Volume 20 | Issue 13 | July 15th, 2006

OBSERVATIONS

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Front Wheel Drive vs. Rear Wheel Drive in the Light Vehicle Marketplace

A lot of ink has been spilled in recent years over the subject of a vehicle's driven wheels - specifically, which set (front or rear) should receive the power? This issue has become particularly relevant in recent months because several important upcoming products are to be based on natively rear drive platforms (note: we use the term 'natively' since a number of vehicles, both FWD and RWD, are available with AWD systems). A significant number of investment dollars may be poured into the factory retoolings necessary to manufacture rear wheel drive passenger cars, so in this *Observation* we would like to examine the larger market trends behind these investment decisions.

Market Shifts

Driven primarily by the need for better fuel economy and more efficient utilization of interior space, Canadian consumers embraced the first generation of mainstream front drive products in the early 1980s. In 1982, 46.6 percent of Canadian passenger car sales represented natively FWD vehicles. That percentage had increased to 94.8 in 2001, and by the early years of our present decade, the rear drive layout (representing just 5.2 percent of the market in 2001) had become the exclusive domain of low volume Luxury and Sports cars. Manufacturers like Toyota have demarcated their mainstream and premium passenger car lineups along FWD/RWD lines. The volume Toyota brand remains exclusively front drive, while the majority of Lexus variants are rear drive.

1981 was the last year in which rear drive cars

FWD/RWD Sales Volumes - Canada by Type of Vehicle

	1985	1990	1995	2000	2001	2002	2003	2004	2005
Passenger Car									
Natively FWD	763,954	793,517	618,867	793,277	812,765	864,236	795,955	744,302	754,367
Natively RWD	334,147	81,671	45,740	45,828	44,203	57,267	57,492	63,385	79,365
Natively FWD	69.6%	90.7%	93.1%	94.5%	94.8%	93.8%	93.3%	92.2%	90.5%
Natively RWD	30.4%	9.3%	6.9%	5.5%	5.2%	6.2%	6.7%	7.8%	9.5%
Light Truck									
Natively FWD	35,765	56,307	132,081	269,947	306,248	338,191	319,698	317,021	337,340
Natively RWD	326,848	345,739	328,489	430,391	395,754	430,584	408,345	397,295	400,721
Natively FWD	9.9%	14.0%	28.7%	38.5%	43.6%	44.0%	43.9%	44.4%	45.7%
Natively RWD	90.1%	86.0%	71.3%	61.5%	56.4%	56.0%	56.1%	55.6%	54.3%
Total Vehicles									
Natively FWD	799,719	849,824	750,948	1,063,224	1,119,013	1,202,427	1,115,653	1,061,323	1,091,707
Natively RWD	660,995	427,410	374,229	476,219	439,957	487,851	465,837	460,680	480,086
Natively FWD	54.7%	66.5%	66.7%	69.1%	71.8%	71.1%	70.5%	69.7%	69.5%
Natively RWD	45.3%	33.5%	33.3%	30.9%	28.2%	28.9%	29.5%	30.3%	30.5%

Source: DesRosiers Automotive Consultants Inc., AIAMC and CVMA

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represented the majority of passenger car sales, but the same cannot be said for the light trucks. RWD light trucks still account for the majority of that market (54.3 percent in 2005). Whereas front drive has peaked among passenger cars, it is still gaining currency among makers of light trucks. The percentage of cars based on FWD platforms has been downtrending since 1997, but natively FWD light trucks are still on an upswing, with the period between 2000 and 2005 representing an increase from 38.5 percent of the market to 45.7 percent of the market.

Over the past four years, a recovery has taken place in rear drive passenger cars. RWD car shares have risen from 5.2 percent in 2001 to 9.5 percent in 2005, the highest percentage of rear drive cars to hit the sales charts since 1989. In addition, our analysis shows 34 RWD products available in 2001, while our 2005 data tracked 50 individual rear drive cars in 2005.

This recovery is no doubt a result of several important vehicles, including all variants of DaimlerChrysler's LX platform (Chrysler 300 & Dodge Charger), as well as the Cadillac CTS, smart fortwo, Mazda RX-8, Nissan 350Z, and Infiniti G35. All of these RWD vehicles were introduced between 2002 and 2005, and all have proven successful. Unlike in previous years, vehicle classes outside the Luxury/Sport arena are represented. The Dodge Charger is an Intermediate family sedan and the smart fortwo is a Subcompact - the first rear drive economy car since the Hyundai Pony!

In addition, brands dedicated to rear drive have seen sales boom. Forinstance, there are many ways to explain the exponential growth of BMW over the past fifteen years, but it's pretty compelling to look at this expansion as a result of the company's firm abidance by the conventions of proper performance layout - namely, native RWD. During the period at which FWD installation rates were at their highest (1990 - 2004), BMW grew from a 4,000 units-per-year company to one selling around 20,000 vehicles every year. Minus the sales of their FWD MINI Cooper, the 18,150 natively-rear-drive cars and light trucks BMW sold in 2005 still represents a quadrupling over the 1990 numbers.

The fact remains, however, that even the best FWD vehicles tend to subject their drivers to minute tugs or patches of unevenness in their steering arcs.

The Case For Rear Wheel Drive

Among both enthusiasts and executives, the switch between driveline styles is a loaded topic. Debates flare, positions calcify, and specific brands' successes and failures are attributed to the arcane business of driveline configuration. For someone outside the automotive industry, this must seem maddeningly esoteric.

Given that the majority of vehicles sold today are front wheel drive (FWD), most of the fervor resides within the rear wheel drive (RWD) camp. Two basic arguments exist: a) RWD cars handle better, and b) RWD cars look better. Both are entirely subjective, though there is a kernel of truth in both statements.

Yes, RWD vehicles have inherently better handling balance, but how often does the average commuter exercise a vehicle's full performance envelope? Very rarely - if ever - so it goes without saying that the finer points of at-the-limit handling are of little concern to most car shoppers. RWD does a good job isolating the steering wheel - and, hence, the driver - from the undesirable vibrations and sensations of a vehicle's powertrain, but whether or not people consciously perceive this phenomenon is debatable. The fact remains, however, that even the best FWD vehicles tend to subject their drivers to minute tugs or patches of unevenness in their steering arcs. There's a reason BMW, Mercedes Benz, Lexus, Jaguar, and Infiniti have persisted with rear drive in their uplevel offerings. Within these brands, 'perfection' is an important objective.

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Consumer research data from Maritz Canada indicates that vehicle buyers consistently rank "handling" as one of the less important purchasing criteria when considering a new vehicle. "Fun to drive" ranks slightly higher, but both factors lag behind industry stalwarts like "reliability," "purchase price," and "exterior styling."

Therefore, it follows that the second argument for RWD is based on the latter of these criteria: good looks. Vital driveline components don't need to be bunched forward of the firewall, so RWD cars are often more stylistically relaxed than their FWD counterparts. Specifically, a RWD platform allows for shorter front overhangs and lower hoodlines - fewer compromises for the sake of packaging. By contrast, most FWD vehicles have comparatively long overhangs, as well as front wheelhouses positioned fairly close to the leading edges of their doors. Proponents of RWD styling would argue that FWD vehicles look "compromised."

We believe that the average consumer does not consciously make that association, but that the overall effect of RWD styling is appreciated. It has been suggested that DaimlerChrysler's recent return to rear drive was precipitated by styling concerns. "They converted to rear drive for the styling" sounds a bit like Seinfeld's "He converted to Judaism for the jokes," but it's certainly possible that the move to RWD was effected to take advantage of upmarket styling themes. By the time Chrysler's 300 was introduced, classic rear drive sedans proportions were largely associated with BMW and Mercedes Benz - styling targets known to resonate with premium buyers (and the 300 was introduced as a "Luxury" vehicle). Worse strategies have been employed to sell vehicles.

The standard criticism of rear drive is that it's bad in the snow, but today's vehicles allay these fears with effective traction and stability control systems.

Sales by Segment

As noted in previous *Observations*, we use four broad segments to understand the industry's major shifts. In the case of driveline configuration, it appears as though the strategies chosen by most OEMs closely mirror consumer preferences and desires in these four segments.

In the Entry Level class (Subcompact and Compact cars, Small Pickups and Compact SUVs), 90.6 percent of 2005 sales went to front drive vehicles. This segment is largely FWD because of the fuel economy benefits that accrue when vehicles get smaller and weigh less - basically, when they adopt FWD. Entry level consumers generally value gas mileage over handling or looks, so it's a perfect fit. But for the inclusion of Small Pickup trucks (a category that was, until recently, largely "personal use"), this segment would be entirely FWD. It is unlikely that much change will occur over the next few generations of Entry Level vehicles.

Consumers in the Midsize/Family segment (Intermediate passenger

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FWD/RWD Sales Volumes - Canada by Segment

	1990	1995	2000	2001	2002	2003	2004	2005
Entry Level Vehicles								
Natively FWD	479,463	309,553	477,766	536,940	576,766	546,489	555,156	610,287
Natively RWD	91,733	52,407	54,420	58,020	67,675	59,381	50,181	63,191
Natively FWD	83.9%	85.5%	89.8%	90.2%	89.5%	90.2%	91.7%	90.6%
Natively RWD	16.1%	14.5%	10.2%	9.8%	10.5%	9.8%	8.3%	9.4%
Midsize/Family Vehicles								
Natively FWD	310,421	386,144	507,544	501,204	544,923	496,579	439,304	414,245
Natively RWD	118,082	111,365	108,549	91,697	98,584	83,892	66,915	68,446
Natively FWD	72.4%	77.6%	82.4%	84.5%	84.7%	85.5%	86.8%	85.8%
Natively RWD	27.6%	22.4%	17.6%	15.5%	15.3%	14.5%	13.2%	14.2%
Large/Luxury/Sport Vehicles								
Natively FWD	66,899	56,670	67,116	70,309	75,969	72,040	66,839	68,149
Natively RWD	52,618	41,453	84,798	78,850	91,778	93,234	100,028	111,735
Natively FWD	56.0%	57.8%	44.2%	47.1%	45.3%	43.6%	40.1%	37.9%
Natively RWD	44.0%	42.2%	55.8%	52.9%	54.7%	56.4%	59.9%	62.1%
Primarily Commercial Vehicles								
Natively FWD	-	-	-	-	-	-	-	-
Natively RWD	160,518	168,769	234,639	218,219	234,613	230,102	241,312	233,001
Natively FWD	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Natively RWD	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: DesRosiers Automotive Consultants Inc., AIAMC and CVMA

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cars, Intermediate SUVs and Minivans) are also volume buyers of FWD products, with such vehicles accounting for 85.8 percent of 2005 sales. Vehicles in this class are purchased for their carrying capacity and interior accommodations, so - again - the market has responded to FWD's packaging virtues. Upcoming products such as GM's Zeta-based sedans may swing the RWD percentage closer to 20 percent (it currently stands at 14.2), but FWD will remain dominant in the long term.

Buyers of Large/Luxury/Sport vehicles (Luxury and High Luxury sedans, Sports and Sports-Luxury Cars, Large and Luxury SUVs) have been aggressive in their adoption of rear drive. RWD vehicles have risen from 42.2 percent segment share in 1995 to 62.1 percent in 2005. This development dovetails with the proliferation of Luxury SUVs and the maturation of the German-nameplate manufacturers in Canada. Consumers interested in Large/Luxury/Sport vehicles are principally concerned with styling and performance, so the "uncompromised" nature of rear drive platforms suits them perfectly. We believe that RWD will remain dominant in the near term, but the gradual move away from large, body-on-frame SUVs may lead to a stabilization or even decline of RWD volumes in the long term.

Primarily commercial vehicles are not subject to the same fuel economy and passenger comfort criteria as other vehicle classes, so it makes perfect sense that 100 percent of large pickups and large vans are RWD. Aside from being easier to service and more durable under stressful conditions, rear drive is naturally suited to the load-carrying and towing requirements that commercial vehicles face during their service lives. We foresee this remaining so for the foreseeable future.

Present Developments

The return to RWD appears to be rooted in the success of Chrysler's 300, as well as the incredible growth of RWD-based German Luxury brands. These phenomena have revealed a public appetite for such products. Would it be beneficial for competing manufacturers to follow suit? Is a volume-market RWD platform necessary for a manufacturer to remain competitive?

No, not necessarily.

History has taught us that there is ample room in the marketplace (and ample consumer demand) for both driveline styles. The fact that DaimlerChrysler has exploited a seemingly forgotten niche does not negate the remaining 90 percent of passenger car buyers and half the light truck buyers who have been satisfied with front wheel drive cars for over two decades.

A lot of speculation has surrounded General Motors' upcoming rear drive Zeta platform. The yet-to-be-released vehicle architecture will underpin the new Camaro, as well as several Intermediate or Large sedans. Clearly, GM and Chrysler perceive the same consumer yen.

Among mainstream manufacturers bucking the trend, Ford is the boldest refusnik. With the elimination of the Lincoln LS and Town Car, the company's only RWD premium sedan will be the Jaguar S-Type, itself facing an ambiguous future. At odds with the strategy employed by virtually every other manufacturer (GM, DCX, Toyota, Nissan, BMW, and Mercedes Benz come to mind), Ford's "volume premium" divisions - Lincoln and Volvo - will have natively FWD lineups for the foreseeable future.

Finally, there is an interesting Canadian spin to this FWD/RWD debate. With Ford, there are questions as to the future of their St. Thomas assembly plant which produces the RWD Crown Victoria. With GM, there is discussion that Oshawa may be the home of a RWD Zeta platform variant. With DCX, there is debate about whether there is capacity at Bramalea to produce the Challenger coupe, a RWD sports car projected to be a Mustang fighter. Could Canada be the RWD capital of the North American auto sector? A risky strategy if you ask me. Given that the industry's present fascination with RWD could evaporate within the next few product cycles especially with "fuel efficiency" becoming even more important I would prefer that Canada be in the 90 percent FWD safe zone. DAR

July 15th, 2006 | ISSN 0841-9957