-electric and non-premium cars suffer from slacking demand and require high incentives, while dealerships continue to sell off vehicle stock.

Production: After the almost complete production shut-down, production of pre-ordered vehicles and new series is increasingly resuming. While production totals still lag 2019 by a hefty -30%, production in October was only -2% lower than 2019 in the year. Production capacity of battery-electric and plug-in-hybrid cars limits higher output and sales.

Comparison over 10-year period:

After peaking in 2009 (3.8 million units), the market in Germany weakened while reaching new highs in 2019. 2020 sales volumes are slightly below the historically low level of 2008 (2.9 million units), thus representing the lowest level in the period under review. Only low growth is expected for 2021 due to advanced demand into 2020 and lacking catch-up.

Vehicle Sales* - Variance (in million units, DE, 2009-21)



2020/11/11

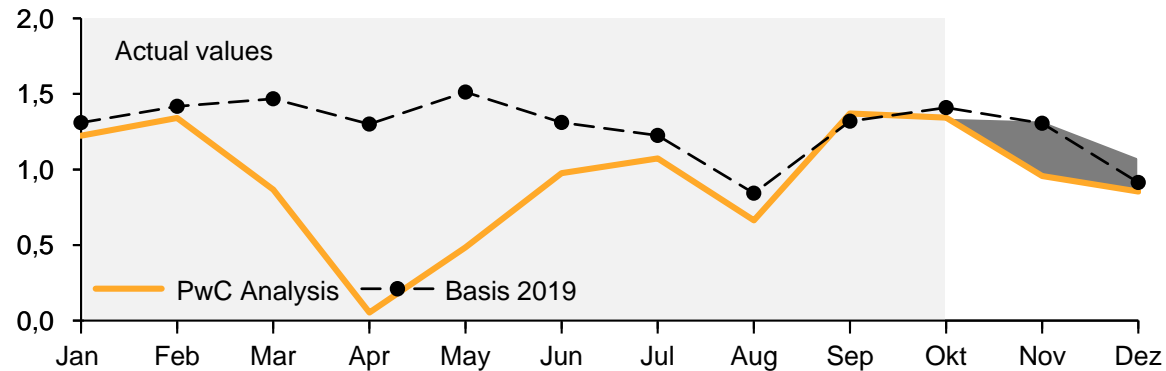
10

Focus Europe: Production

Vehicle production is characterized by uncertainties about the expected demand

PV Production*: Expected range for 2020

(in million units, Europe**)



Analysis	Prod. (M)	Effect	Result
2019	15.3		Basis of comparison
Upper limit of the bandwidth	11.8	-23.1%	+3.2% in Q4 vs. 2019
PwC Analysis	11.2	-26.9%	-13.1% in Q4 vs. 2019
Lower limit of the bandwidth	11.2	-26.9%	-13.1% in Q4 vs. 2019

*Vehicle Production = passenger car according to M1-classification ** - Europe = EU + UK + EFTA

Key insights:

Until the end of the year, ongoing **capacity adjustments** and production restrictions are expected due to weak demand in the overall market. In 2021, the expected catch-up effects of demand will lead to a significant increase in production.

Current situation and effects – Double Dip:

Sales of stock vehicles are keeping the resurgent demand satisfied, thus further decoupling production from market recovery.

In the short term: Impeding shut-downs across European countries are deliberately intended to pare factories and production, so fully-fledged lock-downs as in Q1 are unlikely and not factored into our scenario analysis. However, selected closures of individual factories and operations may occur, temporarily disrupting supply chains.

Medium-term: The actual level of required output will only become apparent once stock orders have been processed and dealer inventories have been replenished, thus allowing capacity utilization in the fourth quarter to be determined. Export regions have been weaker in the year than local demand, so a global recovery is likely to help recovery of production.

Comparison over 10-year period:

Production in Europe has fallen continuously since its peak in 2017 (16.7 million units). Compared to 2017, a decrease of -33% is expected for this year. Production in 2020 is well below the historically lowest level of 2009 (-17% vs. 13.4 million units) and thus represents the lowest level in the period under review. A recovery of +23% vs. 2020 is expected for 2021.

Vehicle Prod.* - Variance

(in million units, Europe, 2009-21)

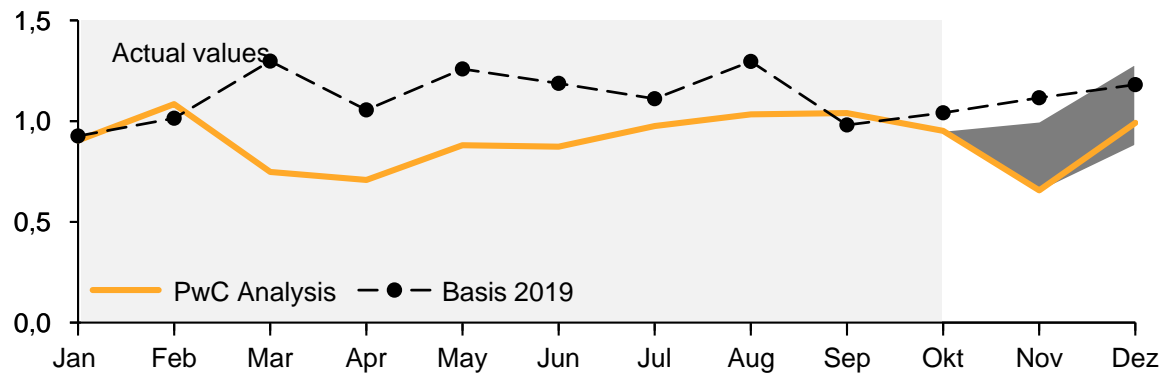


Focus USA: Sales

Strong inventory reduction and favorable financing have been able to prevent the most severe slump up to now

Passenger Vehicle Sales*: Expected range for 2020

(in million units, USA)



Analysis	Sales (M)	Effect	Result
2019	13.5		Basis of comparison
Upper limit of the bandwidth	11.5	-14.7%	-3.1% in Q4 vs. 2019
PwC Analysis	10.8	-19.4%	-22.1% in Q4 vs. 2019
Lower limit of the bandwidth	10.7	-20.3%	-25.7% in Q4 vs. 2019

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

PwC

Key insights:

Demand in the fourth quarter of 2020 will be strongly influenced by political (presidential elections) and economic uncertainties (unemployment). Capacity adjustments as well as **production bottlenecks** due to failures and closures of suppliers in Mexico and also within the USA are to be expected.

Current situation and effects:

Demand: Following relatively strong vehicle sales in the lockdown months and September (+6.2% vs. 2019), the outlook for the upcoming months is rather gloomy (October -5% est.). Political and economic uncertainties lead us to expect high volatility and associated weak months. Our numbers are not identical to the usual Light Vehicle market total, but exclude commercially-used vehicles such as heavy pickups, vans.

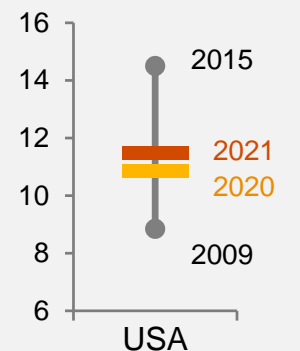
Production: The full recovery and utilization of production at pre-Corona level has not yet been achieved. The introduction of new 2021 models is strongly delayed, and may lead to a very weak 4th sales quarter, accompanied by higher than average incentives due to lacking new vehicle stock.

Double Dip: Since the lockdown measures had less impact in the first lockdown, no major additional losses are expected in a second wave.

Comparison over 10-year period:

Demand in the USA is on a downward trend after reaching its peak in 2015 (14.5 million units). Compared to the record year 2015, a slump of -27% is expected for this year. Sales in 2020 are roughly the same as in 2011 (10.7 million units). Growth of +8% is expected for 2021 compared to 2020.

Vehicle Sales* - Variance (in million units, USA, 2009-21)



2020/11/11

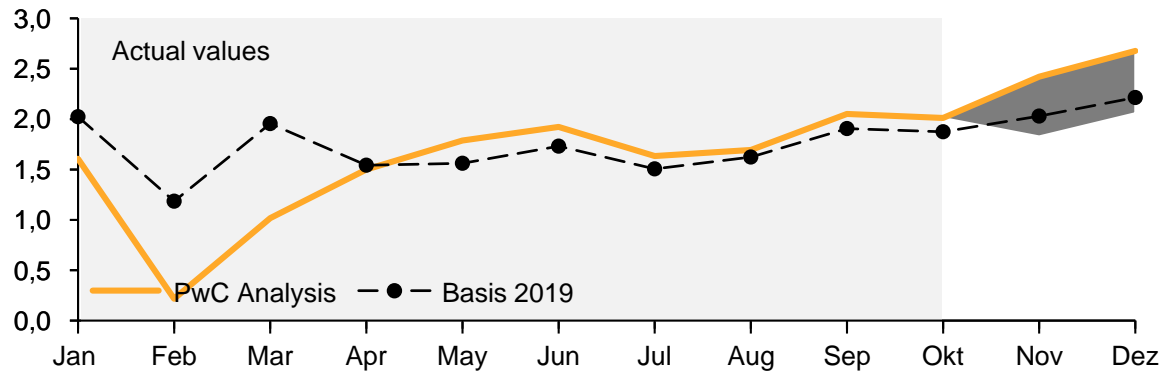
12

Focus China: Sales

Even compared to the weak year 2019, the automotive market is continuing to catch up lost sales from Q1

Passenger Vehicle Sales*: Expected range for 2020

(in million units, China)



Analysis	Sales (M)	Effect	Result
2019	21.1		Basis of comparison
Upper limit of the bandwidth	20.5	-2.9%	+16.2% in Q4 vs. 2019
PwC Analysis	20.5	-2.9%	+16.2% in Q4 vs. 2019
Lower limit of the bandwidth	19.3	-8.6%	-3.6% in Q4 vs. 2019

*Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

PwC

Key insights:

Premium and electric vehicles in particular will provide an additional boost to **demand** in the final quarter of 2020. The automotive market is expected to close only slightly below the previous year's figure. Ongoing protective measures in **production** further reduce capacity utilization, but are expected to be phased out under ongoing government supervision.

Current situation and effects:

Demand: The pent-up demand for new and replacement vehicles is already high due to the downturn in 2018/ 2019 and will be further supported by the partial reduction of registration restrictions and the extension of NEV subsidies. However, the reduction in VAT on used vehicles may have a reverse effect on the sale of new vehicles.

Production: Both low-priced domestic and premium brands are benefiting from the strong recovery in demand. For this year we expect a slight decline provided that the wave of infection remains under control.

Double dip: Should another comprehensive lockdown occur, the slump seen in the 1st quarter is likely to be repeated, and for the total year the decline could amount to **-13.7%**.

Comparison over 10-year period:

Since reaching its peak in 2017 (24.0 million units), demand for vehicles in China has been on a downward trend. Compared to the record year 2017, a decline of -14% is expected for this year. Unit sales in 2020 are roughly the same as in 2015/16 (19.7/ 23.0 million units). Growth of +7% compared to 2020 is expected for 2021, i.e. in line with the long-term trend.

Vehicle Sales* - Variance (in million units, China, 2009-21)



2020/11/11

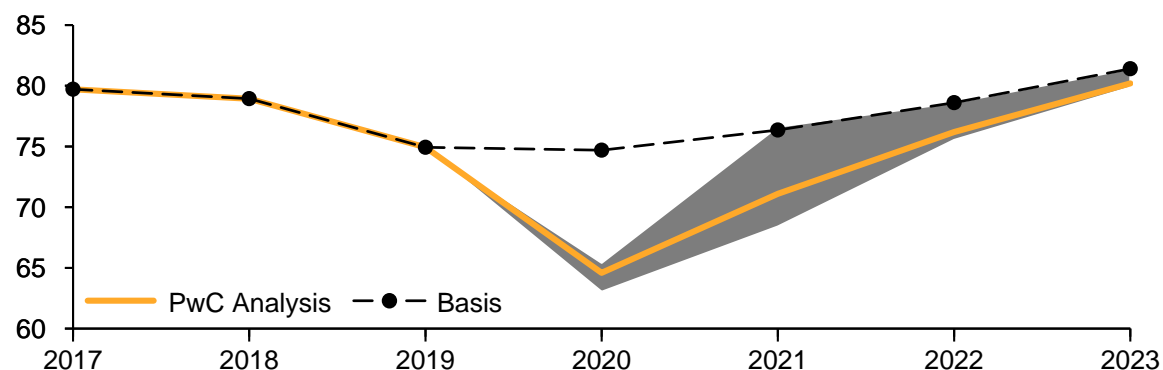
13

Medium-term sales Global**

Our detailed modeling expects only a gradual recovery in 2021 in most scenarios

Passenger Vehicle Sales*: Risk assessment until 2023 Key insights:

(in millions of units, Global)



Change Year to year

Analysis	2020 vs. 2019	2021 vs. 2020	2022 vs. 2021	2023 vs. 2022
Upper limit of the bandwidth	-12.7%	+17.1%	+2.6%	+3.6%
PwC Analysis	-13.8%	+10.1%	+7.2%	+5.3%
Lower limit of the bandwidth	-15.9%	+8.5%	+10.4%	+5.7%

Upper range limit:

In the second half of 2020, driven by China and the USA, a complete global recovery sets in, which will continue in 2021 with slight catch-up effects. The units lost in the first half of 2020 will only be partially made up for, but previous levels will be reached more quickly.

PwC Analysis:

After the global lockdown, supply chains and demand are recovering rapidly - initially in China. Synchronized sales incentives for EV/PHEVs create limited volume effects without significant impact on production, while overall demand stabilizes. Impact on demand, partially brought forward due to sales incentives, weakens growth in 2021 and leads to a delayed recovery phase.

Lower range limit:

The economic crisis reaches into further areas of the economy, leading to an intensification of the impacts and a renewed collapse of demand. The economic crisis extends well into 2021 and only allows for demand recovery after structural reforms, but with visibly lower purchasing power.

* - Passenger Vehicles = Passenger Cars, in NA LV w/o heavy pickups, commercial vans

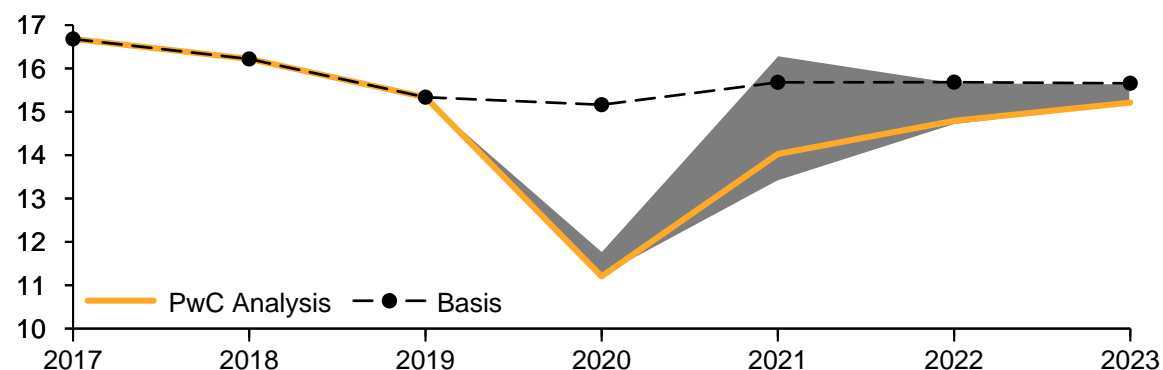
** - modelled countries: China, USA, Germany, UK, France, Spain, Italy, Turkey

Medium-term production Europe**

The 2020 production shutdown will have an indirect impact on capacity utilization in 2021

PV Production*: Risk assessment until 2023

(in millions, Europe)



Change Year to year

Analysis	2020 vs. 2019	2021 vs. 2020	2022 vs. 2021	2023 vs. 2022
Upper limit of the bandwidth	-23.1%	+38.2%	-3.8%	-0.2%
PwC Analysis	-26.9%	+25.2%	+5.4%	+2.8%
Lower limit of the bandwidth	-26.9%	+19.5%	+9.7%	+3.2%

Upper limit of the bandwidth:

After the plant closures in the first half of the year, production can be resumed for the most part with minor restrictions. Despite strong demand, production losses from the first half of the year cannot be made up in the second half, but will lead to additional production in 2021.

PwC Analysis – Double Dip:

While the second-wave lock-downs are intended to spare the economy, they are still expected to disrupt the ongoing recovery and reduce 2020 results. European governments' incentives are leading to excess demand for electric vehicles, but this only compensates to a small extent for the actual weakness in demand. Once the government incentives expire, however, consumers will continue to demand aggressive deal-making and discounts. Production will fall back onto the path of a slow recovery, as exports are also weak.

Lower limit of the bandwidth:

The prolonged Corona-measures trigger a deep economic crisis in 2020, which will not allow for a substantial recovery in the first half of 2021 either. After a quick, short-term catch-up phase in the 3rd quarter of 2020, production remains weak partly due to low export demand and recovers only slowly in 2021, while capacities are increasingly being relocated.

*Vehicle Production = In the US incl. Light trucks, without Light Commercial Vans

** - modelled countries: Germany, UK, France, Spain, Italy

COVID-19

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Version control

Version	Date	Editor	Changes
0.0	20.03.2020	C. Stürmer	Creation of document
1.0	23.03.2020	C. Stürmer	Presentation
2.0	25.03.2020	C. Stürmer	Adaptation of documentation, assumptions and results
2.1	27.03.2020	C. Stürmer	Formatting
3.0	06.04.2020	C. Stürmer	Corrections, contacts and annex; 2019 Global Sales 75 m instead of 74 m due to update Rest-of-NA
3.1	08.04.2020	C. Stürmer	Added Q1 overview slide, reviewed scenarios
4.0	21.04.2020	C. Stürmer	Replacement of "Recovery" with "Incentive" Scenario Correction of Q1 Overview slide to ACEA sales actuals and production reports Adaption of Deep Impact Scenario to actuals: Global Sales -36.8% instead of -29%
4.1	27.04.2020	C. Stürmer	Format adapted to global template
4.2	12.05.2020	E. Lüttel	Inclusion of April actuals; sales volume 1.4 million higher (+0.6 m in USA, +0.5 m in China)
5.0	13.05.2020	E. Lüttel	Update of consolidation model for actuals Jan-Apr (Deep Impact -29.2% instead of -38.6%) Takeover of actualized China scenarios (Incentive scenario: sales -3% instead of +16.6%)
6.0	09.06.2020	C. Stürmer	Research of actual sales and production estimates year-to date May 2020 Exact modelling of DEU/ EU incentive scenario
7.0	13.07.2020	C. Stürmer	Update of actual sales and production estimates until June 2020, update press clippings
		E. Lüttel	Modelling Turkey, added slide with incentive programs

Version control

Version	Date	Editor	Changes
8.0	17.08.2020	E. Lüttel	Update of actual sales and production estimates until July 2020, update press clippings
		C. Stürmer	Modelling of the scenarios until 2021 at monthly level
11.0	06.11.2020	C. Stürmer	Modelling of the scenarios for expectation range including indication of variance
		E. Lüttel	Update of actual sales and production estimates until October 2020

