



Used car prices could crash —will they?

The supply/demand disequilibrium in the auto market has caused an unprecedented spike in used-car prices. How this unwinds could also affect new-car sales and prices for years to come—and impact players across the industry and beyond.

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To our readers

A massive demand/supply gap has been disrupting global automotive markets for the past year. The media are reporting the exorbitant prices U.S. car dealers are getting, especially for used-cars: the Bureau of Labor Statistics' used-car index jumped 42 percent from December 2019 to October 2021. Car prices are a major contributor to the biggest surge in inflation in the U.S. in three decades.

A year ago, could you have imagined a 2003 Camry LE, with 262,000 miles, steel wheels, and visible front-end damage on offer for nearly \$5,000? In fall 2021, that rates a "good price" sticker on the Kelley Blue Book website.

It's what the market will bear, because of the ongoing and deepening shortage of new cars. Dealers who normally have new-car inventories in the hundreds can now count new models on their lots with their fingers.

How did this happen? In a nutshell: the auto industry has been slammed by a series of unexpected events that have created a supply/demand imbalance unlike anything we have seen. First, COVID-19 hit and the economy was put into an induced coma. Auto plants shut down and automakers braced for a long recession. They canceled orders from suppliers—including for the semiconductor chips that are now essential for production. But demand started to rebound after just one terrible quarter, catching

the industry off guard. Then, just as automakers were ramping back up to normal production in late 2020, the global semiconductor shortage hit.

By the second half of 2021, the shortage really took hold. In Q3 2021, new-car production fell to about a 12-million-unit annual rate. Yet demand remained healthy, driving millions of consumers and fleet buyers into the used-car market, where the supply was shrinking. The result: the unprecedented increase in used-car prices.

History tells us the current frenzy in the used-car market will come to an end. Chip suppliers will catch up with demand, supply chains will unclog, and the massive auto manufacturing machine will shift back into high gear and dealer lots will again be full. When that happens, the used-car market could collapse. The millions of consumers and businesses that are forced to buy used-cars today, will go back to buying new ones. Used-car demand would normalize and the relationship to new-car prices would be restored. That would imply a drop in used-car prices of about 30 percent below where they are today. However, the fall could be somewhat less if inflation persists. The decline could be sudden or slow and will depend on how quickly supply and demand come back into equilibrium.

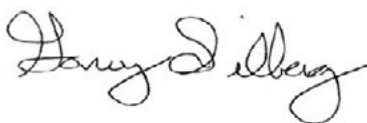


A large decline in used-car prices would have profound implications across the automotive ecosystem.

- By the end of 2021, some 17 million consumers—the equivalent of a full year’s sales—will own vastly overpriced used vehicles. This number is growing by close to 2 million used-car buyers a month.
- Over half of these overpriced vehicles are financed, posing potential risks to lenders and investors in the \$1.4 trillion auto-loan business. Moreover, these buyers will have little to no equity in their cars making future car purchases unaffordable.
- Automakers and suppliers may be whipsawed by changes in future demand caused by today’s imbalances. However, they can adjust their inventory and distribution models that can reduce volatility.
- Dealers are enjoying profits from inflated prices, but margins will contract again when prices normalize—and dealers will still face existential business issues.

In this paper, we look at how the used-car price spiral took off, how it has affected every corner of the automotive business, and the interplay between new- and used-car markets. We also look at what industry players can and must do to prepare for the consequences. In the depths of the pandemic, nobody would have imagined that today the used-car in your driveway would have jumped 40 percent in value. Now we know. But we also know it can’t last forever.

How and when this will end has become difficult to predict. Under normal circumstances, we would expect that automakers would solve their supply chain issues and the historic relationship between new and used-car prices would quickly be restored. Used car prices would drop—maybe precipitously. But there are other forces at work—general inflation, rising input prices, labor shortages—that are beyond the industry’s control. Inflation could be more serious and endemic—not just a result of supply/demand balances—making today’s auto prices the new normal. And the steps to control inflation could have direct impact on auto sales. This makes used-car prices a matter of significant concern for everybody in the automotive ecosystem.

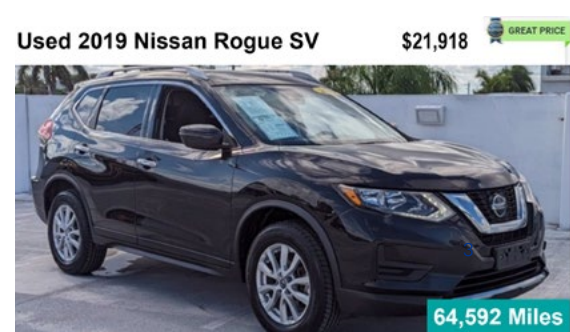


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Key take-aways

How the used-car market moves back to equilibrium will have a huge impact on new-car demand, sales, and pricing



This spike in used-car prices is unprecedented. Used-car prices fluctuate with the economy, but decades of data show nothing like 2021, as a result of the semiconductor shortage and other factors that severely reduced new-car production. In October 2021, the BLS used-car index was 42 percent above December 2020. In November 2021, wholesale prices for used cars were up 44 percent over November 2020.



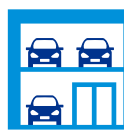
Used-car prices should tumble back to earth. Normally, when the market senses that automakers are once again able to produce a normal supply of new cars, we would expect equilibrium to be restored and used-car prices would normalize. That implies a reduction from current price levels of roughly 30 percent.



The effect on new-car markets could last for years. By the time supply and demand come back into balance, say by year-end 2022, 30 million to 40 million used cars will have been sold to consumers at perhaps 30 percent higher than they would have paid before the shortage. When those consumers come in to trade their cars at “normal” prices in two or three years, they may have little equity to fund their next purchase.



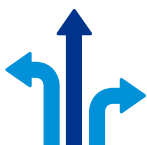
What it means for automakers. Around the world, the semiconductor shortage has cost automakers hundreds of billions of dollars in lost sales, but automakers have blunted the impact by skewing production toward the most profitable trucks and SUVs. As they prepare for the end of the shortage, automakers can find ways to reduce volatility, including through subscription services and more direct-to-customer marketing strategies.



What it means for dealers. U.S. auto dealers are getting sticker price and more for new cars and enjoying record profits on used-cars. But that is only a temporary reprieve from long-term challenges. Dealers still need to adapt to impending lower margins, master omnichannel selling, and prepare for the shift to electric vehicles (EVs).



What it could mean for lenders. Lenders and investors holding securitized auto loans could face losses. New-car loan originations and total auto debt reached all-time highs in 2021. By the time the new-car shortage ends, \$1 trillion worth of new and used cars could have been financed for far above pre-COVID-19 prices. This implies tens of millions of consumers could be underwater on their loans.



We see multiple scenarios for how this ends. A lot depends on inflation. If prices continue to rise, it could create a new floor for new and used-car prices. Raising interest rates to curb inflation could also reduce consumer demand, placing downward pressure on pricing and bringing back aggressive incentive spending. The other factor is how quickly the industry solves the supply-chain issues and ramps up production. How these factors play out could have dramatic downstream impacts. Players across the automotive industry need to plan for multiple scenarios.

Why the used-car price spiral took off

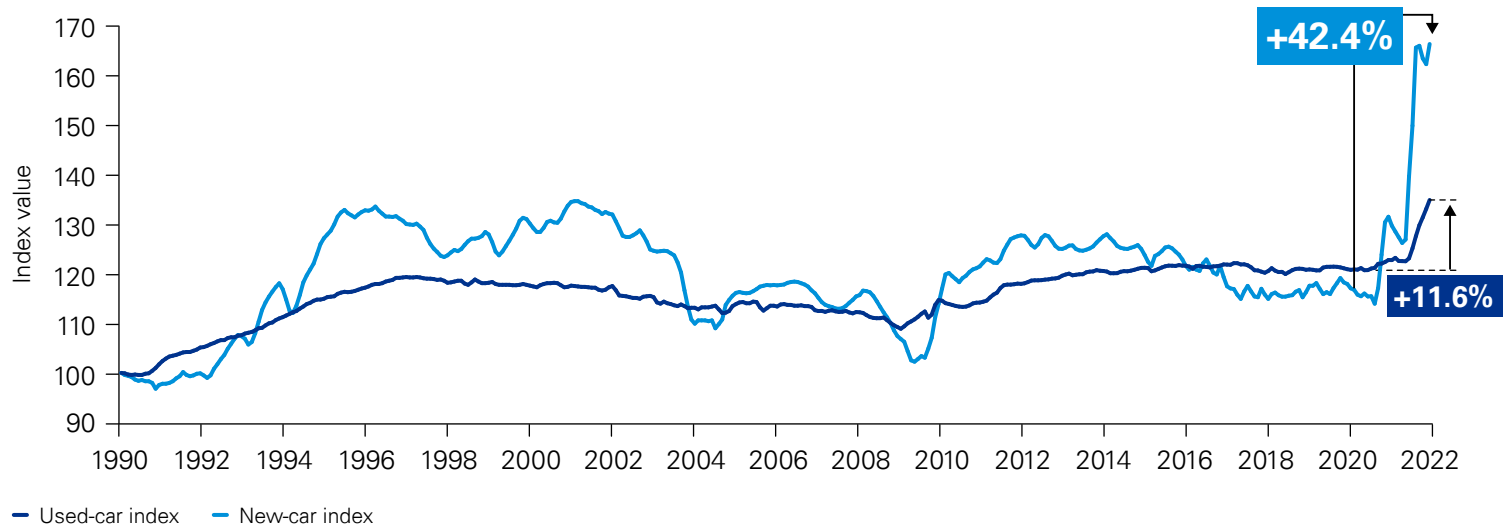
This unprecedented price spiral in used-cars is the result of a unique series of events (see infographic, page 6). The pandemic-induced recession was severe—GDP fell at a 31 percent annualized rate in Q2'20 and 20 million Americans lost their jobs. But it turned out to be short-lived and by the third quarter, car shoppers were back. Automakers that had shut down plants and canceled orders for parts, scrambled to restock dealer lots, and by fall of 2020, new-car sales were back on track.

But then another unprecedented development hit—a global semiconductor shortage began cutting into auto production. One after another, major automakers

announced production cuts, plant shutdowns, and predictions of sharp losses. Automotive demand continued to rise as economic growth accelerated and unemployment dropped in early 2021. But the supply situation deteriorated—fires and floods knocked out key semiconductor facilities and estimates of when the chip industry would catch up were pushed farther into the future.¹ By July, U.S. dealer inventories had fallen to historic lows and new-car transaction prices had soared past MSRPs, pushing millions of consumers, business owners, and fleet buyers into a used-car market that is also short on supply. That's when used-car prices took off, increasing by nearly four times the pace of new cars (Exhibit 1).

Exhibit 1. An unprecedented leap in the used-car index in mid-2021

New- and used-vehicle indices (U.S.), 1990-2021



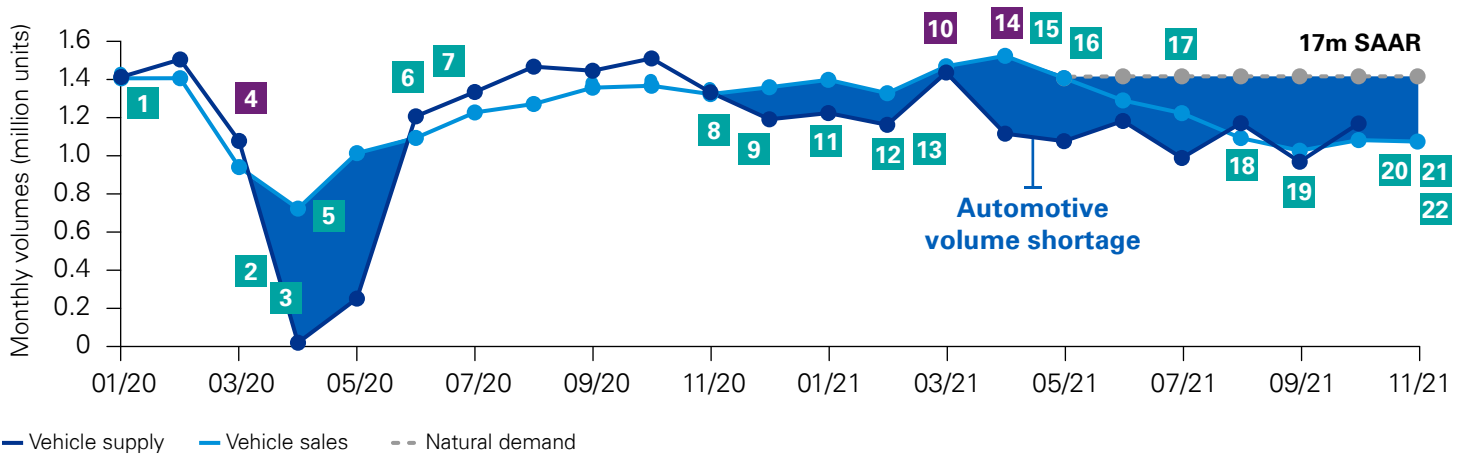
Source: FRED, BLS

¹ Source: [Surviving the silicon storm](#), KPMG, 2021

How it happened

The gap between supply and normal demand continues to widen

U.S. new light vehicle supply and demand



Q1 2020

- 1** Jan 2020: First COVID-19 cases in U.S.
- 2** Mar 2020: COVID-19 lockdown, plant closures

Q2 2020

- 3** New production goes to zero; automakers cancel chip orders
- 4** Mar 2020: CARES Act signed (\$2.2 trillion)
- 5** Apr 2020: U.S. new-car sales plunge 46%

Q3 2020

- 6** Summer 2020: Facing bankruptcy, rental-car fleets dump inventories
- 7** June 2020: Consumers start to venture out; new-car sales start to recover

Q4 2020

- 8** Dec 2020: Fire at AKM chip plant
- 9** Dec 2020: Suppliers disclose shortages of semiconductors
- 10** Dec 2020: Second stimulus bill signed (\$900 billion)

Q1 2021

- 11** Jan 2021: Automakers begin to cut production
- 12** Feb 2021: Texas ice storms close wafer plants
- 13** March 2021: Fire shuts Renesas chip plant
- 14** March 2021: American Rescue Plan is passed (\$1.9 trillion)

Q2 2021

- 15** Spring 2021: New car inventory on dealer lots falls rapidly as sales far exceed supply
- 16** April 2021: Used car prices begin to rise rapidly

Q3 2021

- 17** Retail sales fall as inventories are exhausted
- 18** Toyota, GM, and VW announce additional production cuts
- 19** September: Ford cuts F-150 production again

Q4 2021

- 20** October: Inflation hits 31-year high in October
- 21** December: VW reduces production outlook
- 22** December: Toyota says semiconductor shortage is easing, but expects shortages through year-end 2022

An unprecedented supply shock

During the initial wave of the COVID-19 pandemic in 2020, auto sales and production ground to a halt. With the nation under stay-at-home orders, consumers could not visit showrooms and automakers could not operate plants. North American light-vehicle production fell 63 percent from Q1 to Q2 2020.²

Automakers brought back production over the summer of 2020, but in the fall of 2020, the global semiconductor shortage began to ripple through the industry. Automakers were hit harder by the global shortage than other chip customers for several reasons, including fires at two plants that specialized in automotive chips.

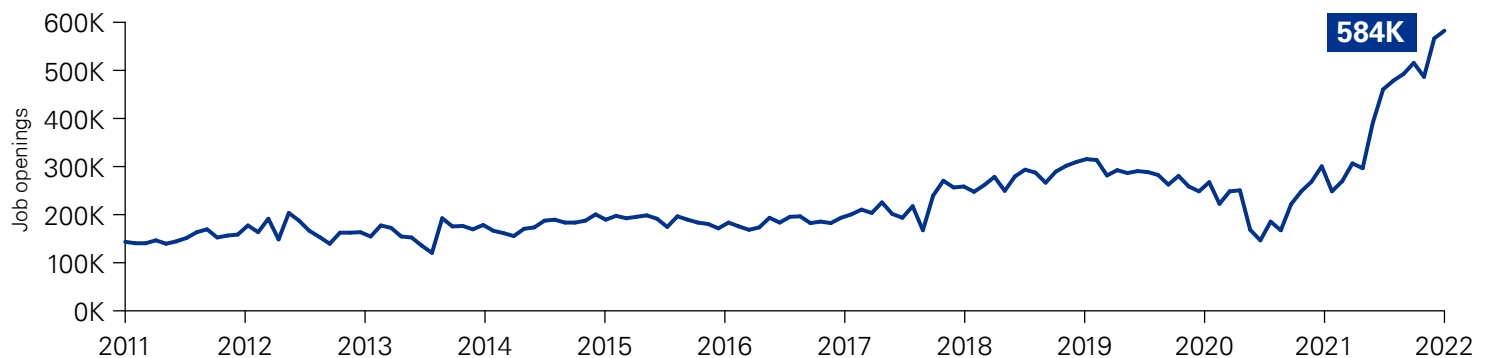
The situation was complicated by the decision by automakers and Tier 1 suppliers to cancel chip orders when demand tanked. By the time they started reordering, their allotments were gone. Another factor exacerbating the shortage: new capacity is not being built for many of the

older types of chips that automakers use.³ Semiconductor shortages have prompted a series of production cuts that will likely reduce total 2021 output to the lowest level since the end of the last recession.

The chip shortage was not the only supply constraint. As the U.S. economy revived, West Coast ports and warehouses became massive bottlenecks. Super-container ships with auto parts and RORO automobile transporters were moored offshore for weeks.⁴ Like other manufacturers, automakers also complain of labor shortages and rising wage rates—semiskilled workers can now command manufacturing wages in less demanding occupations, such as retail. In October 2021, manufacturers said they had more than 584,000 jobs they could not fill.⁵ Automakers are still concerned about shortages across the supply chain (Exhibit 2).

Exhibit 2. Automakers also face a shortage of labor

Job openings in durable goods manufacturing (seasonally adjusted)



Source: Bureau of Labor Statistics

² Source: FRED

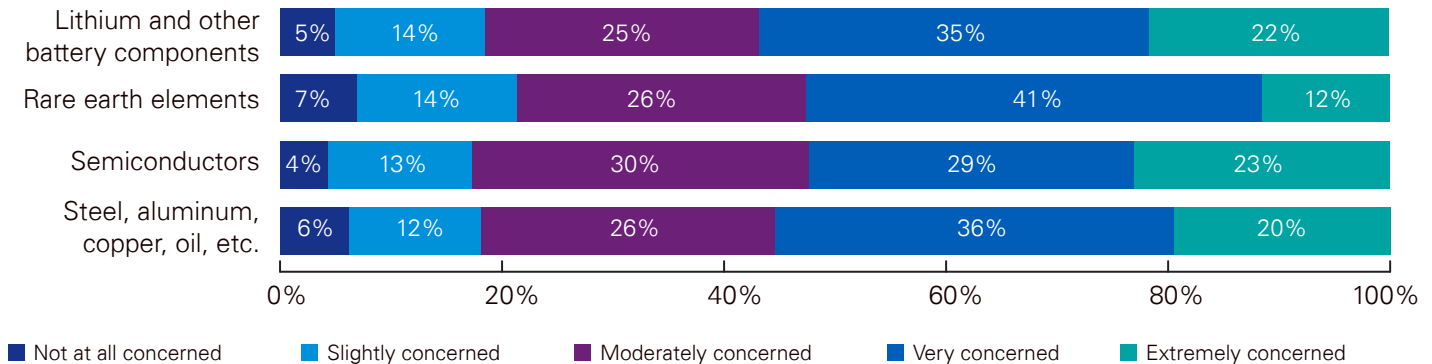
³ Source: Comments on Risks in the Semiconductor Manufacturing and Advanced Packaging Supply Chain, Alliance for Automotive Innovation, April 5, 2021

⁴ Source: The U.S. Railroads and COVID-19: Keeping Supply Chains Moving, Northwestern University Transportation Center, May 2021

⁵ Source: Bureau of Labor Statistics

Exhibit 3. Automotive executives remain concerned about a range of supply chain issues

How concerned are you about the following supply constraints?

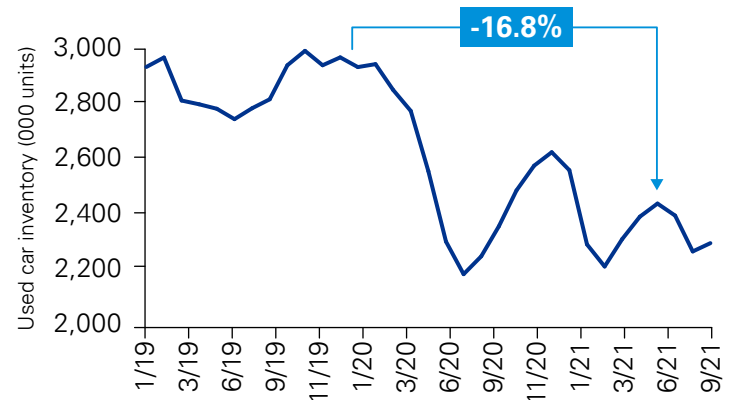


Source: GAES 2021, KPMG International

Meanwhile, in the used-car market, inventories fell by 17 percent between early 2020 and the summer of 2021 (Exhibit 4). With new cars in short supply, fleet owners, including rental-car companies, held onto vehicles, rather than selling into the used-car pool. Repos, another source of used-cars, fell due to foreclosure moratoria and improving consumer credit. And anybody with a lease has been doing the new math: with buyout prices far below current market value, more consumers were buying cars at lease end, sometimes to profit on a quick resale.⁶ Ford and GM both report steep declines in lease-return rates. In 2020, more than three-quarters of their lease cars were returned. By mid-2021, that figure had fallen to 10 percent for GM and 34 percent for Ford.⁷

Exhibit 4. Used-car inventory fell 17% from pre-COVID-19 levels

U.S. used-car inventory by month



Source: Cox Automotive

A surprise demand surge

Just as the chip shortage began to take hold, automotive demand took off. As vaccines rolled out and the second round of government stimulus checks arrived in early 2021, consumer confidence—and finances—rebounded. Some consumers used stimulus checks for down payments on new cars.⁸ Others were attracted by low interest rates on car loans.

By mid-2021, millions of consumers, businesses, fleet owners, and other customers were back in the market. With new vehicles in short supply, dealers could get sticker price and higher for new cars.⁹ Amended window stickers for new vehicles often reflected “market adjustments,” far above the MSRP on the Monroney label.¹⁰

⁶ Source: Jim Henry, “How to Cash In on The High Value of Your Leased Car,” *Forbes*, last modified October 4, 2021

⁷ Source: Ford Motor Credit, GM Financial 10Q reports

⁸ Source: David Muller, “Tight supply sends some prices well over sticker,” *Automotive News*, May 31, 2021

⁹ Source: Brad Tuttle, “It’s the Worst Time Ever to Buy a Car,” *CNN Money*, September 2, 2021

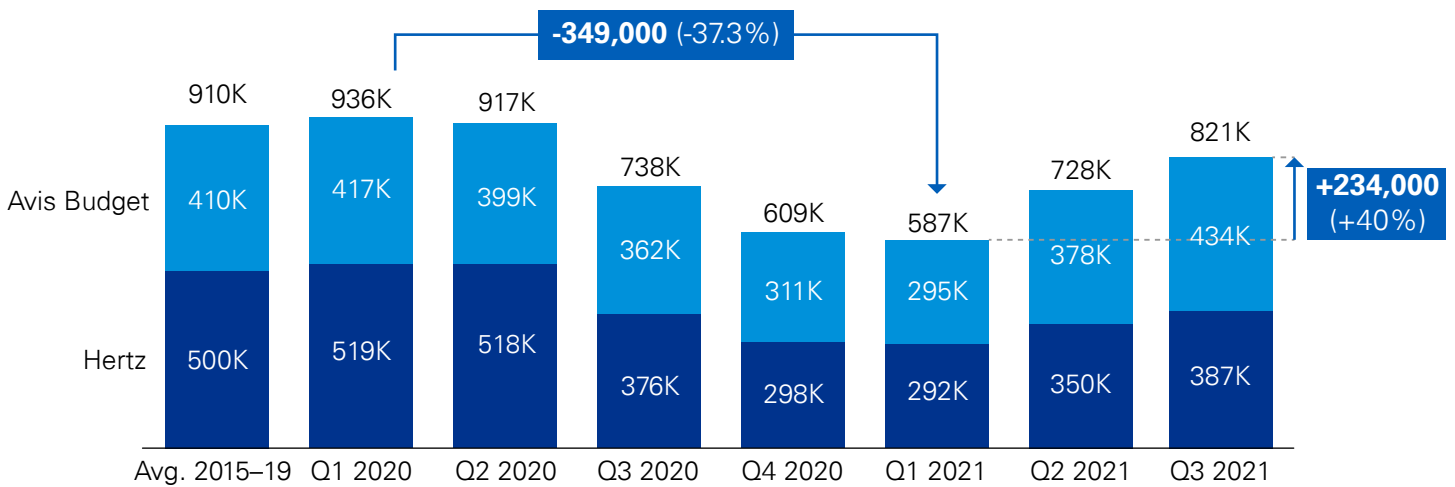
¹⁰ Source: KPMG interviews with industry analysts

Meanwhile, corporations and small businesses needed new vehicles to keep up with reviving economic activity. Cox Automotive estimates that rental-car and commercial fleet sales dropped from 3.3 million in 2019 to 2 million in 2020.¹¹

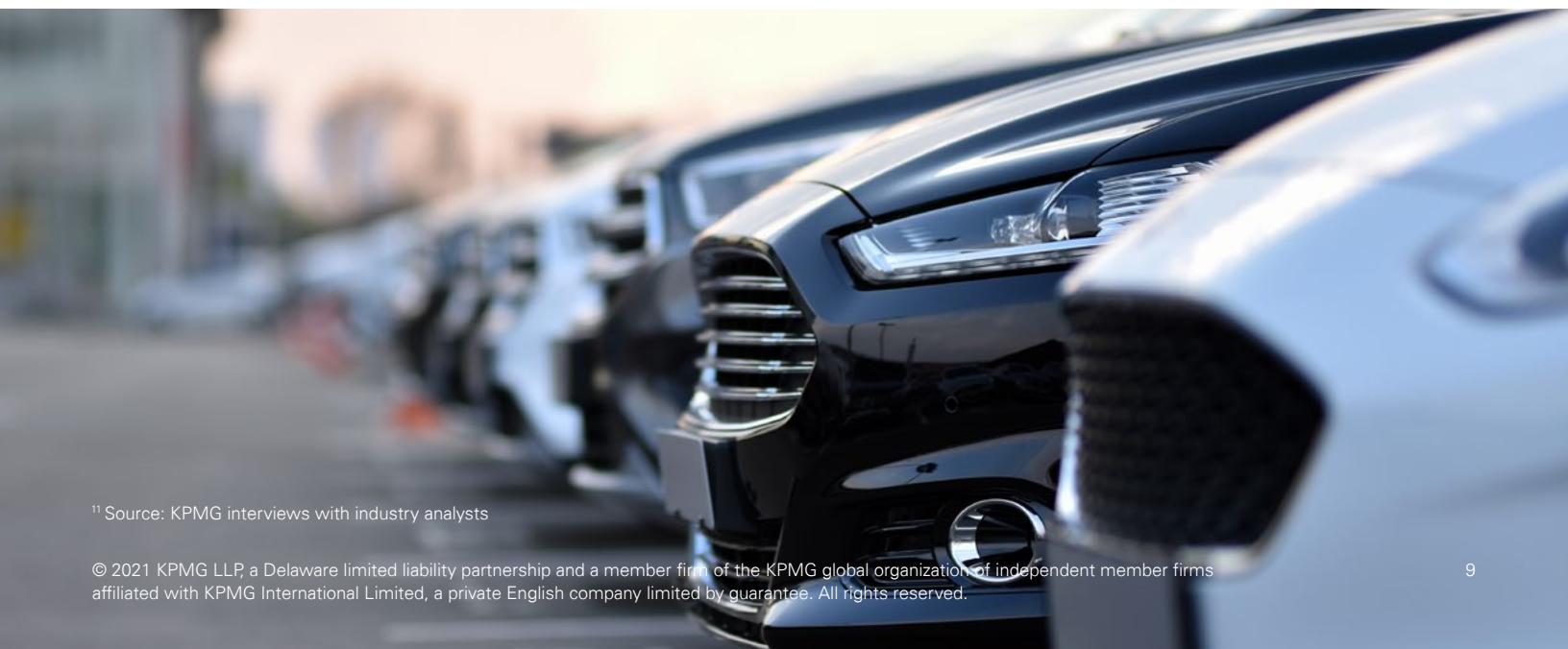
However, as the economy recovered and Americans started to travel, rental-car giants like Hertz and Avis

started rebuilding their fleets. Hertz and Avis had dumped nearly 350,000 vehicles in mid-2020 (Exhibit 5) when they faced extreme financial stress. Smaller competitors followed suit; we estimate that 500,000 rental cars were sold off in Q2'20. Since then, rental-car companies and other commercial fleet operators have been scrambling to find cars—going directly to dealers and the used-vehicle market, adding to demand in automotive retail channels.

Exhibit 5. Rental-car companies shed more than a third of their fleets, but are building back
Hertz and Avis Budget Group fleet sizes (thousands)



Source: Company SEC filings, KPMG analysis



¹¹ Source: KPMG interviews with industry analysts

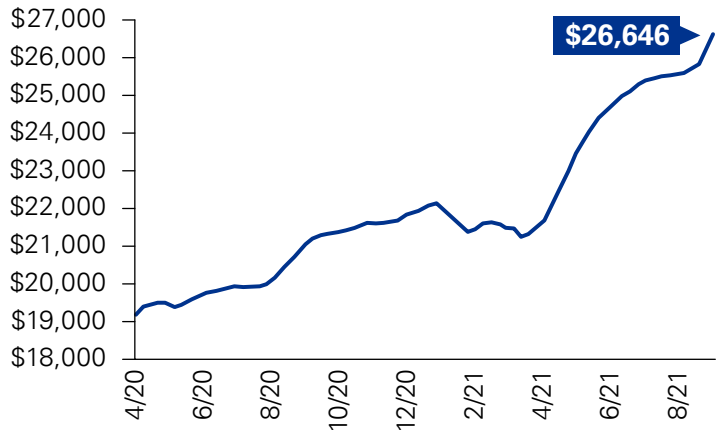
The result

The effect of unprecedented demand and a shrinking supply was a surge in average selling prices on used cars. Buyers who could not postpone purchases—employees who had to have a car to get to work or businesses that needed vehicles—paid up. Auto dealers blanketed lease customers with offers to turn in lease cars early to get more used cars on their lots. According to Cox Automotive data, used-car prices jumped from about \$21,000 in April 2021 to more than \$26,600 in September 2021 (Exhibit 6).

The spiral has not stopped. In November 2021, Cox Automotive reported that prices at the Mannheim used-car auction were up 44 percent over November 2020.¹² In December, J.D. Power estimated that for the first time the average used car in the U.S. was selling for \$30,000.¹³

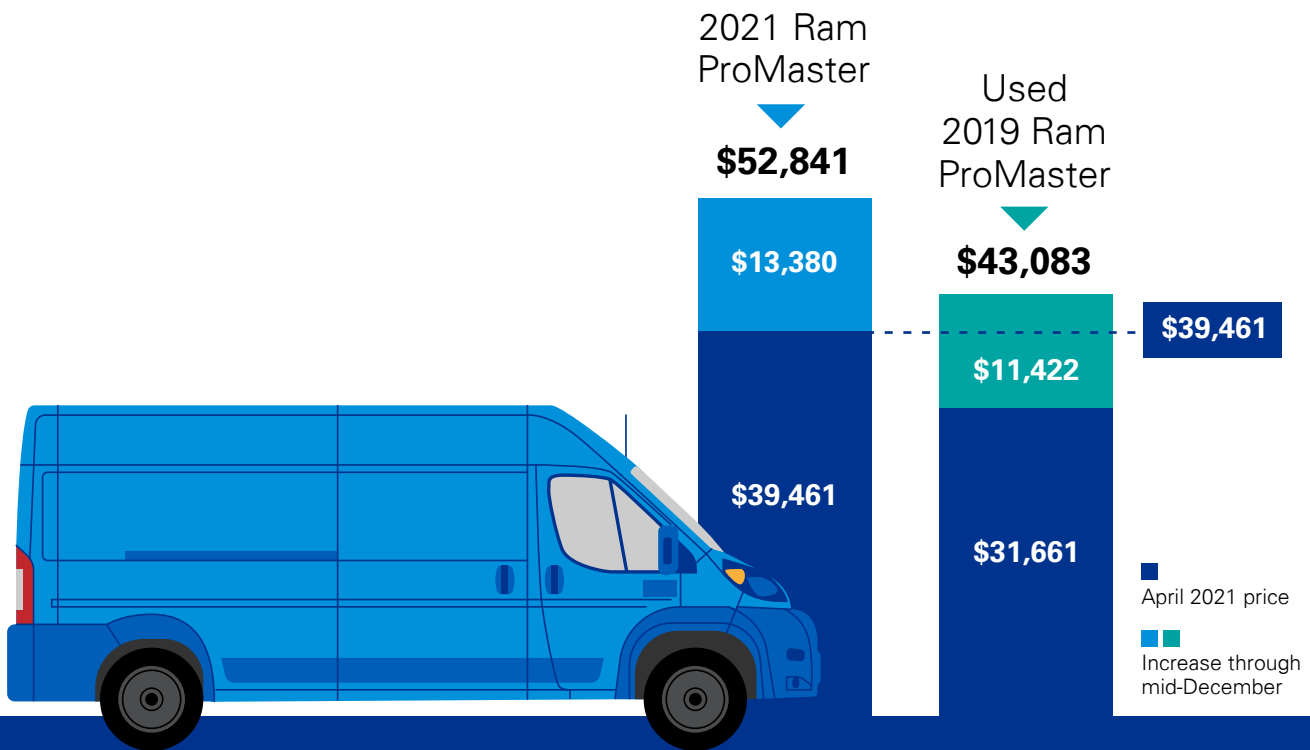
Exhibit 6. Average used-vehicle listing price

Based on 30-day sales



Source: vAuto/Cox Automotive VMA database

Exhibit 7. How prices are rising for in-demand vehicles



¹² Source: C.J. Moore, "Demand pushes wholesale used-vehicle prices to new highs, yet again," Automotive News, December 8, 2021

¹³ Source: Nora Naughton, "Why a Car Deal Will Be Hard to Find This Holiday Season," Wall Street Journal, December 14, 2021

When the music stops

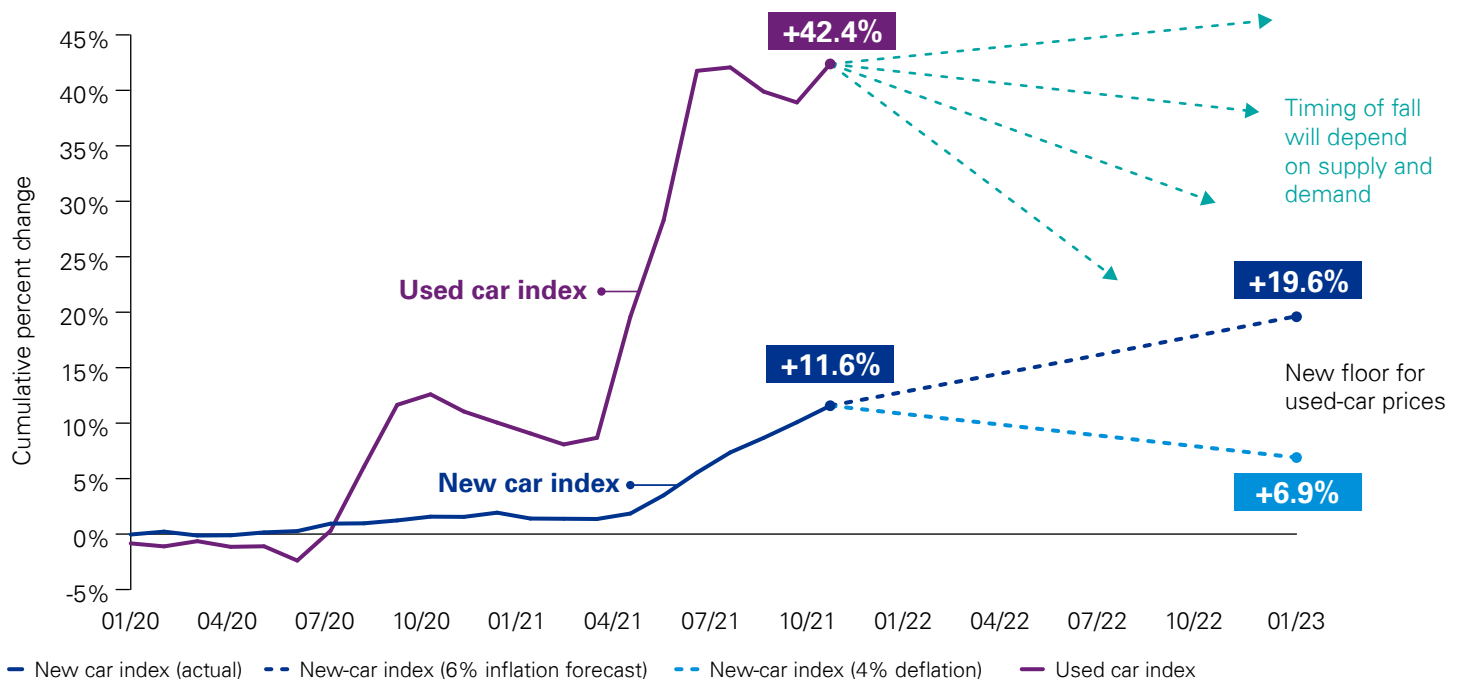
Nature abhors a vacuum, and markets abhor an imbalance. Demand and supply of new vehicles in the U.S. will come back into equilibrium. How that happens will make an enormous difference to automakers, consumers, parts suppliers, auto retailers, and perhaps the economy itself. Given the current trends in inflation, new car prices could continue to rise through 2022. However, as supply comes back, automakers are likely to reintroduce incentives and dealer margins will compress. As a result, we may see a reversal of some portion of the price increases. Whatever path the new-car market takes to a “new normal,” used-car prices will eventually return to the traditional relationship with new-vehicle prices. In other words, a 20 to 30 percent plunge in used-vehicle prices is in the cards.

How quickly used-car prices normalize—and how widespread the damage is—will depend on how the new-car market evolves over the next several years. There are many possibilities for recovery, which will be driven by the trajectories of supply and demand for new vehicles (Exhibit 8).

The question is not only when there will be sufficient supply to meet normal demand, but when supply will catch up with the cumulative shortage that continues to build up (now at least 1.5 million units, we estimate). And then there’s the question of demand: How many customers who didn’t buy because of shortages will still be in the market? Will the economy still be growing rapidly? Or will automakers resume production at a 17 million-unit clip only to find that demand has declined? Used-car prices took off faster than anyone expected. Will they fall just as rapidly?

Exhibit 8. Used car prices will ultimately converge with new car prices

Cumulative percent change in new and used vehicle indices, Jan 2020 to Dec 2022 (forecast)



Source: FRED, BLS
Change based on December 2019 prices

Supply trajectories

The recovery in supply is primarily dependent on the availability of semiconductors. Expectations for an end to the shortage have continued to slip, and it appears capacity will be limited until at least mid-2022.¹⁴ However, full supplies of semiconductors may not be available until well into 2023, some automakers now warn. In addition, aggressive component purchasing by automakers and suppliers could perpetuate imbalances in the chip market.¹⁵ Lastly, the full return of vehicle supply also assumes no major disruptions may be lurking on the horizon such as new supply, shortages, natural disasters, or COVID-19 variants that cause plant closures. In the fourth quarter of 2021, the outlook for semiconductors remains unclear.

“**Our planning visibility regarding semiconductors continues to be rather limited. However, we’re seeing some progress with some key suppliers, and we do expect moderate improvements in supply in 4Q21 compared to 3Q21.**

— Richard Palmer, CFO of Stellantis

“**[The shortage] will get better toward the end of the year, but it still continues to be somewhat volatile.**”

— Mary Barra, GM CEO

Demand trajectories

Economists remain positive on the U.S. economy. KPMG predicts GDP growth of 4.4 percent in 2022 and 2.8 percent in 2023. These growth levels would suggest annual demand for light vehicles of at least 16.5 million to 17 million units. However, economic headwinds could curb demand. New COVID-19 variants continue to disrupt supply chains and limit demand for some services. An economic downturn, combined with a reduced need for cars as more Americans work and shop from home, could push demand down by several million units per year.¹⁸

In addition to consumer demand, a major open question is to what extent dealers will rebuild inventories. As of September 2021, dealers had roughly 31 days of new-car inventory on average; in December, a car spent only 10 days on the lot before selling.¹⁹ Returning to the historic norm of 60 to 90 days, would, in theory, require shipping an additional 1.8 million units over existing demand, which would likely delay a return to normal supply/demand dynamics.

Scenarios to return to equilibrium

In Exhibit 9, we lay out four broad scenarios, based on different assumptions about supply and demand. These scenarios are illustrative; there are infinite variations between the two extreme cases. The upper-left scenario, represents a continuation of the current situation of limited supply and high demand, which would drive used-car prices even higher. The lower right represents the least

desirable scenario for automakers: Just as they get back to full capacity and start building for a 17-million-plus unit market, demand evaporates because of rising interest rates or a slowing economy.

In each scenario, we look at likely patterns of overall supply and demand, as well as the potential timing and the impact of external forces. The wild card could be inflation.

¹⁴ Source: Updated announcements by leading automakers now place the chip shortage anywhere from mid-2022 to as late as 2024, Source: New reports

¹⁵ Source: Wale Azeez, “Carmakers hoarding semiconductors like ‘toilet paper’ risk prolonging the chip shortage,” Euronews.next, July 13, 2021

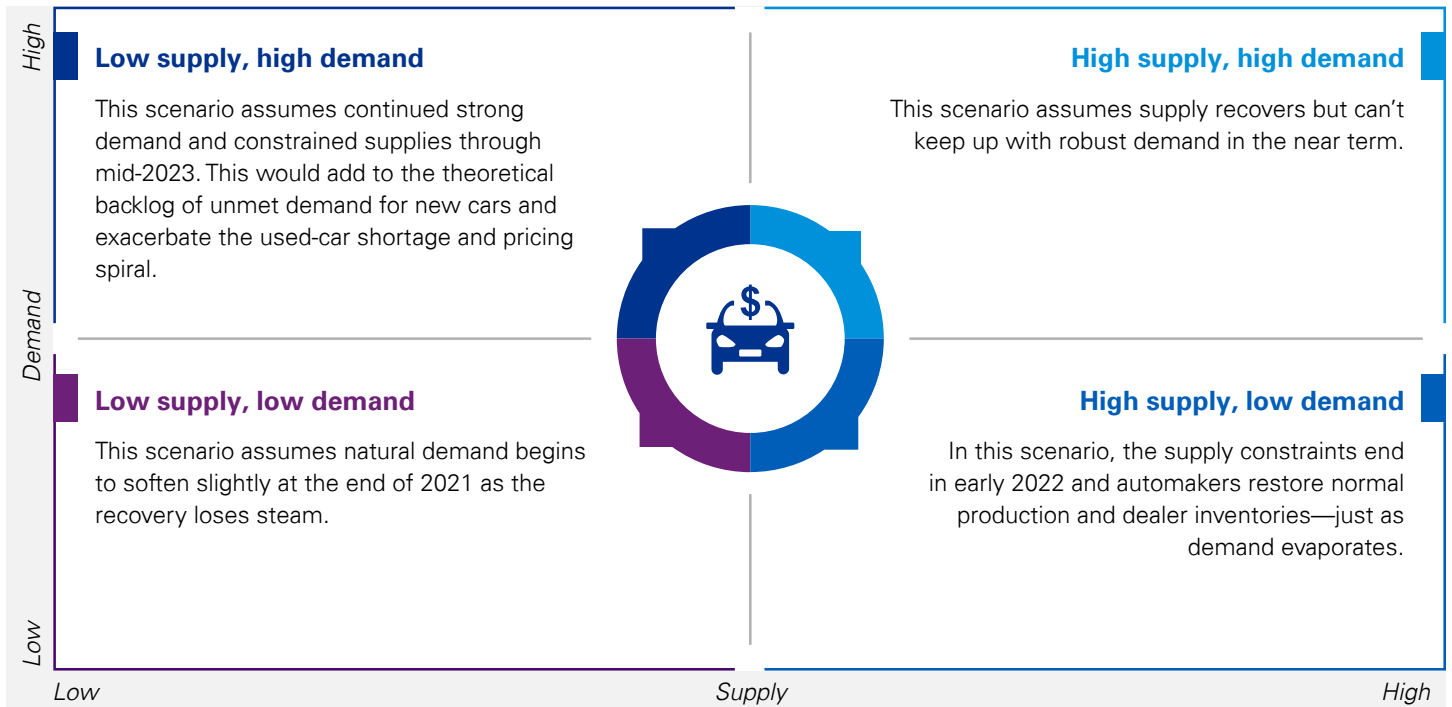
¹⁶ Source: Sam Sheeh, “Global chip shortage continues to wreak havoc for automakers,” CNBC, October 28, 2021

¹⁷ Source: Claire Bushey, “GM and Ford expect impact of chip squeeze to linger through next year,” Financial Times, October 27, 2021

¹⁸ Source: [Reflation vs. Stagflation: The Great Policy Showdown](#), KPMG LLP (U.S.), November 2021

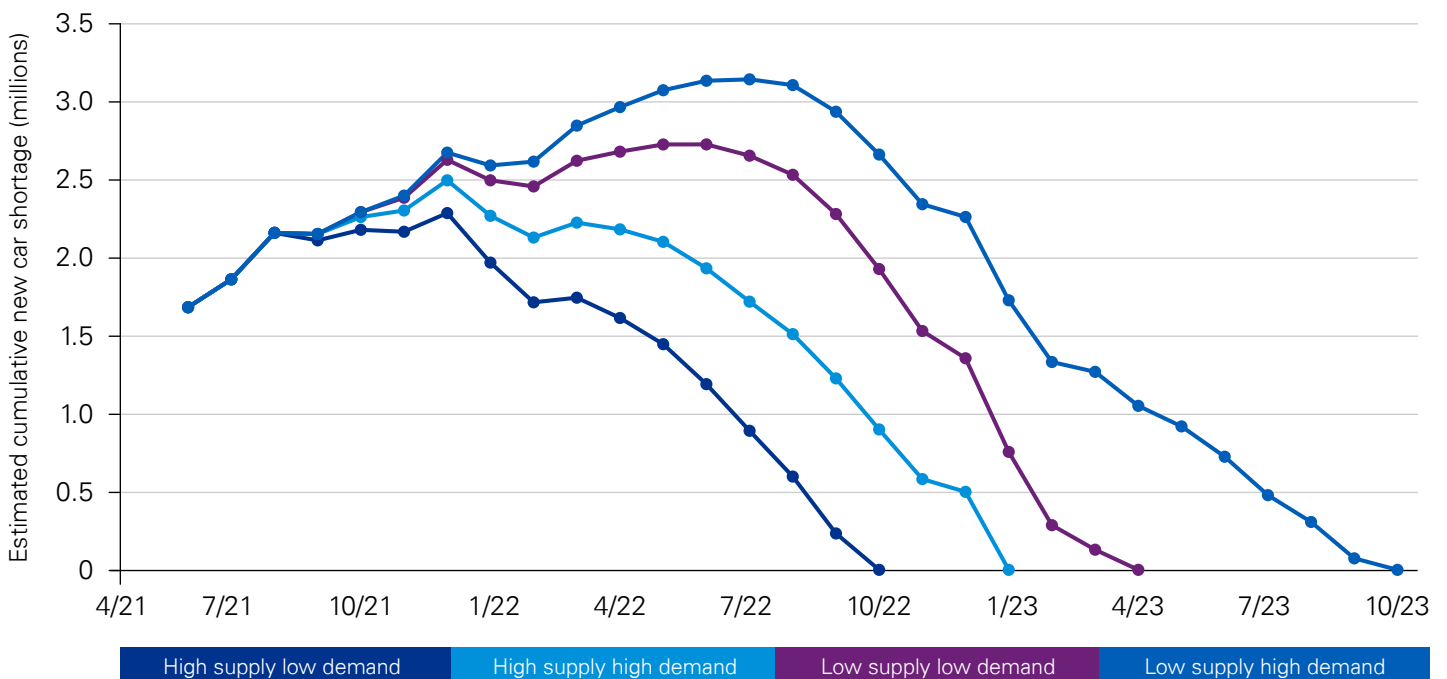
¹⁹ Source: Nora Naughton, “Why a Car Deal Will Be Hard to Find This Holiday Season,” Wall Street Journal, December 14, 2021

Exhibit 9. Four potential scenarios for used-car prices



A key finding from our illustrative scenarios is that in all cases, the backlog of unmet demand will continue to grow at least through Q1 2022. However, the time it takes to restore normal production and satisfy theoretical unfilled demand varies. As Exhibit 10 illustrates, getting back to normal could take until late 2023. In every scenario, we expect the market to anticipate the turnaround in the new-car supply situation ahead of time and begin repricing used cars before new-car lots are full and used-car demand returns to normal.

Exhibit 10. Illustrative scenarios for when supply and demand return to equilibrium



Implications

Before the used-car pricing spiral winds down, players across the automotive business have time to prepare and take the opportunity to adjust strategies and operating models. Automakers and parts suppliers are already taking steps to ensure that they are not so vulnerable to surprise events—there will be more fires and floods and droughts, but resilient supply chains can minimize the impact. This is also an opportunity for automakers to rethink distribution and relations with customers and the full lifecycle ownership experience:

Automakers



While the shortage has cost the global auto industry hundreds of billions in lost sales, there have been upsides to the current low-inventory situation. Incentive spending has plummeted—dropping from an estimated 11 percent of sticker price to less than 4.5 percent and substantially increasing net profit per unit sold.²⁰ Inventory-floor-planning costs have also plummeted.

As automakers prepare for the end of the current anomalous supply/demand imbalance, they have an opportunity to create a more stable new normal, where wild inventory swings are less likely and automakers have direct and enduring relationships with customers.

Build to order. What if automakers aimed for dealer inventories to be a 40 days' supply—rather than the ideal industry target of 60 days (and the more common historical reality of 90 days)? This would bring the U.S. market closer to the European model, where customers place an order at the dealer and wait six to eight weeks for their vehicle to be ready. The payoff for automakers and dealers is lower carrying costs for vehicle inventories on the ground and reduced need for pricey incentives. However, this would require a change in the “I want it now,” mindset of the American consumer.

Reduce “build complexity.” U.S. automakers operate with a high degree of “build complexity”—the dizzying array of models, options, and configuration, that U.S.

automakers believe customers want. Chevrolet has literally thousands of combinations of powertrain, cab, bed, paint, trim, and options for the Silverado. Cutting down build combinations would make factories more efficient, but could drive away some consumers.²¹ “It all sounds great until a Chevy dealer loses a truck sale because he didn't have the right Silverado in stock,” notes ALG vice president Eric Lyman.

Build a direct customer connection. Automakers have started taking brand loyalty seriously, creating specific “voice of the customer” or “customer journey” groups. In many states, franchise laws prevent automakers from going full-Tesla (selling direct to consumers). But online platforms give automakers an opportunity to connect directly (and continually) with customers, even if sales and service are still conducted by franchised dealers. And, with highly computerized connected cars, auto dealers have access to data about the performance and condition of their products, even as they pass into the resale market.

New usage and ownership models also can help automakers remake the relationship with customers. Increasingly, consumers may be getting automotive transportation through ride-sharing, car-sharing, or even subscription services. Over time, these innovations will redefine the consumer vehicle purchase/repurchase model, altering the user experience, and perhaps provide automakers with a more stable cash-flow model.

²⁰ Source: KPMG interview with Charlie Chesbrough, Cox Automotive senior economist, August 27, 2021

²¹ Source: KPMG interview with ALG vice president Eric Lyman, August 18, 2021

Dealers



Overall, the price spiral has been a boon to auto dealers. They are selling new vehicles at sticker price or often above. The used-car business—always an important profit center for dealers—is delivering margins never imagined.²² When this windfall disappears, the same challenges that beset U.S. auto retailing before the pandemic will need to be addressed.²³ This means going back to the tight margins that had become the norm. The internet has given consumers pricing transparency and e-commerce platforms continue to make inroads: Carvana, CarMax etc. and even the specter of Amazon.²⁴

After the supply/demand situation normalizes, there will be renewed urgency to rethink staffing for the e-commerce

era and find ways to maximize profits on service and parts (and get ready to service EVs).

The biggest challenges remain for small dealer groups and single-store franchises. Inevitably there will be more consolidation and ever-larger dealer groups. Overdealing represents a massive inefficiency that automakers have long tried to solve. The shift to EVs may be providing a way: GM's Cadillac division, for example, is requiring dealers to invest \$200,000 in training and equipment to carry its new EV lineup. One-third of dealers have opted out of the franchise, although the remaining showrooms represent 90 percent of the brand's sales.²⁵

Suppliers



How will the shortages that caused the 2021 price spiral change the automotive supply chain? Automakers have spent decades building low- or no-buffer, just-in-time sourcing strategies built on short-term forecasts. Many components have a single source and automakers have focused primarily on cost and quality in negotiations with Tier 1 and Tier 2 parts suppliers.

The vulnerability of this approach was exposed at the start of the pandemic, when supplies from China were cut off. When the semiconductor shortage hit, an inconvenience turned into a crisis.²⁶ Restoring chip supplies after cutting orders in 2020 has proven extremely difficult. The semiconductor business operates on 26-week lead times and it takes two years to build new capacity. And many automotive semiconductors are fabricated using older technology, for which new capacity is not being built.²⁷

Meanwhile, estimates for when supply will catch up recede further into the future, especially as EVs require up to 10 times as many chips as conventional cars.²⁸

The costly supply disruptions of 2020 and 2021 that have dramatically squeezed margins for suppliers may encourage automakers to rethink supply chain strategies. The events of 2020 and 2021 showed that automotive supply chains were too concentrated geographically and there was too little slack. It also showed that manufacturers should expect disruptive events, like pandemics, hurricanes, ice storms, floods, droughts, and trade wars.

Tier 1 and Tier 2 parts suppliers have an opportunity to push automakers from just in time toward "just in case" inventory models. While this would require more working capital, it would make the entire system more robust against future shocks.

²² Source: Jackie Charniga, "After record profits amid pandemic, dealer outlook soars for '21," *Automotive News*, February 1, 2021

²³ Source: [The future of automotive retailing](#), KPMG LLP (U.S.), 2020

²⁴ Source: John Pearley Huffman, "Prime Mover: Amazon Is an Automotive Powerhouse," *Car and Driver*, November 21, 2020

²⁵ Source: Hannah Lutz, "Cadillac will have a third fewer stores for EV shift," *Automotive News*, Nov. 8, 2021.

²⁶ Source: [Surviving the silicon storm](#), KPMG LLP (U.S.), 2021

²⁷ Source: Adam Ismail, "I Asked Experts Why Carmakers Can't Just Transition To Newer Chips In Stock. Here's What They Told Me," *Jalopnik* October 1, 2021

²⁸ As of October, estimates ranged from mid-2022 to 2024. Sources: News reports.

Lenders



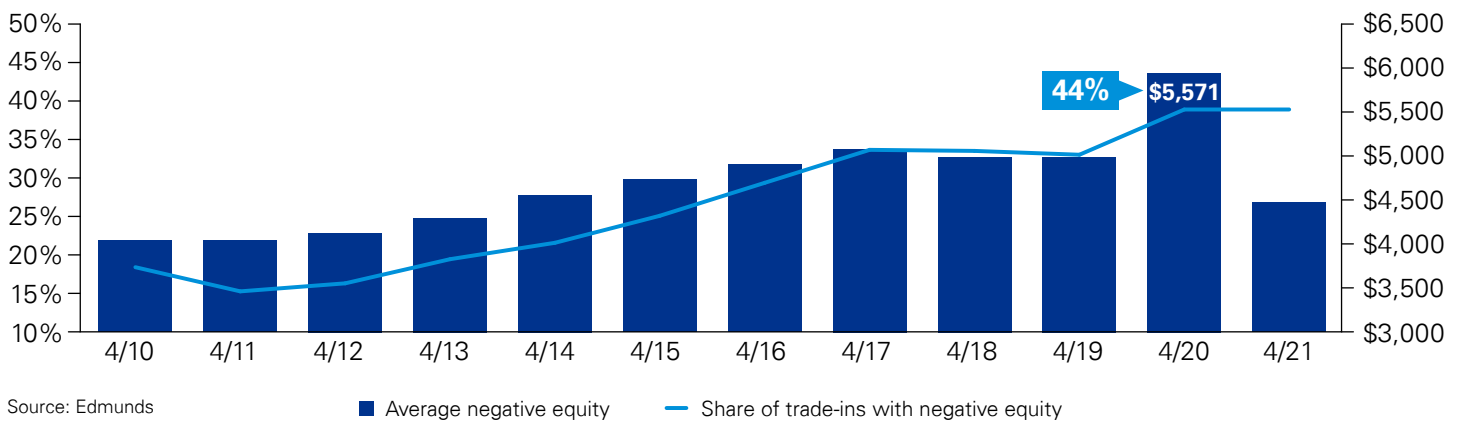
A rapid decline in used-car values could create risks for lenders, current car buyers, operators of rental-car fleets, and investors in syndicated loan packages. All of these parties could be stuck with overvalued assets.

In the third quarter of 2021, even when tight supplies limited sales, new-car loan originations reached \$199 billion, bringing total auto debt to \$1.44 trillion, both all-time highs.²⁹ Even with used-car values soaring,

a large percentage of pre-COVID-19 vehicle loans remain underwater (Exhibit 11).

In addition, the number of consumers who had negative equity at trade-in—and the amount they were underwater—reached all-time highs as the pandemic hit. Millions more consumers who are buying cars at current prices are likely to wind up in this situation, too. This is not only a potential drag on future demand, but also has implications for lenders and investors in securitized auto loans.

Exhibit 11. A decade of negative equity



Source: Edmunds

One indication of how exposed purchasers of vehicles and investors in auto finance debt may be is residual values. Despite today’s sticker-price-plus transactions, ALG’s residual value forecast for 2021 vehicles returning in 2024 is only slightly higher than traditional norms. That increased loan-to-value gap represents incremental exposure for lenders.

Used-car buyers and lenders could be more exposed. Consumers who financed vehicles at 30 to 40 percent over pre-shortage values and find themselves in financial straits could walk away from an underwater car loan, the way homeowners did in the housing crisis. While this is unlikely now—default rates have actually fallen—a scenario like “stagflation stall” could raise loss exposure.

²⁹ Source: Federal Reserve Bank of New York, “Credit Card and Auto Loan Balances Climb,” November 2021

Conclusion

This has been the most volatile time in the auto business in decades. How this unfolds and how the industry reacts could dramatically impact future markets and business models. Tomorrow's winners will be the companies that plan and prepare today.

How KPMG can help

KPMG is a recognized leader in delineating critical trends in the automotive sector—mobility, autonomy, electrification, etc. Our strategy practice helps top companies in the industry plan and execute strategies to make the most of these trends.

Our data-driven approach allows us to quantify the impact of trends such as mobility for automakers, dealers and other players so they can identify and prioritize emerging opportunities. We then assist clients in defining technology investment and development roadmaps to pursue these opportunities.

In addition, we support clients with operating-model and business transformations to prepare their organizations for building new types of products and doing business in new ways. To implement new operating models, we develop forward-looking metrics.

Automotive/mobility strategy clients:

- Major OEMs
- Tier 1 suppliers
- Aftermarket players
- Mobility providers
- EV/AV start-ups
- Institutional investors

Examples of recent strategy projects:

- Market sizing and entry options development for EV and MaaS (mobility as a service)
- Scenario development for regulatory changes based on AV/EV adoption
- Development of a new usage-based forecast model for privately owned and MaaS vehicles
- Analysis of industry value-chain shifts and future participation options
- Development of vehicle subscription operating models based on ROI simulation
- Retail innovation and customer experience transformation

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Thank you

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