Automotive Industry

The rate cascade in Autos – June 2023 update

Industry Overview

21 June 2023

Equity
Global
Autos/Car Manufacturers

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Cascade of rates in the automotive value chain

Since the Fed began its fight against inflation in the beginning of 2022, the effective fed funds rate has risen from near-zero to 5.1%. Our BofA Global Economics team expects the fed to do two more 25bp rate hikes in July and September, and that the first rate cuts won't occur until May 2024. With this in mind, we are updating our review of the impact of interest rates on the automotive industry. In isolation, rising interest rates are simply a headwind for the industry in numerous ways. However, nothing is ever simple in the auto industry, and the biggest complication now remains production constraints/restraints. Therefore, the Fed's desire to temper inflation by suppressing demand below supply may be futile in the auto industry, and may have the unintended consequence of supporting pricing (see Twisted rate logic may = higher auto price). In our view, fostering demand destruction is not the best way to drive lower auto pricing. Instead, unlocking supply constraints could be very effective fighting auto inflation.

1) Higher rates => Higher monthly payments, all else equal

Changes in interest rates have a direct impact on financing cost and affordability. The increase in the broader rate complex has resulted in a new dynamic for auto financing, with auto loan rates increasing to the highest level seen in over a decade. Should rates continue to rise, consumers will likely face an increase in monthly payments, with each 100bps increase equating to a ~$20 increase in a new vehicle monthly payment.

2) Higher rates => Higher dealer costs, primarily inventory

Higher interest rates potentially have a three-pronged impact on dealers: ***1)*** new vehicle demand is likely pressured; ***2)*** borrowing costs for inventory (floorplan) increase, while assistance remains fairly stable; and ***3)*** borrowing costs for non-floorplan funding also increase. Inventory levels at dealers are still lower than normal, so increasing floorplan from higher interest rates had a muted impact in 2022. However, this dynamic could be a larger headwind in 2023+ as automakers and dealers eventually restock inventory.

3) Cost of corp. borrowing could rise for now

Increasing interest rates imply that the cost of borrowing for automotive companies could rise. However, floating-rate debt at suppliers and OEMs is minimal, so it is unlikely that there will be a material change in direct cost of debt. Furthermore, these companies have little reason to raise new debt, given strong cash flow and healthy balance sheets. Therefore, we believe there will be little effect on the direct economic cost of capital.

4) Pensions could get some help, namely at OEMs

Higher discount rates could impact companies with material pensions, most notably GM and Ford, by reducing the pension benefit obligation (PBO), although there is likely a corresponding reduction in asset values that will mitigate the PBO benefit (due to duration matching in the assets and liabilities). In aggregate, however, we believe that higher rates would create a positive impact from pensions on a net basis.

5) Higher rates hurt sentiment, but this could reverse

Finally, higher rates simplistically increase discount rates, so, all else equal, this is already pressuring stocks. It should be noted that the correlation has been somewhat inconsistent through-cycle for automotive stocks. Nonetheless, persistent inflation, higher interest rates and looming recession risks are depressing investor enthusiasm and could continue do so until the supply chain unlocks, vehicle supply increases, and interest rate hikes slow, which could be soon.

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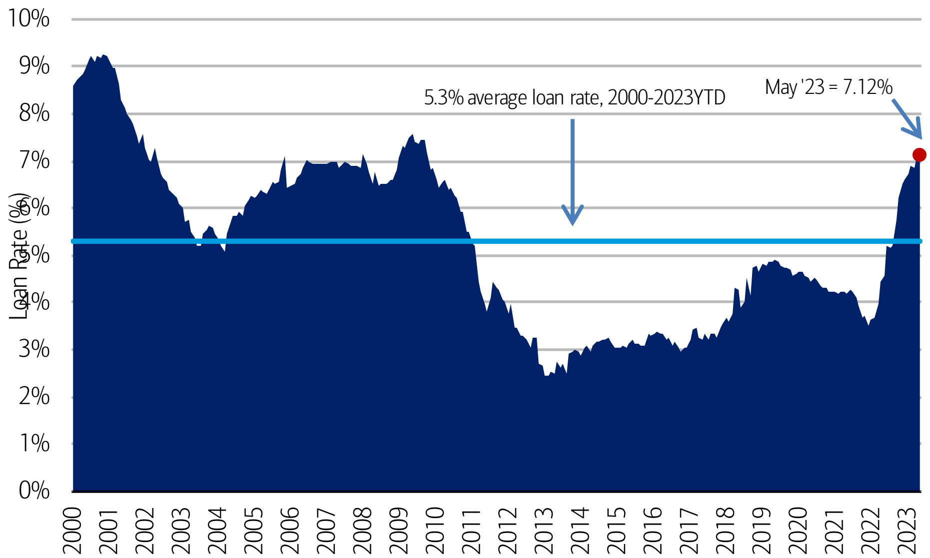
The rate cascade in Autos

Rising rates has put affordability at risk

In our view, widely available credit and favorable terms via lease or loans have been supportive of automotive sales over the past decade. This dynamic has changed since the Fed began its rate hike campaign, with the national average 60-month new vehicle loan rate rising about 350bps since the beginning of 2022 to 7.1% at the end of May, the highest level since October 2009 and above the average over the last 20+ years of 5.3% (**Exhibit 1**). Given persistent inflation and the potential for more rate hikes, automotive loan rates are set to remain elevated, posing an increasing headwind for vehicle affordability and sales.

Exhibit 1: US new auto 60-month national average loan rate

US new auto 60-month national average loan rate is now well above the average over the last 20+ years



Source: Bloomberg, BofA Global Research

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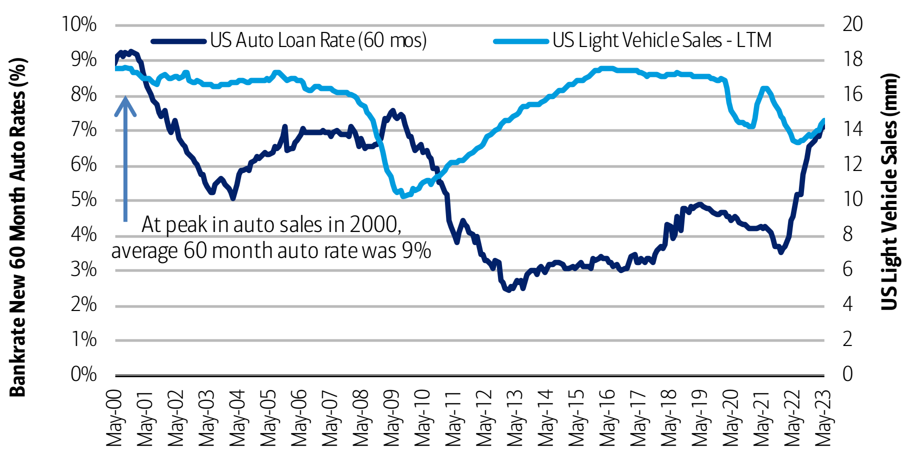
Trends in automotive sales historically have had a strong correlation with the availability and attractiveness of credit (**Exhibit 2**), although we believe that the recovery in US automotive sales that ensued from 2010-2016+ had been driven by pent-up replacement demand, rather than the favorable financing environment (although it certainly helped to some degree).

Exhibit 2: US auto loan rate (60 months) vs. US SAAR – LTM (last twelve months)

US auto loan rate (60 mos) and the US SAAR (LTM) have been inversely correlated in the last 20+ yrs



Source: Bloomberg, WardsAuto, BofA Global Research

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The potential magnitude of the headwind is increasing, and automotive financing is becoming a headwind to sales via the higher monthly payment impact on consumers. However, it is important to consider other factors underlying vehicle affordability, especially used vehicle values (residual/trade-in values). Although used vehicle prices corrected in 2022, declining 10%+ from the peak in 2021, they are still ~50% above 2019 levels according to the Manheim index. We don't think they are likely to crash in the coming years as the supply of 1-6 year-old vehicles continues to shrink well into 2025+, ironically partially because of higher rates. Beyond consumers, the first losers in a rising rate scenario are the dealers, which would not only have a harder time selling vehicles when financing costs increase but would also experience a rise in floorplan interest expense that may not be offset by floorplan assistance. OEMs could experience a decrease in vehicle sales with higher interest rates (presuming all else held equal in terms of vehicle affordability), but we'd note that they could also get the benefit of higher discount rates that would be a small positive impact on pension obligations, most notably GM and Ford.

Rising rates have a multi-tiered impact on Autos

Interest rates impact the cost of capital and flow through the automotive value chain in five distinct ways: ***1)*** influence consumer demand through changes in vehicle affordability; ***2)*** increase/decrease the cost of carrying inventory at dealers; ***3)*** increase/decrease the cost of borrowing for companies; ***4)*** impact pension funding, primarily for the OEMs; and ***5)*** influence the capital markets viewpoint.

In isolation, rising interest rates can be viewed as a headwind in many of the scenarios outlined below. Moreover, we would note that the Fed plans keep interest rates high to combat inflation, which is occurring in confluence with continued market volatility and continued supply chain disruptions. Therefore, the combination of these factors poses a material headwind for the automotive value chain.

1) Higher interest rates can increase monthly payments, but used vehicle values have been an offset

Changes in interest rates have a direct impact on the cost of financing and consequently on vehicle affordability; however, the dollar magnitude on monthly payments is relatively modest.

We estimate that each 100bps increase in rates equates to a $20 increase in new vehicle monthly payment. Considering auto loan rates are up about 350bps since the beginning of 2022, the increase equates to about $70/month on a base payment in 1Q:23 of $721 (as of the latest measurement from Experian).

It should be noted that there is additional risk to monthly payments if used vehicle pricing were to fall meaningfully more than they already have. However, we do not anticipate used vehicle values to correct meaningfully more than they have YTD because aggregate Used supply will continue to decline.

The ~350bps increase in auto loan rates since the beginning of 2022 along with a slight increase in pricing and no change in residual value assumptions has resulted in changes in monthly payments for:

- A new vehicle **loan increased by ~$96/month** (+11.8%) to $909 – **Exhibit 3**
- A new vehicle **lease increased by ~$48/month** (+8.1%) to $637 – **Exhibit 4**
- A used vehicle **loan** could **increase by ~$19/month** (+3.8%) to $521 – **Exhibit 5**

Exhibit 3: Average monthly payment for new vehicle loan – YE 2021 vs. Now

Below we analyze the impact on monthly payments from year end 2021 to the latest available data and a ~350bps increase in average interest rates

NEW VEHICLE LOAN - Year end 2021

Assumed Purchase Price **$44,683** <-- Avg new vehicle transaction price
3.5% <-- Avg new vehicle loan APR

Monthly Consumer Payment

Term in months	Financing Rate 1.5%	2.5%	3.5%	4.5%	5.5%	6.5%	7.5%	8.5%
12	$3,754	$3,774	$3,795	$3,815	$3,836	$3,856	$3,877	$3,897
24	$1,891	$1,911	$1,931	$1,951	$1,971	$1,991	$2,011	$2,031
36	$1,270	$1,290	$1,310	$1,329	$1,349	$1,370	$1,390	$1,411
48	$960	$979	$999	$1,019	$1,039	$1,060	$1,081	$1,102
60	$774	$793	$813	$833	$854	$874	$896	$917
72	$650	$669	$689	$710	$730	$751	$773	$795
84	$561	$581	$601	$621	$642	$664	$686	$708

NEW VEHICLE LOAN - May 2023

Assumed Purchase Price **$45,779** <-- Avg new vehicle transaction price
7.1% <-- Avg new vehicle loan APR

Monthly Consumer Payment

Term in months	Financing Rate 5.1%	6.1%	7.1%	8.1%	9.1%	10.1%	11.1%	12.1%
12	$3,922	$3,943	$3,964	$3,985	$4,006	$4,027	$4,049	$4,070
24	$2,011	$2,031	$2,052	$2,073	$2,094	$2,115	$2,136	$2,158
36	$1,375	$1,395	$1,416	$1,437	$1,458	$1,480	$1,501	$1,523
48	$1,057	$1,078	$1,099	$1,120	$1,142	$1,164	$1,186	$1,208
60	$866	$888	$909	$931	$953	$975	$998	$1,021
72	$740	$761	$783	$805	$828	$851	$874	$898
84	$650	$671	$694	$716	$739	$763	$787	$811

Source: TrueCar, Bloomberg, BofA Global Research estimates

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Exhibit 4: Average monthly payment for new vehicle lease – YE 2021 vs. Now

Below we analyze the impact on monthly lease payments from year end 2021 and a ~350bps increase in average interest rates

NEW VEHICLE LEASE - Year end 2021

Assumed Purchase Price **$44,683** <-- Avg new vehicle transaction price
55.0% Residual value assumption
$20,107 <-- Amt financed
3.5% <-- Assumed APR

Monthly Consumer Payment

Term in months	Financing Rate 1.5%	2.5%	3.5%	4.5%	5.5%	6.5%	7.5%	8.5%
12	$1,689	$1,698	$1,708	$1,717	$1,726	$1,735	$1,745	$1,754
24	$851	$860	$869	$878	$887	$896	$905	$914
36	$572	$580	$589	$598	$607	$616	$626	$635
48	$432	$441	$450	$459	$468	$477	$486	$496

NEW VEHICLE LEASE – May 2023

Assumed Purchase Price **$45,779** <-- Avg new vehicle transaction price
55.0% Residual value assumption
$20,601 <-- Amt financed
7.1% <-- Assumed APR

Monthly Consumer Payment

Term in months	Financing Rate 5.1%	6.1%	7.1%	8.1%	9.1%	10.1%	11.1%	12.1%
12	$1,765	$1,774	$1,784	$1,793	$1,803	$1,812	$1,822	$1,831
24	$905	$914	$923	$933	$942	$952	$961	$971
36	$619	$628	$637	$647	$656	$666	$676	$685
48	$476	$485	$494	$504	$514	$524	$534	$544

Source: TrueCar, Bloomberg, BofA Global Research estimates

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Exhibit 5: Average monthly payment for a used vehicle loan – YE 2021 vs. Now

Below we analyze the impact on monthly payments from year end 2021 to the latest available data and assuming a ~290bps increase in average interest rates

USED VEHICLE LOAN - AVG VEHICLE - Year end 2021

Assumed Purchase Price **$27,291** <-- ATP used vehicle per Experian 4Q:21
3.9% <-- Avg 60 month used vehicle APR

Monthly Consumer Payment

Term in months	Financing Rate 1.9%	2.9%	3.9%	4.9%	5.9%	6.9%	7.9%	8.9%
12	$2,298	$2,311	$2,323	$2,336	$2,348	$2,361	$2,373	$2,386
24	$1,160	$1,172	$1,184	$1,197	$1,209	$1,221	$1,234	$1,246
36	$781	$793	$805	$817	$830	$842	$854	$867
48	$591	$603	$615	$628	$640	$653	$665	$678
60	$478	$490	$502	$514	$527	$540	$553	$566
72	$402	$414	$426	$439	$452	$464	$478	$491
84	$348	$360	$372	$385	$398	$411	$425	$438

USED VEHICLE LOAN - AVG VEHICLE - May 2023

Assumed Purchase Price **$26,420** <-- ATP used vehicle per Experian 1Q:23
6.8% <-- Avg 60 month used vehicle APR

Monthly Consumer Payment

Term in months	Financing Rate 4.8%	5.8%	6.8%	7.8%	8.8%	9.8%	10.8%	11.8%
12	$2,260	$2,272	$2,284	$2,296	$2,309	$2,321	$2,333	$2,345
24	$1,157	$1,169	$1,181	$1,193	$1,205	$1,217	$1,229	$1,242
36	$790	$802	$814	$826	$838	$851	$863	$876
48	$607	$619	$631	$643	$655	$668	$681	$694
60	$497	$509	$521	$534	$546	$559	$572	$586
72	$424	$436	$448	$461	$474	$487	$501	$514
84	$371	$384	$397	$410	$423	$436	$450	$464

Source: Experian, Bloomberg, BofA Global Research estimates

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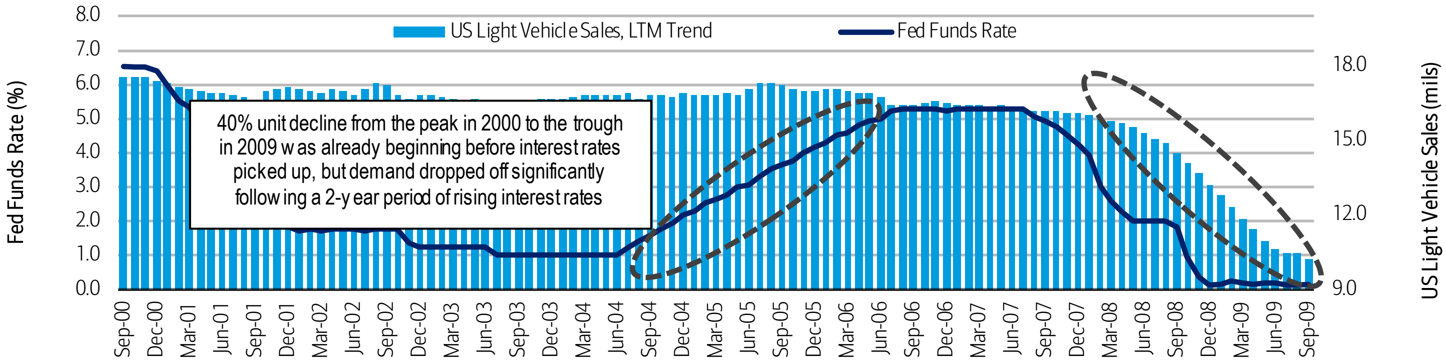
Past rate hike cycles have had somewhat inconsistent correlations with demand, with some periods of increases preceding significant economic downturns and others coinciding with continued strength. Furthermore, in periods where rate hikes did precede declines in demand, the impact was far from immediate. In fact, the lag time in past cycles between when interest rates started to rise and when LTM automotive sales started to fall, was a few years. Therefore, while we believe the current rate hike cycle will ultimately have a negative impact on automotive sales, the impact may be muted for now due to the pent-up demand created from supply shortages over the past few years.

Exhibit 6: Fed funds rate vs. US LV (light vehicle) sales LTM, Sept 2000 – Sept 2009

Rising rates seen in 2004-2005 had little to no discernable impact on sales during that time, but did precede a sales and rate downturn in 2008-2009



Source: WardsAuto, Federal Reserve, BofA Global Research

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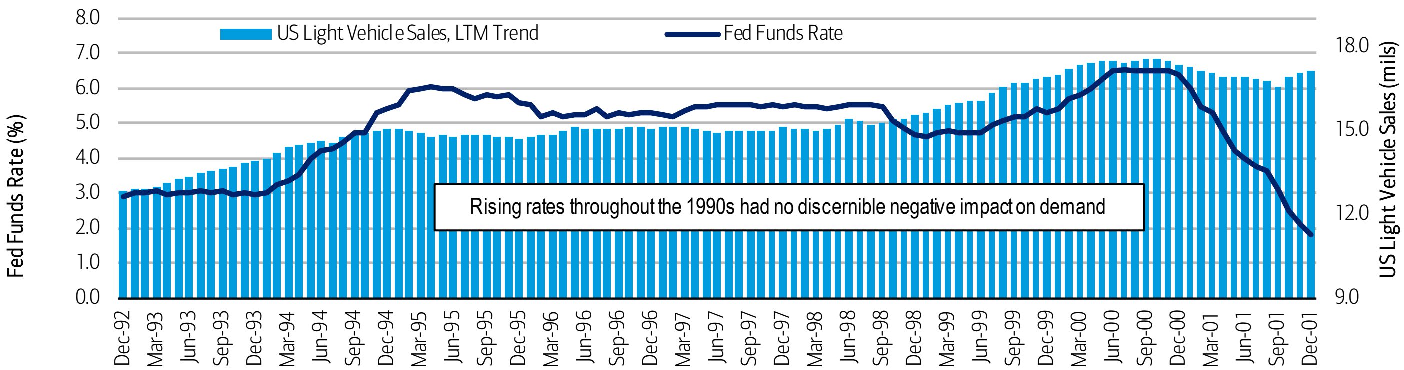
Exhibit 7: Fed funds rate vs. US LV sales LTM, Dec 1992 – Dec 2001

Rising interest rates in the early 1990s and early 2000s had little discernible impact on automotive demand



Source: WardsAuto, Federal Reserve, BofA Global Research

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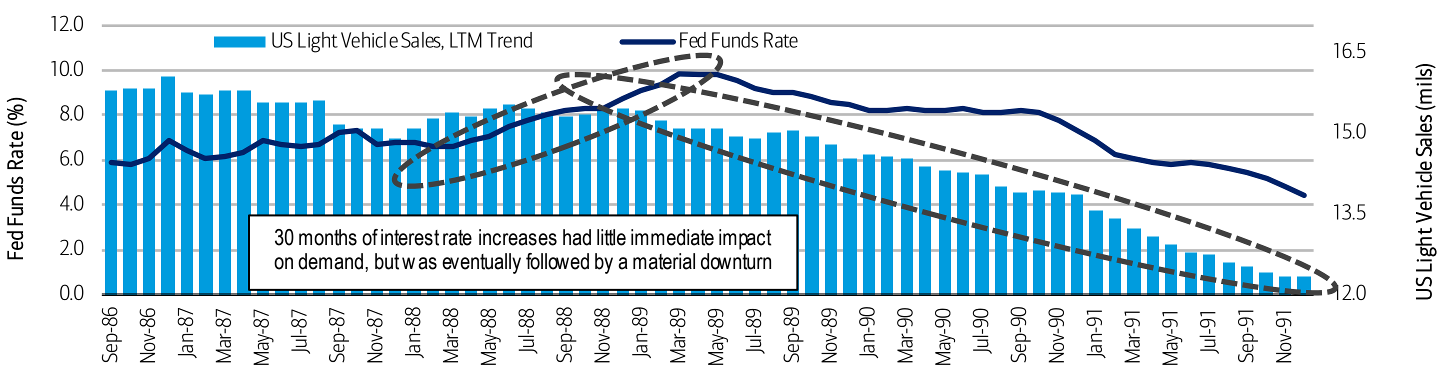
Exhibit 8: Fed funds rate vs. US LV sales LTM, Sept 1986 – Dec 1991

Rising rates in 1988 had little to no impact on sales on an immediate basis, but did precede a sales and rate downturn starting in 1989



Source: WardsAuto, Federal Reserve, BofA Global Research

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2) Higher rates = Higher dealer costs, most notably on inventory

Higher interest rates potentially have a three-pronged impact on dealers: ***1)*** new vehicle demand is potentially pressured; ***2)*** borrowing costs for inventory (floorplan) increase, while assistance remains fairly stable; and ***3)*** borrowing costs for non-floorplan funding also increase. After bottoming at 970k units in September 2021, inventory on dealer lots has increased to ~1.8mm units, which is still well below "more normal" levels. As a result, higher floorplan expenses stemming from rising interest rates had a negative, but muted impact in 2022 compared to 2021. This dynamic could pose a more significant headwind in 2023+ as the automakers and dealers work to restock inventory back to normal levels.

As **Exhibit 9** illustrates, the public dealers' floorplan interest expense broadly increased in 2022, as a result of rising interest rates and increasing inventory levels. On the other hand, the offsetting factor of floorplan assistance was relatively flat on balance, as the dealers turned inventory extremely quickly to fill resilient demand. The confluence of these factors created a slight YoY headwind to dealer earnings in 2022.

Exhibit 9: Floorplan assistance versus floorplan interest expense ($mm)
Below we outline floorplan assistance versus floorplan interest expense for the dealers within our coverage universe

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ABG														
Floorplan Assistance	16.1	18.3	18.9	22.6	25.5	27.6	33.6	35.3	36.4	39.2	42.2	44.0	57.5	85.8
Floorplan Interest Expense	10.3	9.4	9.3	11.6	12.5	12.4	16.1	19.3	22.7	32.5	37.9	17.7	8.2	8.4
Net Assistance/(Expense)	5.8	8.9	9.6	11.0	13.0	15.2	17.5	16.0	13.7	6.7	4.3	26.3	49.3	77.4
Contribution to Pretax Earnings	13%	12%	10%	8%	7%	7%	7%	7%	6%	3%	2%	8%	7%	7%
AN														
Floorplan Assistance	47.4	55.6	61.1	73.5	92.7	106.2	117.8	124.0	122.1	117.9	111.8	110.7	121.4	108.9
Floorplan Interest Expense	33.5	40.2	40.3	43.7	51.2	50.6	62.5	71.5	90.4	121.7	128.1	58.0	22.3	35.5
Net Assistance/(Expense)	13.9	15.4	20.8	29.8	41.5	55.6	55.3	52.5	31.7	(3.8)	(16.3)	52.7	99.1	73.4
Contribution to Pretax Earnings	4%	4%	4%	6%	7%	8%	7%	7%	5%	-1%	-3%	6%	6%	4%
GPI														
Floorplan Assistance	20.0	24.0	26.1	33.9	38.5	45.1	50.5	49.2	48.9	47.3	49.1	47.3	54.2	56.0
Floorplan Interest Expense	32.3	34.1	27.7	31.8	41.7	41.6	39.3	44.9	52.4	59.9	61.6	39.5	27.6	27.3
Net Assistance/(Expense)	(12.3)	(10.1)	(1.6)	2.1	(3.2)	3.5	11.2	4.3	(3.5)	(12.6)	(12.5)	7.8	26.6	28.7
Contribution to Pretax Earnings	-18%	-10%	-1%	1%	-2%	1%	4%	2%	-1%	-5%	-5%	2%	3%	3%
LAD														
Floorplan Assistance	9.0	9.5	12.8	16.6	21.0	28.7	41.4	46.3	56.0	66.9	69.0	72.8	120.1	130.6
Floorplan Interest Expense	10.7	10.3	10.6	12.8	12.4	13.9	19.5	25.5	39.3	62.3	72.8	34.4	22.3	38.8
Net Assistance/(Expense)	(1.7)	(0.8)	2.2	3.8	8.6	14.9	21.9	20.8	16.6	4.6	(3.8)	38.4	97.8	91.8
Contribution to Pretax Earnings	-8%	-2%	3%	3%	5%	7%	7%	7%	5%	1%	-1%	6%	6%	5%
PAG														
Floorplan Assistance	29.7	26.2	27.8	30.5	34.1	39.7	43.7	51.6	55.4	54.6	51.6	52.6	63.7	53.3
Floorplan Interest Expense	34.1	33.8	28.5	38.0	43.1	46.1	44.5	50.9	63.4	80.9	84.5	46.3	26.2	52.4
Net Assistance/(Expense)	(4.4)	(7.6)	(0.7)	(7.5)	(9.0)	(6.4)	(0.8)	0.7	(8.0)	(26.3)	(32.9)	6.3	37.5	0.9
Contribution to Pretax Earnings	-4%	-5%	0%	-3%	-3%	-2%	0%	0%	-2%	-6%	-7%	1%	3%	0%
SAH														
Floorplan Assistance	22.6	24.6	26.9	35.3	37.9	39.7	42.1	45.0	45.3	42.2	41.5	40.6	46.5	51.5
Floorplan Interest Expense	19.8	21.5	19.6	19.5	22.0	18.8	21.3	27.7	36.4	48.4	48.5	27.2	16.7	34.3
Net Assistance/(Expense)	2.8	3.1	7.3	15.8	15.9	20.9	20.8	17.3	8.9	(6.2)	(7.0)	13.4	29.8	17.2
Contribution to Pretax Earnings	4%	3%	5%	10%	9%	13%	13%	11%	7%	-6%	-4%	6%	6%	4%

Source: Company filings, BofA Global Research
Note: ABG = Asbury Auto, AN = AutoNation, Inc, GPI = Group 1 Auto, LAD = Lithia Motors A, PAG = Penske Auto Group, SAH: Sonic Automotive

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Dealers may run with structurally lower inventory, although not lower than now

The key way in which dealers can respond to rising interest rates is by carrying lower levels of inventory, due to the higher cost of borrowing, which could theoretically reduce unit volumes. As seen over the past year, running with tighter inventory levels also introduces more pricing power if demand remains healthy. Per recent commentary from OEMs and dealers, pent up demand has offset macro headwinds and affordability concerns so far this year. Automakers have shown a willingness to maintain production discipline, managing inventory levels to match demand. If OEMs maintain discipline, dealers could operate at structurally lower inventory levels than pre-pandemic. We note however, that as production constraints ease and the volume recovery progresses, inventory levels should increase through 2023+. As a result, we believe the dynamics of increasing inventories and higher borrowing costs will likely result in higher floorplan interest expense for the dealers over the next few years.

3) Cost of corporate borrowing could increase, but impact small

Floating-rate debt is minimal, so little impact likely

Simplistically, rising interest rates imply that the cost of borrowing for automotive companies would increase. However, floating-rate debt at suppliers and OEMs is minimal, so we believe that it is unlikely that there will be a material change in interest expenses. Furthermore, these companies have little reason to raise new debt, given their strong balance sheets and capitalization actions executed over the past few years amid the macroeconomic volatility. In short, we believe that the impact of raising interest rates will have little effects at the supplier and OEM level.

4) Pension obligations decrease more than assets, namely at OEMs

Higher discount rates could benefit those companies with material pensions, most notably GM and Ford, by decreasing the pension benefit obligation (PBO), although there would likely be a corresponding decrease to assets (due to duration matching in the assets and liabilities). In aggregate, however, we believe that higher rates would create a minimal positive impact from pensions on a net basis.

In fact, we estimate that a 1% increase in interest rates would result in a $3.2bn decrease in the pension benefit obligation at Ford and a $3.5bn decrease in the PBO at GM. It should be noted that Ford's US pension assets are about 85% fixed income and GM's are about 70%.

Exhibit 10: Ford interest rate sensitivity & US pension funded status
We estimate that a 1% rate increase would result in a $3.2bn PBO decrease

	+/- Change at December 31, 2022
($mils)	Pension Benefit Obligation
Pensions:	
Assumption:	
+100bps Discount Rate	($3,200)
2022 YE US Plan Asset	32,922
2022 YE US Plan Liability	32,867
US Funded Status YE 2022	$55

Source: Company filings, BofA Global Research
Note: US plans

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Exhibit 11: GM interest rate sensitivity & US pension funded status
We estimate that a 1% rate increase would result in a $3.5bn PBO decrease

	+/- Change at December 31, 2022
($mils)	Pension Benefit Obligation
Pensions:	
Assumption:	
+100bps Discount Rate	($3,540)
2022 YE US Plan Asset	44,901
2022 YE US Plan Liability	44,817
US Funded Status YE 2022	$84

Source: Company filings, BofA Global Research
Note: US plans

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5) Higher rates could hurt capital markets sentiment and stocks

Finally, higher rates simplistically raise discount rates, so, all else equal, this could drive stock prices lower. However, the correlation has been somewhat inconsistent through-cycle for automotive stocks. Generally, the supplier stocks are more sensitive to discount rates than automaker or dealer stocks. We expect the Fed will continue its fight against inflation and therefore keep interest rates at a high level, which is in confluence with continued market volatility and persistent supply chain disruptions. In our view, the combination of these factors poses a headwind for the automotive value chain in the coming years, although it remains to be seen whether a broader cyclical recovery in volumes from three years of recessionary levels (2020-2022) could be an offsetting factor.

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