North America United States
Consumer Autos & Auto Parts

Deutsche Bank

16 March 2008

US Autos and Auto Parts

Paradigm Shift for the Global Auto Industry

Rod Lache
Research Analyst
(+1) 212 250-5551
rod.lache@db.com

Dan Galves
Associate Analyst
(+1) 212 250-3738
dan.galves@db.com

Patrick Nolan, CFA
Associate Analyst
(+1) 212 250-5267
patrick.nolan@db.com

We remain concerned about the ramifications of higher oil prices.
The shift from traditional light trucks to crossover vehicles and cars has been ongoing since 2005, but we see potential for this shift to accelerate, significantly reducing profitability for U.S. Automakers. Looking purely at the mix impact, we estimate that a reduction in demand for large pickup trucks and large SUV's to 1990 levels would reduce GM's long term profitability by $4.5 bn, ($8.00 EPS). A similar analysis implies a reduction of $2.2 bn ($1.50 EPS) for Ford.

Technology change represents a new risk and opportunity.
Investors should be aware that motor vehicle technology has the potential to change more significantly over the next 5 years than it has in the past 100 years. Technological change adds another level of uncertainty for investors in the auto industry. Companies that embrace the winning technology have the potential for disproportionate market share gains. Those that do not could be left behind. The potential for electric vehicles (EV's) could be highly disruptive to the used car market. Particularly in markets such as Europe, where the operating cost differential between emerging electric vehicles (EV's) and internal combustion cars is projected to be high.

Environmental mandates may not cause inflationary vehicle pricing.
We've been concerned that complying with new CAFÉ and CO2 regulations in North America and Europe would place tremendous burdens on automakers and consumers, leading to slower growth and lower profitability. GM's 10K suggests that the new CAFÉ standards could cost the industry $100 bn per year, or $5000 per vehicle. While there is still considerable uncertainty on how this will play out, and the R&D burden is still significant, we met with a proponent of electric vehicles whose business model suggests that future vehicles that comply with new regs may not me more expensive to buy or operate.

We see potential for a paradigm shift in the way vehicles are owned and fueled
We recently met with Better PLC, a proponent of EV's globally. Looking at Better PLC's model, we conclude that a pure EV should not be more expensive than a gasoline/diesel vehicle. And in most countries, operating costs could be much lower. The paradigm shift in our thinking about EV's is that we believe businesses such as Better PLC will emerge that will own the batteries, and charge for "miles". Including electricity and depreciation on the battery, the cost of a mile should be no more than $0.07. This compares with $0.24 per mile for $6.00/gal gasoline in Europe and $0.15-$0.20 for $3.00-$4.00 gasoline in the U.S.

Sector Valuation and Risks
We utilize an EV/EBITDA valuation methodology for our companies with extensive liabilities and P/E valuation methodology for companies that generate considerable free cash flow and exhibit an ability to consistently grow earnings. The principal sector risk is significantly higher or lower-than-expected North American auto demand.

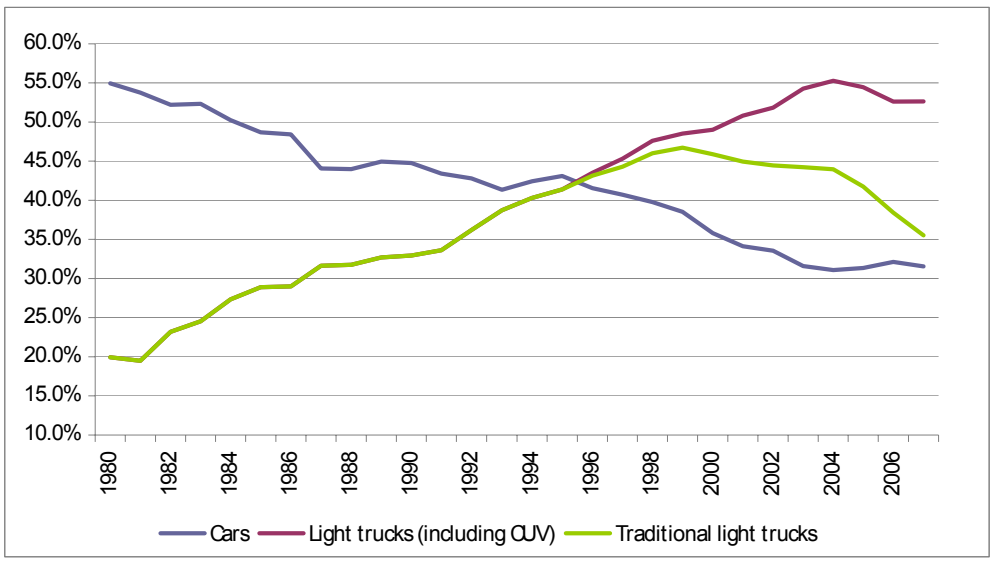
Industry Analysis

Companies featured	
General Motors (GM.N),USD19.22	Hold
Autoliv (ALV.N),USD50.32	Buy
American Axle & Manufacturi (AXL.N),USD21.37	
BorgWarner (BWA.N),USD41.67	Hold
Ford Motor (F.N),USD5.29	Buy
Johnson Controls (JCI.N),USD32.64	Hold
Lear Corporation (LEA.N),USD25.11	Hold
Magna International (MGA.N),USD70.93	Hold
TRW Automotive (TRW.N),USD23.73	Buy
Visteon (VC.N),USD3.44	Hold

With unemployment rising, consumer confidence plummeting, U.S. consumer wealth falling, and credit availability becoming more constrained, reasons to be concerned about the prospects for the Global Auto Industry are in abundance. But our greatest concern over the intermediate to longer term is oil. The world is currently consuming 88 million barrels per day. Demand is expected to increase by at least 1.5 MM barrels per day per year, and many industry experts believe that global capacity will peak at approximately 100 MM barrels per day (see our note published today on our trip to China, where 6 MM of the 26 MM light vehicles in operation were sold last year, and the SAAR is increasing by more than 1 MM units per year). With these types of drivers and very little evidence of demand destruction from high oil prices, we're not willing to bet on a sharp decline from $110 oil. We remain concerned about the ramifications of these changes for the Global Automakers.

The shift from traditional light trucks to crossover vehicles and cars has been an ongoing phenomenon since 2005, but we see potential for this shift to accelerate, significantly reducing profitability and capacity utilization for the U.S. Automakers (see our April 15, 2005 report entitled "End of an Era"). We would note that 2007 segment market share for full-sized pickups was 13.4%. Peak market share for large pickups was 14.8% in 2004; but they were only 8.6% of the market in 1990, and 7.3% in 1986. The full sized SUV segment has already declined to 4.2% of the market from its peak of 6.2% in 2003. But prior to 1995, the segment never accounted for more than 1.5% of US demand (it was 1.2% of the market in 1990). Based on our estimates for the differential in incremental margin for the U.S. automakers (for GM we estimate it's $8,000 for a large pickup, $12,000 for a large SUV, $2,500 for a small SUV, $5,000 for a mid car, $2,500 for a small car), we are concerned that our intermediate term assumptions may not be sufficiently negative. We've been assuming a 160 basis point decline in traditional truck segment market share through 2010. In a bear case scenario, we assume that large SUV's and pickups segment market share declines to 1990 levels (by 300 bps and 500 bps for large SUV's and pickups, respectively). Such a decline would reduce long term profitability by $4.5bn for GM and $2.2bn for Ford. There would also be significant negative implications for several U.S. suppliers including American Axle, Lear, Magna and Dana.

Figure 1: US Car vs Truck Sales (as of year end 2007)



Source: Deutsche Bank, Wards

In considering the long term implications of higher oil prices and tightening regulations, we've begun to also consider the potential for even more radical changes, including changes to the way vehicles are owned and fueled. One proponent of this shift is a company called Better PLC. We met with CEO of Better PLC at the company's Palo Alto HQ. Our conclusion: This company's concept could cause massive disruption to the auto industry as it exists today.

Many companies are working on different concepts to reduce dependence on oil from the transportation sector. Many of them are focused on changing conventional internal combustion engines (i.e. turbocharged direct injected gasoline and diesel engines), adding electric powertrains to conventional gasoline engines (i.e. the Hybrid Prius, Camry, Civic, Accord, Aura, Malibu, Escape), or adding gasoline engines to extend the range of a conventional electric vehicles (i.e. GM's Volt plug-in vehicle concept). Better PLC is focused on the infrastructure for purely electric vehicles, which have the potential to eliminate the gasoline engine altogether. Importantly, these vehicles would be cheaper vs. today's gasoline vehicles, and more reliable.

Success for this concept will involve distribution of Lithium Ion batteries, establishing networks of battery exchange stations (like gas stations, in which batteries can be swapped for fully charged ones), and distributing recharging panels that will allow electric vehicles to be charged at home, in parking lots/garages, etc. The current state of the art for lithium ion batteries have the capacity to propel a vehicle in excess of 100 miles, which would suffice for 95% of daily driving, and enable 95% of vehicle charging to be done at home. Battery exchange stations will facilitate longer distance driving.

Better PLC has recently announced an agreement with Israel to facilitate the deployment of EV's and Better PLC's infrastructure in that country in a tax advantaged manner such that their vehicles will cost roughly ½ that of conventionally taxed vehicles. 30 more countries and many more cities are considering measures to promote CO2 reduction (later this year London will begin charging £25 per day to drivers of high CO2 emitting vehicles). We believe that entities in 5-10 countries are in the pipeline to announce deals with Better PLC over the course of this year. Renault and Nissan have already announced plans to produce EV's that will use Better PLC's infrastructure, and we expect others. Frankly, we are not aware of any reason why they would not sign up for this, as the automakers do not need to commit capital for infrastructure or for batteries under Better PLC's business model.

We think companies such as Better PLC have the potential to drive significant change in the Global Auto Industry. This company wants to retain ownership the electrification infrastructure—the battery exchange stations, recharging panels, and even the batteries. The buyer of an electric vehicle would buy the car without the battery—typically for less than a new car would cost today—and buy miles from Better PLC, at a cost that is lower than the cost of buying gasoline in most countries (there are a few Mideast countries where gasoline costs $0.15 a gallon). Those miles would be supplied via fully charged batteries at Better PLC exchange centers, and they would be available by hooking up to the recharging panels at home. Consumers can pay by the mile, buy a fixed number of miles per month (i.e. 1000 miles), or they could purchase unlimited miles—the concept is similar to that of cellular service providers. In fact, in some countries Better PLC believes they can offer a package that includes the vehicle along with a long term mileage contract (i.e. Buy 18,000 miles per year for $550 per month, and get a new car as part of the deal). The concept is similar to buying minutes and getting a free phone from a cellular service provider. Our preliminary estimates suggest that this business model would be particularly compelling from a consumer's perspective in markets with higher gas prices (i.e. $4+), where internal combustion vehicles are highly taxed at the state level, or in cities that are attempting to tax higher CO2 emitting vehicles. With gasoline at $6 per gallon in Europe, the cost of driving 12,000-18,000 miles is approximately $2880-$4320 per year using a 25 MPG car. The

equivalent cost of electricity for 12,000-18,000 miles of driving would be between $240-$360 for the electricity alone ($900-$1350 including depreciation on the battery). The savings are so large, that we believe the introduction of this concept could have implications for residual values of conventional internal combustion vehicles, given their higher operating costs.

What we find unique about this model, as opposed to others we've seen, such as the Volt extended range EV, or the Prius Hybrid, is that the system appears to be financially compelling even in the U.S., where fuel costs are relatively low. Consumers in the U.S today typically pay between $0.15 and $0.20 a mile for fuel, assuming $3.00-$4.00 gas and 20 miles per gallon.

Lithium Ion batteries are expected to cost under $500/kWh. A typical car requires 22 kWh to achieve a 100 mile range, which implies roughly $10,000-$11,000 for a typical battery pack (Note that most drivers in Europe drive less than 30 miles per day, and would consume only 6.6 KWH per day. Factoring in transmission losses, the utility would need 8kWh to replenish this. Over 24 hours, the consumption is equivalent to slightly over 300W per vehicle, which is like having 5 light bulbs on in a typical house every day). Manufacturers of these packs suggest that the batteries will have a life cycle of 7,000 charges. Better PLC assumes 2,000 charges, which would provide 200,000 miles of use. Amortizing the cost of the battery over 200,000 miles implies $0.05-$0.055 of depreciation cost per mile (note that battery manufacturers such as A123 Systems believe that the life expectancy of these batteries could be 2x-3x this assumption).

1 kWh is sufficient to drive 5 miles. Assuming electricity costs of $0.10 per kWh, each mile will cost approximately $0.02. Adding together the depreciation on the battery and the cost of electricity implies a cost of $0.07 per mile; less than half the $0.15-$0.20 cost of gasoline at $3.00-$4.00 per gallon in the U.S. (at 20 MPG) and at least $0.24 per mile in Europe (at 25 MPG).

Figure 2: Full-size Pickup Sensitivity

Fullsize Pickup					
Change in Segment Share	-100bps	-200bps	-300bps	-400bps	-500bps
Segment Share	12.4%	11.4%	10.4%	9.4%	8.4%
Ford					
Ford Share	29.8%	29.8%	29.8%	29.8%	29.8%
Lost Units	(50,733)	(101,467)	(152,200)	(202,933)	(253,667)
Contribution Per Unit	10,000	10,000	10,000	10,000	10,000
Pre-tax Impact ($MM)	-507	-1015	-1522	-2029	-2537
EPS Impact	$ (0.24)	$ (0.47)	$ (0.71)	$ (0.94)	$ (1.18)
Offset by growth in other segments					
Ford Total Share	15.5%	15.5%	15.5%	15.5%	15.5%
Change in Units	26,434	52,868	79,301	105,735	132,169
Contribution Per Unit	6,000	6,000	6,000	6,000	6,000
Pre-tax Impact	159	317	476	634	793
EPS Impact	$ 0.07	$ 0.15	$ 0.22	$ 0.30	$ 0.37
Ford Net Pre-tax Impact	(349)	(697)	(1,046)	(1,395)	(1,744)
Ford Net EPS Impact	$ (0.16)	$ (0.32)	$ (0.49)	$ (0.65)	$ (0.81)
General Motors					
GM Share	41.4%	41.4%	41.4%	41.4%	41.4%
Lost Units	(70,296)	(140,593)	(210,889)	(281,186)	(351,482)
Contribution Per Unit	8,000	8,000	8,000	8,000	8,000
Pre-tax Impact	-562	-1125	-1687	-2249	-2812
EPS Impact	$ (0.99)	$ (1.98)	$ (2.97)	$ (3.95)	$ (4.94)
Offset by growth in other segments					
GM Share	23.8%	23.8%	23.8%	23.8%	23.8%
Units Gained	40,410	80,821	121,231	161,642	202,052
Contribution Per Unit	6000	6000	6000	6000	6000
Pre-tax Impact	242.46	484.93	727.39	969.85	1,212.31
EPS Impact	$ 0.43	$ 0.85	$ 1.28	$ 1.70	$ 2.13
GM Net Pre-tax Impact	(320)	(640)	(960)	(1,280)	(1,600)
GM Net EPS Impact	$ (0.56)	$ (1.12)	$ (1.69)	$ (2.25)	$ (2.81)

Source Deutsche Bank, Wards, Company reports

Figure 3: Full-size SUV Sensitivity

Fullsize SUV			
Change in Segment Share	-100bps	-200bps	-300bps
Segment Share	3.2%	2.2%	1.2%
Ford			
Ford Segment Share	18.7%	18.7%	18.7%
Lost Units	(31,752)	(63,504)	(95,256)
Contribution Per Unit	10,000	10,000	10,000
Pre-tax Impact	-318	-635	-953
EPS Impact	$ (0.15)	$ (0.30)	$ (0.44)
Offset by growth in other segments			
Ford Total Share	15.5%	15.5%	15.5%
Change in Units	26,434	52,868	79,301
Contribution Per Unit	6,000	6,000	6,000
Pre-tax Impact	159	317	476
EPS Impact	$ 0.07	$ 0.15	$ 0.22
Ford Pre-Tax Impact	(159)	(318)	(477)
Ford Net EPS Impact	$ (0.22)	$ (0.44)	$ (0.66)
General Motors			
GM Share	59.6%	59.6%	59.6%
Lost Units	(101,344)	(202,688)	(304,031)
Contribution Per Unit	12,000	12,000	12,000
Pre-tax Impact	-1216	-2432	-3648
EPS Impact	$ (2.14)	$ (4.27)	$ (6.41)
Offset by growth in other segments			
GM Share	23.8%	23.8%	23.8%
Units Gained	40,410	80,821	121,231
Contribution Per Unit	6000	6000	6000
Pre-tax Impact	242.46	484.93	727.39
EPS Impact	$ 0.43	$ 0.85	$ 1.28
GM Net Pre-tax Impact	(974)	(1,947)	(2,921)
GM Net EPS Impact	$ (1.71)	$ (3.42)	$ (5.13)

Source: Deutsche Bank, Wards, Company reports

Figure 4: Estimated Variable Margin by Segment

SEGMENT	Example Vehicles	$ Per Unit
LOWER SMALL CAR	Aveo	1,500
UPPER SMALL CAR	Cobalt	2,500
MIDSIZE CAR	Impala / Malibu	5,000
LARGE CAR	Lucerne / G8	7,500
LOWER LUXURY	CTS	7,500
MIDDLE LUXURY	DTS / STS	13,000
LUXURY SPORT	Corvette	18,000
SMALL CROSSOVER	Equinox	2,500
LARGE CROSSOVER	Enclave / Acadia	9,000
MIDDLE SUV	Trailblazer / Envoy	6,000
LARGE SUV	Tahoe / Yukon	12,000
LARGE LUX SUV	Escalade	18,000
MINIVAN	Uplander	5,000
LARGE VAN	Express / Savana	7,500
SMALL PICKUP	Colorado / Canyon	4,000
LARGE PICKUP	Silverado / Sierra	8,000

Source: Deutsche Bank

Valuation and Risks

In terms of price targets for stocks in our universe, we utilize an EV/EBITDA valuation methodology for our companies with extensive liabilities including high debt levels and large pension and post employment obligations. We utilize the P/E valuation methodology for companies that generate considerable free cash flow and exhibit an ability to consistently grow earnings. The principal sector risks include: 1) significantly higher or lower-than expected North American auto demand -- given the high operating leverage in the auto industry, auto company earnings are highly correlated with industry volume; and 2) a significantly improving mix outlook. U.S. automakers are facing a deteriorating mix as a result of several factors, including higher fuel prices.

Appendix 1

Important Disclosures

Additional information available upon request

For disclosures pertaining to recommendations or estimates made on a security mentioned in this report, please see the most recently published company report or visit our global disclosure look-up page on our website at http://gm.db.com.

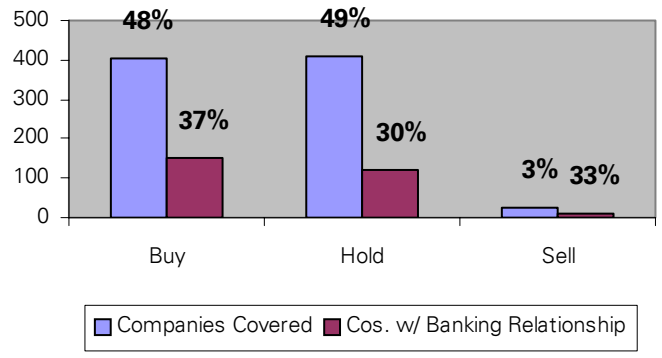
Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst about the subject issuers and the securities of those issuers. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Rod Lache

Equity rating key

Buy: Based on a current 12- month view of total shareholder return (TSR = percentage change in share price from current price to projected target price plus projected dividend yield) , we recommend that investors buy the stock.
Sell: Based on a current 12-month view of total shareholder return, we recommend that investors sell the stock
Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.
Notes:
1. Newly issued research recommendations and target prices always supersede previously published research.
2. Ratings definitions prior to 27 January, 2007 were:
   Buy: Expected total return (including dividends) of 10% or more over a 12-month period
   Hold: Expected total return (including dividends) between -10% and 10% over a 12-month period
   Sell: Expected total return (including dividends) of -10% or worse over a 12-month period

Equity rating dispersion and banking relationships



North American Universe

Regulatory Disclosures

SOLAR Disclosure

For select companies, Deutsche Bank equity research analysts may identify shorter-term trade opportunities that are consistent or inconsistent with Deutsche Bank's existing longer term ratings. This information is made available only to Deutsche Bank clients, who may access it through the SOLAR stock list, which can be found at http://gm.db.com

Disclosures required by United States laws and regulations

See company-specific disclosures above for any of the following disclosures required for covered companies referred to in this report: acting as a financial advisor, manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/comanaged public offerings in prior periods; directorships; market making and/or specialist role.

The following are additional required disclosures:

Ownership and Material Conflicts of Interest: DBSI prohibits its analysts, persons reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage.
Analyst compensation: Analysts are paid in part based on the profitability of DBSI, which includes investment banking revenues.
Analyst as Officer or Director: DBSI policy prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director, advisory board member or employee of any company in the analyst's area of coverage.
Distribution of ratings: See the distribution of ratings disclosure above.
Price Chart: See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the DBSI website at http://gm.db.com.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, in addition to those already made pursuant to United States laws and regulations.
Analyst compensation: Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking revenues
Australia: This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act.
EU: A general description of how Deutsche Bank AG identifies and manages conflicts of interest in Europe is contained in our public facing policy for managing conflicts of interest in connection with investment research.Disclosures relating to the firm's obligations under MiFiD can be found at http://globalmarkets.db.com/riskdisclosures.
Germany: See company-specific disclosures above for holdings of five percent or more of the share capital. In order to prevent or deal with conflicts of interests Deutsche Bank AG has implemented the necessary organisational procedures to comply with legal requirements and regulatory decrees. Adherence to these procedures is monitored by the Compliance-Department.
Hong Kong: See http://gm.db.com for company-specific disclosures required under Hong Kong regulations in connection with this research report. Disclosure #5 includes an associate of the research analyst. Disclosure #6, satisfies the disclosure of financial interests for the purposes of paragraph 16.5(a) of the SFC's Code of Conduct (the "Code"). The 1% or more interests is calculated as of the previous month end. Disclosures #7 and #8 combined satisfy the SFC requirement under paragraph 16.5(d) of the Code to disclose an investment banking relationship.
Japan: See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.
New Zealand: This research is not intended for, and should not be given to, "members of the public" within the meaning of the New Zealand Securities Markets Act 1988.
Russia: The information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a licence in the Russian Federation.
South Africa: Publisher: Deutsche Securities (Pty) Ltd, 3 Exchange Square, 87 Maude Street, Sandton, 2196, South Africa. Author: As referred to on the front cover.

Turkey: The information, interpretation and advice submitted herein are not in the context of an investment consultancy service. Investment consultancy services are provided by brokerage firms, portfolio management companies and banks that are not authorized to accept deposits through an investment consultancy agreement to be entered into such corporations and their clients. The interpretation and advices herein are submitted on the basis of personal opinion of the relevant interpreters and consultants. Such opinion may not fit your financial situation and your profit/risk preferences. Accordingly, investment decisions solely based on the information herein may not result in expected outcomes.

United Kingdom: Persons who would be categorized as private customers in the United Kingdom, as such term is defined in the rules of the Financial Services Authority, should read this research in conjunction with prior Deutsche Bank AG research on the companies which are the subject of this research. Disclosures relating to the firm's obligations under MiFiD can be found at http://globalmarkets.db.com/riskdisclosures.

Deutsche Bank Securities Inc.

North American locations

Deutsche Bank Securities Inc.
60 Wall Street
New York, NY 10005
(212) 250 2500

Deutsche Bank Securities Inc.
225 Franklin Street
25th Floor
Boston, MA 02110
(617) 988 8600

Deutsche Bank Securities Inc.
222 South Riverside Plaza
30th Floor
Chicago, IL 60606
Tel: (312) 537-3758

Deutsche Bank Securities Inc.
3033 East First Avenue
Suite 303, Third Floor
Denver, CO 80206
(303) 394 6800

Deutsche Bank Securities Inc.
1735 Market Street
24th Floor
Philadelphia, PA 19103
(215) 854 1546

Deutsche Bank Securities Inc.
101 California Street
46th Floor
San Francisco, CA 94111
(415) 617 2800

Deutsche Bank Securities Inc.
700 Louisiana Street
Houston, Texas 77002

International locations

Deutsche Bank Securities Inc.
60 Wall Street
New York, NY 10005
United States of America
Tel: (1) 212 250 2500

Deutsche Bank AG London
1 Great Winchester Street
London EC2N 2EQ
United Kingdom
Tel: (44) 20 7545 8000

Deutsche Bank AG
Große Gallusstraße 10-14
60272 Frankfurt am Main
Germany
Tel: (49) 69 910 0

Deutsche Bank AG
Deutsche Bank Place
Level 16
Corner of Hunter & Phillip Streets
Sydney, NSW 2000
Australia
Tel: (61) 2 8258 1234

Deutsche Bank AG
Level 55
Cheung Kong Center
2 Queen's Road Central
Hong Kong
Tel: (852) 2203 8888

Deutsche Securities Inc.
2-11-1 Nagatacho
Sanno Park Tower
Chiyoda-ku, Tokyo 100-6171
Japan
Tel: (81) 3 5156 6701

Global Disclaimer

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank") for its clients. The information herein is believed by Deutsche Bank to be reliable and has been obtained from public sources believed to be reliable. With the exception of information about Deutsche Bank, Deutsche Bank makes no representation as to the accuracy or completeness of such information.

This published research report may be considered by Deutsche Bank when Deutsche Bank is deciding to buy or sell proprietary positions in the securities mentioned in this report.

For select companies, Deutsche Bank equity research analysts may identify shorter-term opportunities that are consistent or inconsistent with Deutsche Bank's existing, longer-term Buy or Sell recommendations. This information is made available on the SOLAR stock list, which can be found at http://gm.db.com.

Deutsche Bank may trade for its own account as a result of the short term trading suggestions of analysts and may also engage in securities transactions in a manner inconsistent with this research report and with respect to securities covered by this report, will sell to or buy from customers on a principal basis. Disclosures of conflicts of interest, if any, are discussed at the end of the text of this report or on the Deutsche Bank website at *http://gm.db.com.*

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, except if research on the subject company is withdrawn. Prices and availability of financial instruments also are subject to change without notice. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction or as an advertisement of any financial instruments.

The financial instruments discussed in this report may not be suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from, the financial instrument, and such investor effectively assumes currency risk. In addition, income from an investment may fluctuate and the price or value of financial instruments described in this report, either directly or indirectly, may rise or fall. Furthermore, past performance is not necessarily indicative of future results.

Derivative transactions involve numerous risks including, among others, market, counterparty default and illiquidity risk. The appropriateness or otherwise of these products for use by investors is dependent on the investors' own circumstances including their tax position, their regulatory environment and the nature of their other assets and liabilities and as such investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option investors must review the "Characteristics and Risks of Standardized Options," at http://www.optionsclearing.com/publications/risks/riskchap1.jsp. If you are unable to access the website please contact Deutsche Bank AG at +1 (212) 250-7994, for a copy of this important document. Furthermore, past performance is not necessarily indicative of future results. Please note that multi-leg options strategies will incur multiple commissions.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction . In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this report is approved and/or communicated by Deutsche Bank AG Frankfurt authorised by Bundesanstalt für Finanzdienstleistungsaufsicht. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange and regulated by the Financial Services Authority for the conduct of investment business in the UK and authorised by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin). This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. and in Singapore by Deutsche Bank AG, Singapore Branch. In Japan this report is approved and/or distributed by Deutsche Securities Inc. The information contained in this report does not constitute the provision of investment advice. In Australia, retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product. Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10) Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting.