

Inside China: Understanding China's Current and Future Automotive Industry

University of Michigan China Automotive Conference

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UMTRI's "Window to the Industry"

Economic and Demographic Analysis

Industry Structure

Advanced Manufacturing and Training



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Funding

- Affiliate Program
- Research
- Conferences
- Training

Interdisciplinary Staff

- Engineering
- Social Sciences
- Business
- Economics

Affiliates

IT Organizations

Oracle Corporation
IBM
HP
UGS-PLM Solutions
QAD

OEMs

General Motors
Honda
Toyota

Consultants

Deloitte

Affiliates

Suppliers

Chevron
Denso
Dana
Delphi
Michelin
Peterson Spring
Siemens VDO
TRW
Valeo
NREL / EPA
UAW



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**Research work -
covering a broad range of topics**

- Globalization
- Manufacturing validation, quality
- Powertrain Strategies
- IT/e-Business
- Human Capital

Key Research Partners

IBM, Bosch, TRW, Tenneco

GM, NIST

Denso, EPA, Nissan, NRDC

Oracle, IBM

Watson Wyatt

Panelists

- **Jun Ni**, Professor, Department of Mechanical Engineering, University of Michigan
- **Loren Brandt**, Professor, Department of Economics, University of Toronto
- **Walter McManus**, Research Scientist, Automotive Analysis Division, University of Michigan Transportation Research Institute
- **Michael Sivak**, Research Professor, Human Factors Division, University of Michigan Transportation Research Institute
- **Jinyun Liu**, Research Scientist, University of Michigan Institute of Labor and Industrial Relations
- **Minyuan Zhao**, Assistant Professor, Stephen Ross School of Business, University of Michigan



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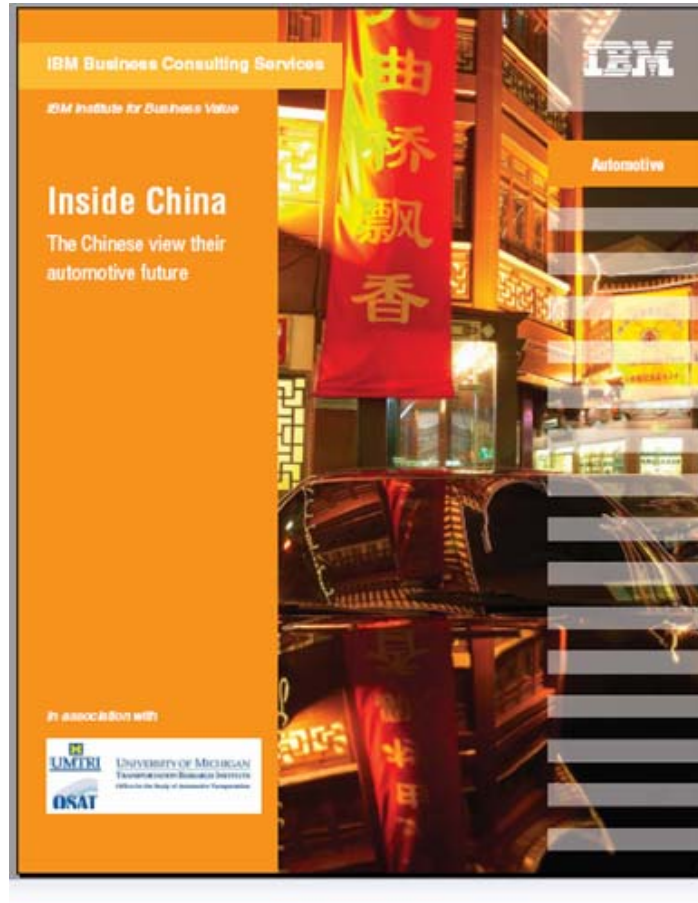
Schedule

- 9 to 10:45am
 - **Bruce Belzowski**: Industry Overview
 - **Jun Ni**: The State of Chinese Automotive R&D and Manufacturing
 - **Loren Brandt**: Upgrading of Capabilities in China's Auto Sector
- 10:45 to 10:55am **Break**
 - **Michael Sivak**: Road Safety in China: Challenges and Opportunities
- 11:30 to Noon **Q&A**
- Noon to 1:15pm **Lunch**

Schedule

- 1:15 to 3:15pm
 - **Walter McManus:** Attitudes and Demographics of Chinese Vehicle Buyers
 - **Jinyun Liu:** New Labor Laws and Their Influences on China's Labor Market
 - **Minyuan Zhao:** External institutions and internal organization: Strategic protection of intellectual property rights in China
- 3:15-3:30pm **Break**
- 3:30 to 4:30pm **Q&A**

China from the inside. . . .



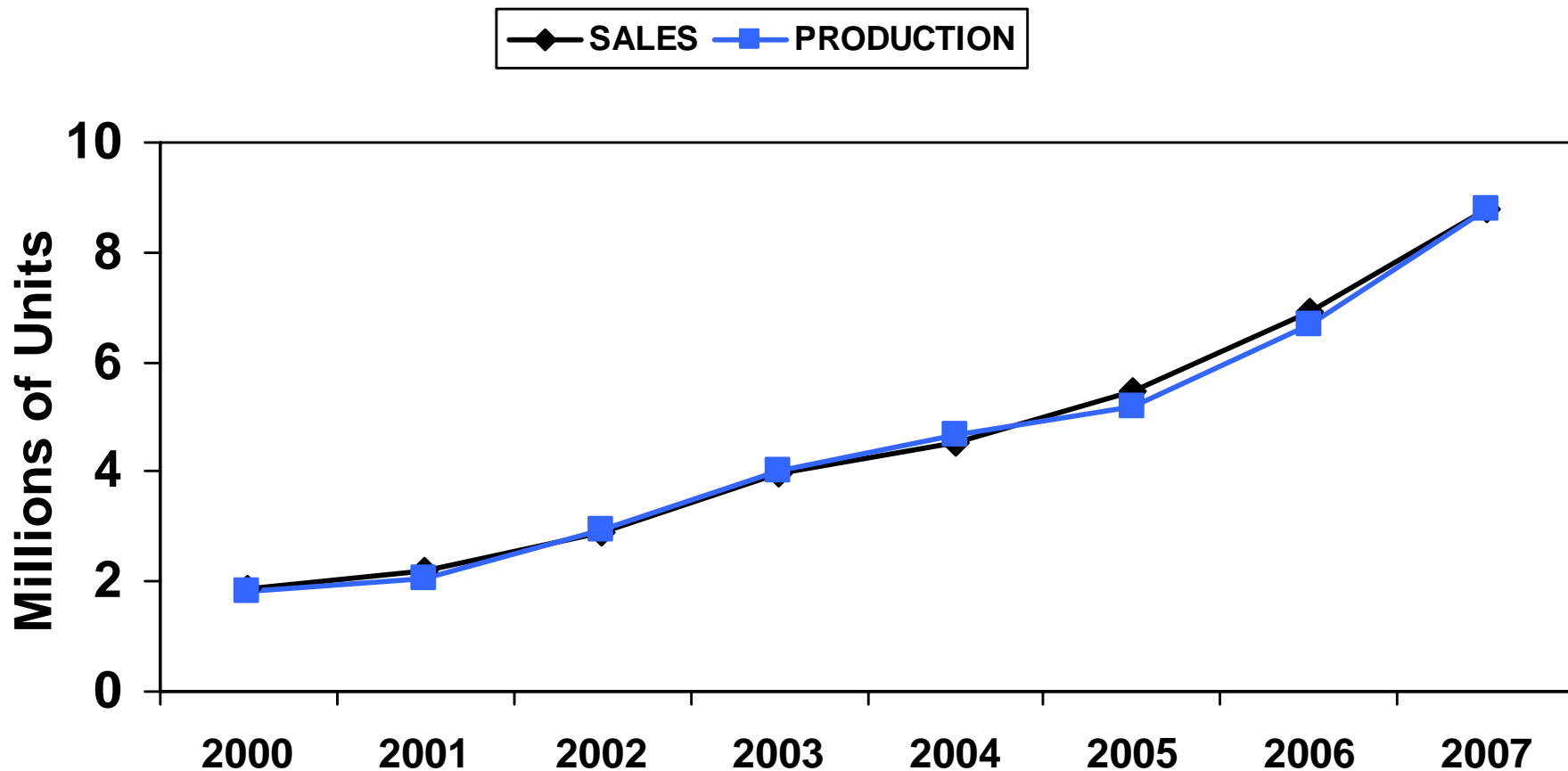
China from the inside. . . .

- In-depth personal interviews with automotive executives and experts
 - Foreign joint ventures - manufacturers and suppliers
 - Domestic manufacturers and suppliers
 - Government officials – national and local
 - Academic experts
- Interviews covered a wide range of questions
 - Market structure
 - Joint venture relationships
 - Transportation infrastructure
 - Air quality
 - Oil supply

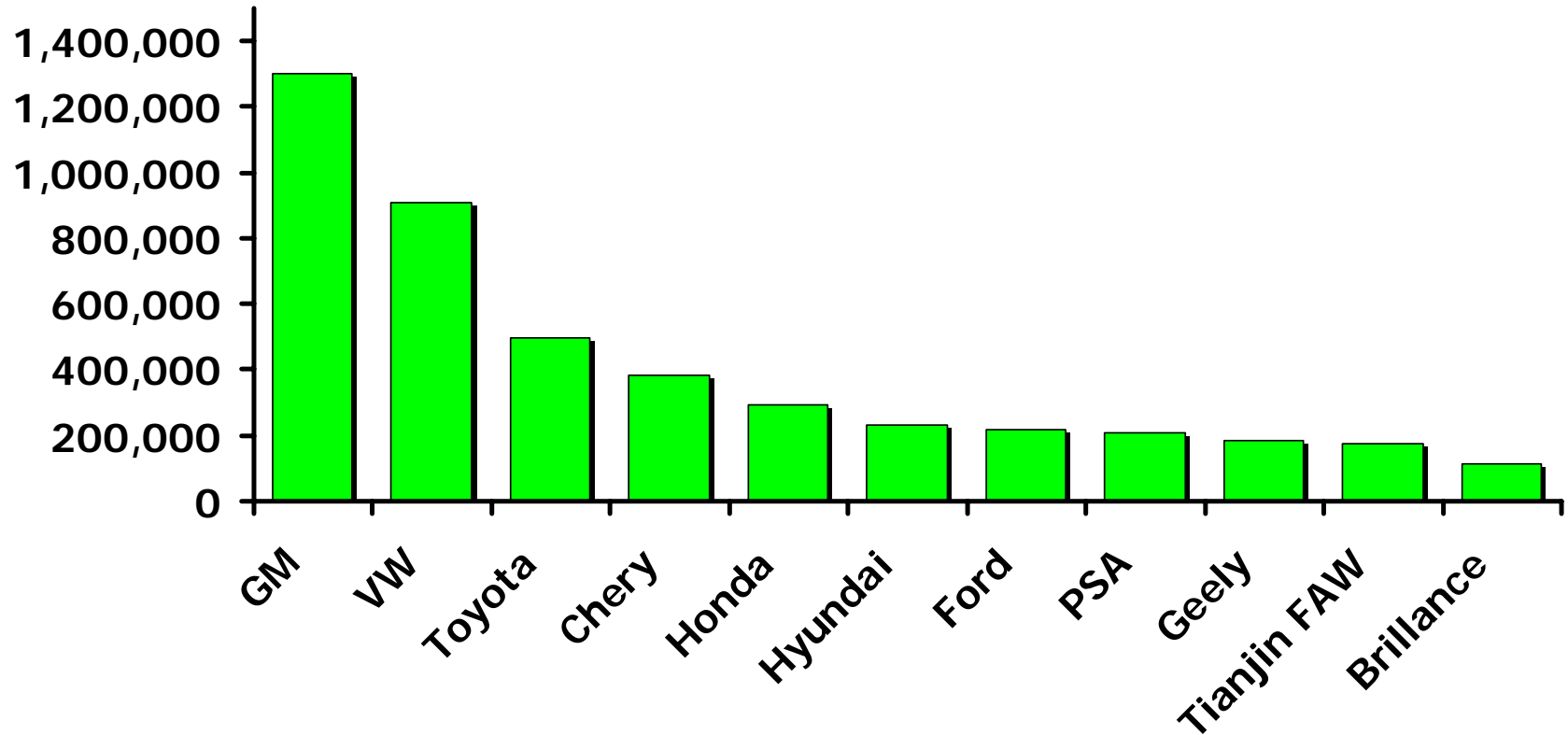
Agenda

- **Market Development**
- Future Market: Drivers for Growth
- Production and Joint Venture Relationships

China 2007 Vehicle Sales and Production



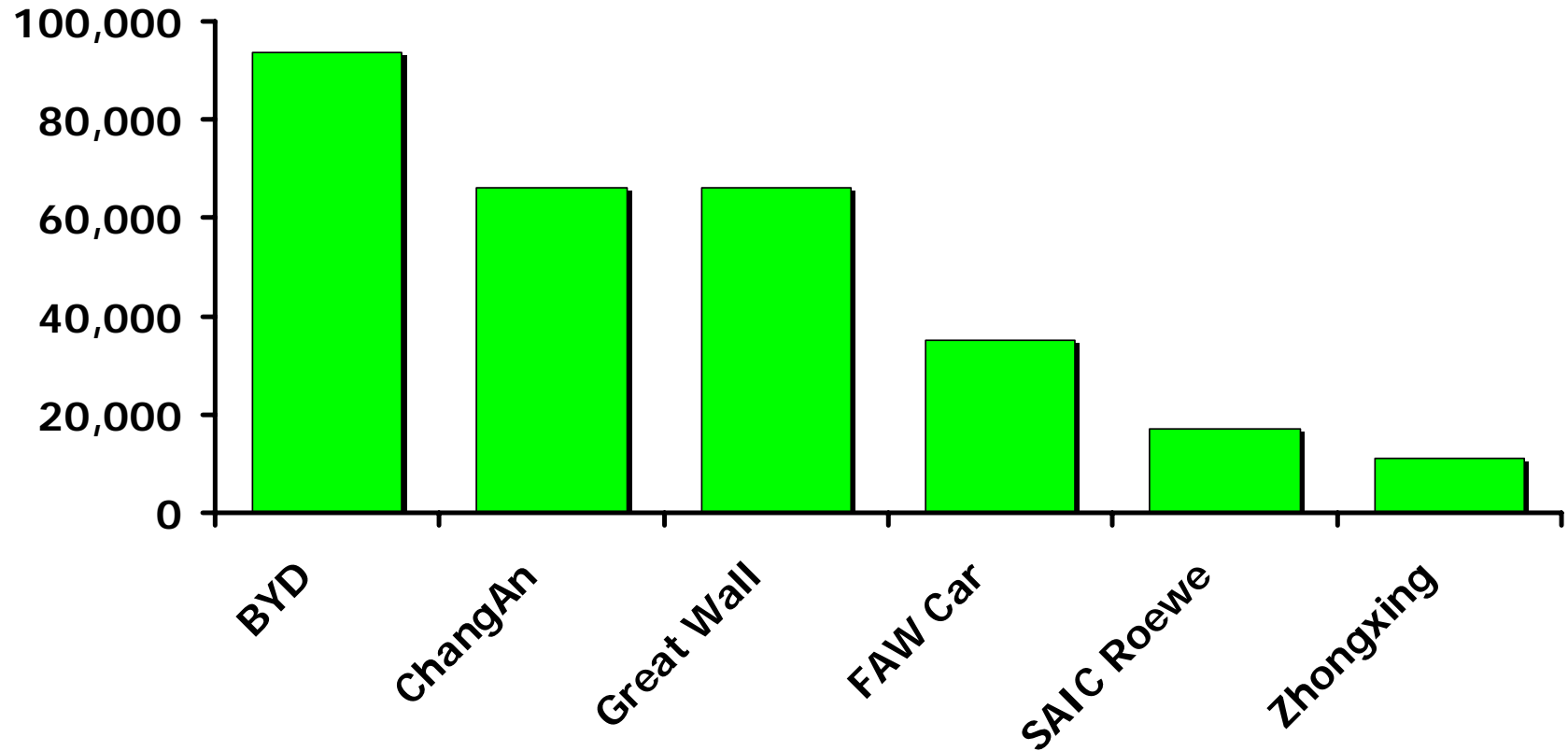
China 2007 Vehicle Sales



Recent Changes

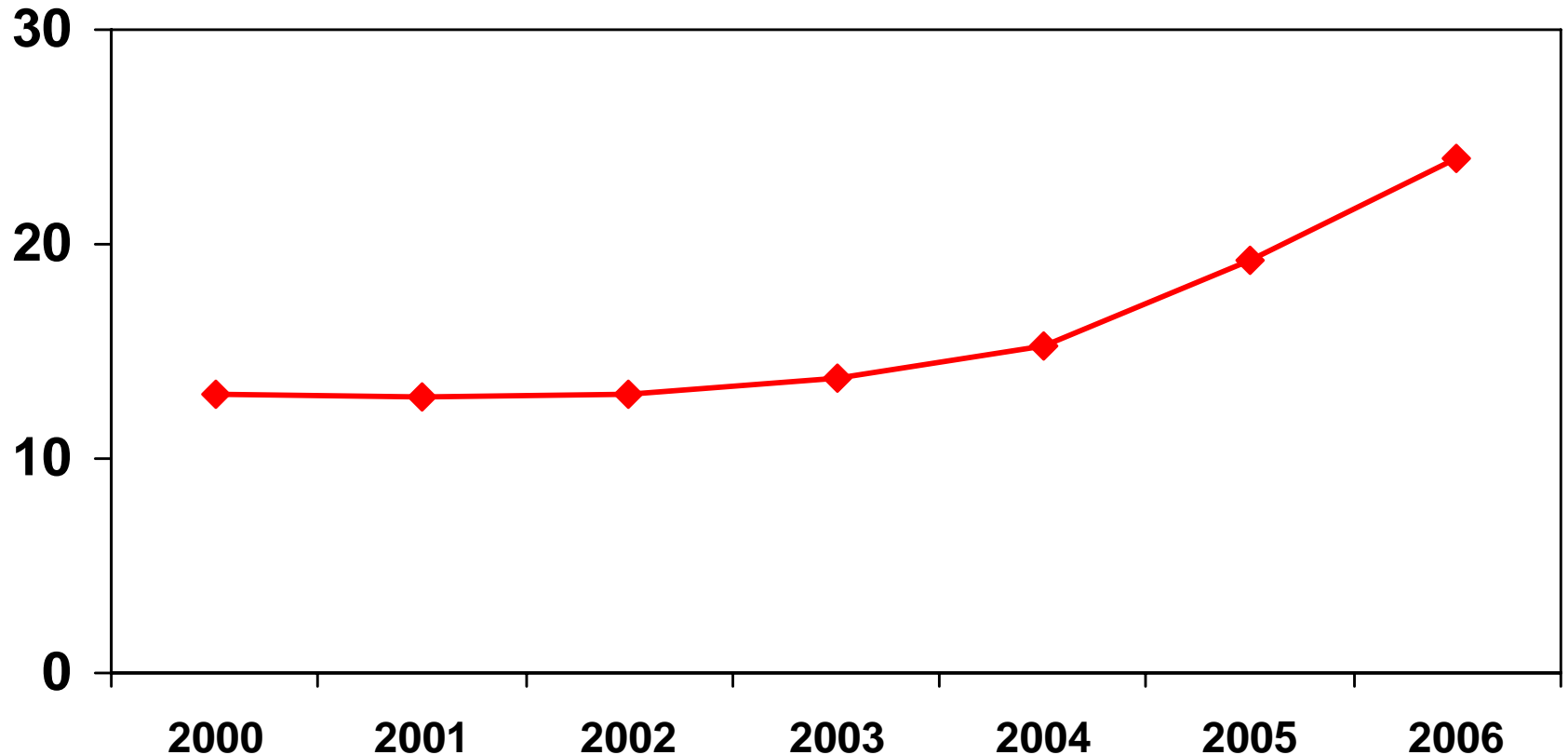
- March, 2007, Chery topped the monthly vehicle sales charts in March, the first time that a domestic carmaker has achieved No. 1 ranking. Chery sold a record 44,568 units, surpassing Shanghai-GM's 40,071 units.

China 2007 Vehicle Sales



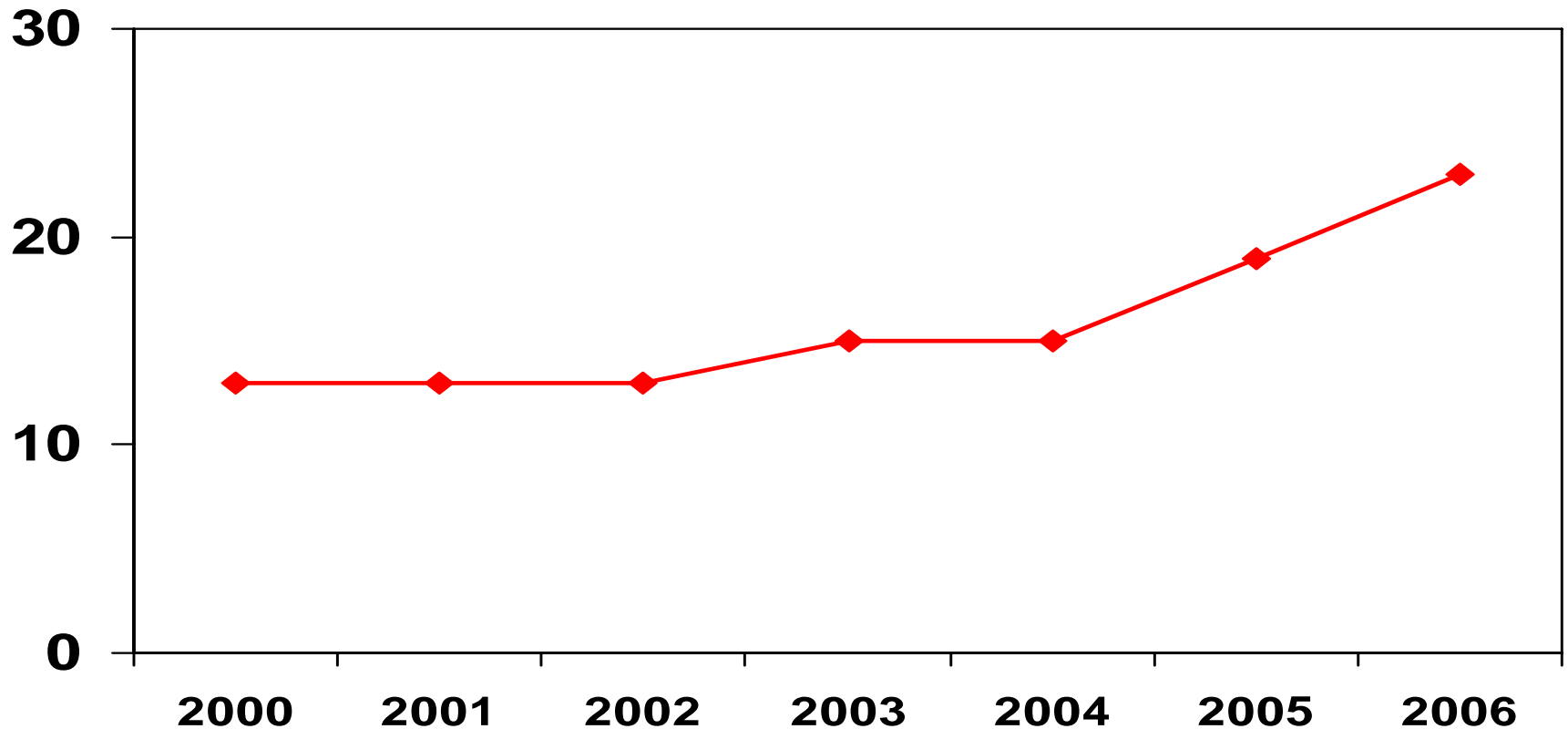
China's Vehicle Parc

Number of vehicles in Millions



China's Vehicle Density

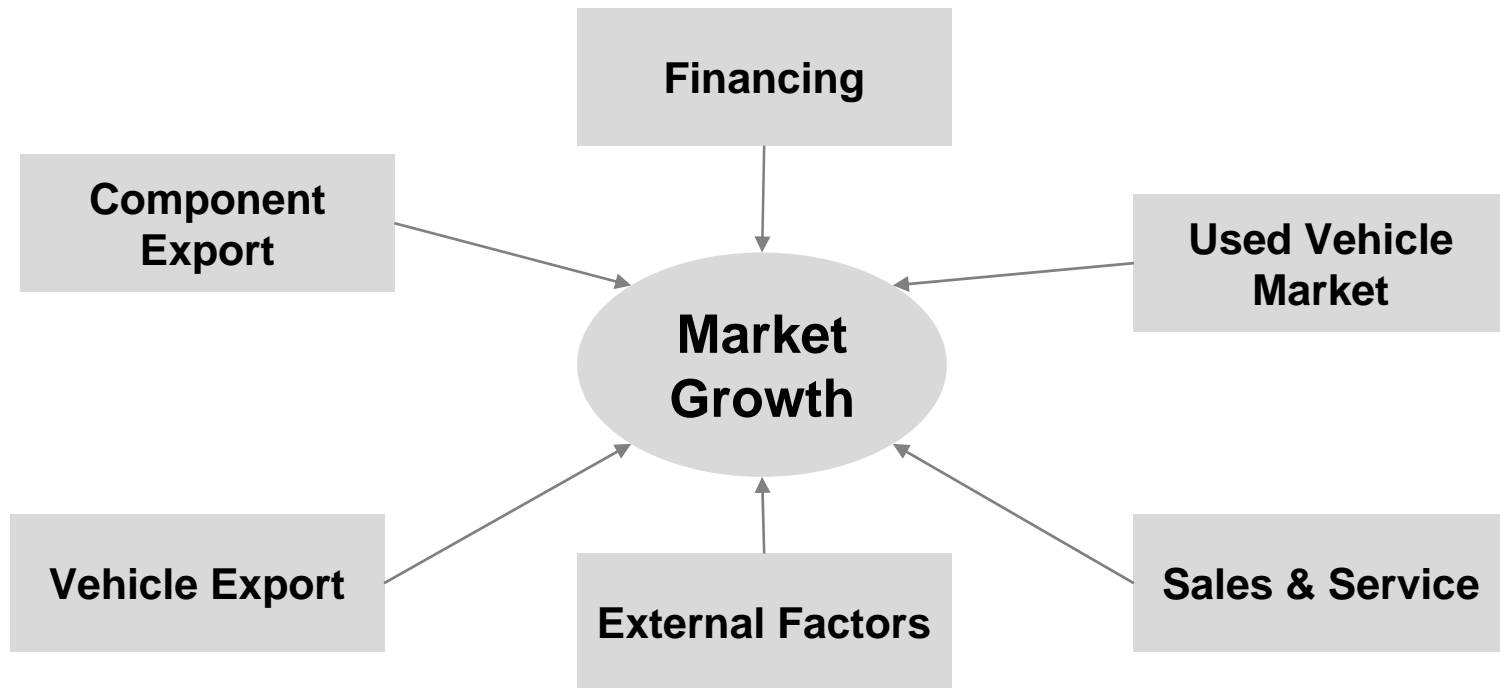
Vehicles per Population



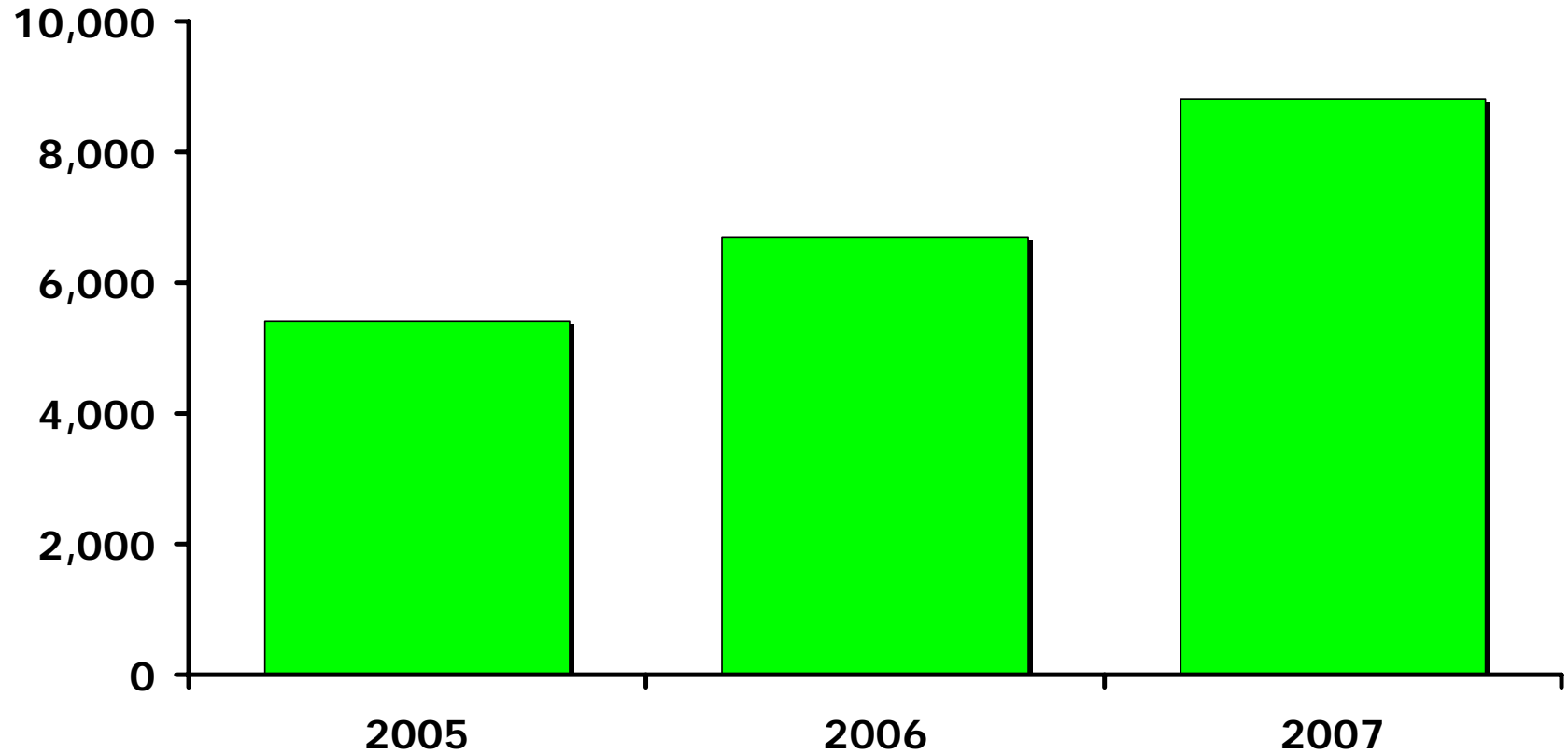
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Growth in China will depend on many factors, according to our interviewees



2007 Dealer Count



Source: JD Power

New Export Issues

- Government requiring export certificates in order to export vehicles from Chinese companies.
 - Trying to discourage substandard brands from ruining the reputation of Chinese automakers.
 - Trying to control quality, aftersales support, and monitor possible IP infringement.

In 2006 there were 1,175 companies exporting vehicles, an increase of 150 over 2005, but 204 firms exported only one vehicle. This new regulation should decrease the total number to about 700.

Vehicle Exports

- North America
 - Chamco (?)
 - FAW Tianjin Xiali (Mexico)
 - China's FAW Group held a plant cornerstone laying ceremony with the Mexican company SALINAS Group on November 23 in Morelia, Michoacan State of Mexico.
- Europe
 - Brilliance
- Emerging Markets: Russia, Iran, South Africa

Captive Financing

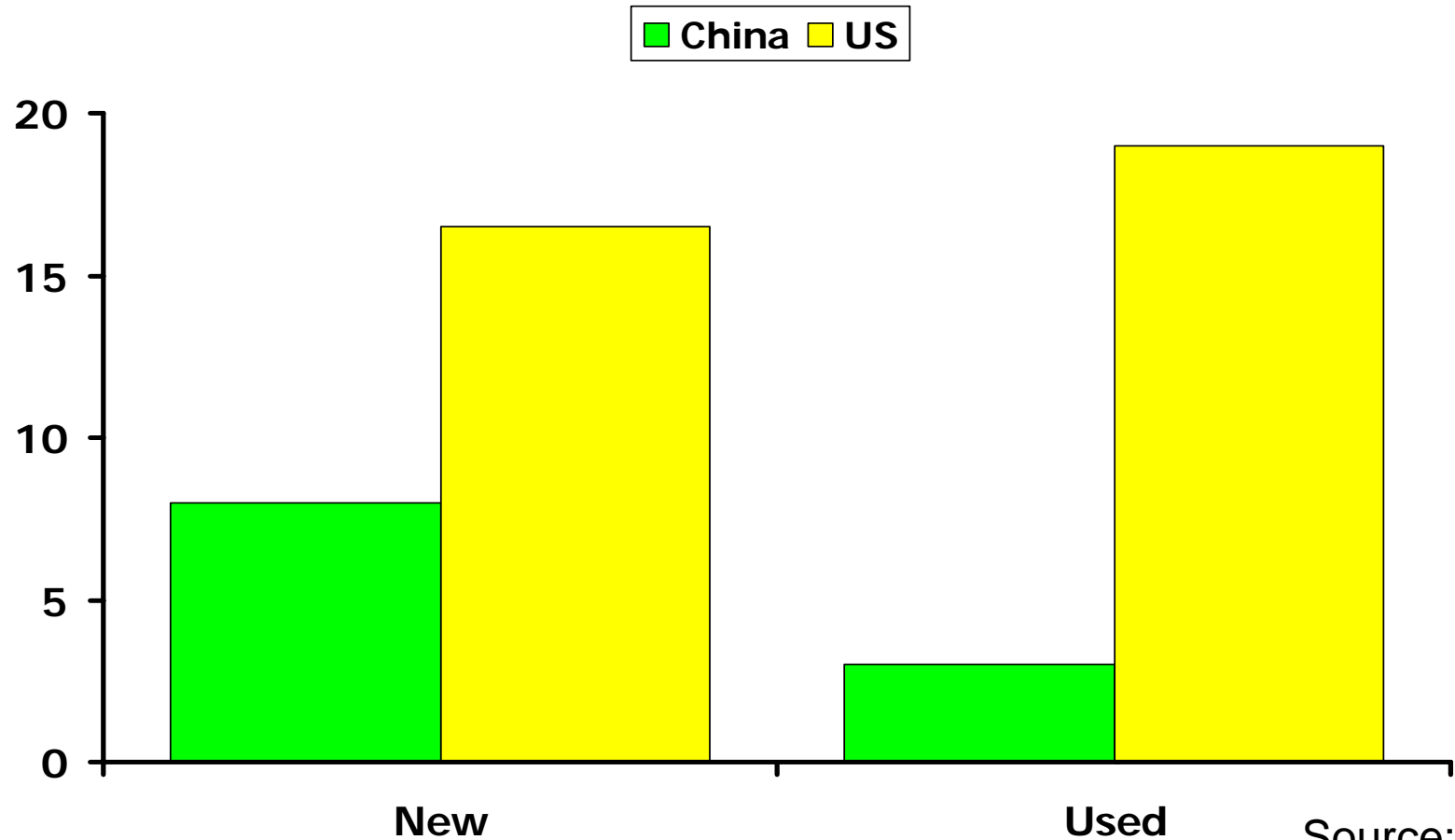
GMAC-SAIC Auto Finance	(2004)	JV
VW Finance (China)	(2004)	Wholly-owned
Toyota Motor Finance	(2005)	Wholly-owned
Ford Auto Finance	(2005)	Wholly-owned
Daimler Auto Finance	(2005)	Wholly-owned
Dongfeng Peugeot Citroen Auto Finance	(2006)	JV
Dongfeng Nissan Auto Finance	(2007)	JV
Volvo Auto Finance	(2006)	Wholly-owned

Source: JD Power



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Pre-Owned (Used) Vehicle Sales



Source: JD Power

Consumers: Vehicle Prices

- China National Passenger Vehicle Association (CNPVA) recently predicted that the price cuts of various vehicles in 2007 would save Chinese consumers a record of about ¥40 billion (\$5.26 billion).
- Increased competition by all brands
- CNPVA also disclosed that total profits of the whole industry are expected to exceed ¥100 billion for 2007.

Consumers: Safety

- A public hearing on compulsory traffic insurance held in Beijing in mid-December, 2007.
- China Automotive Technology and Research Center (CATARC) in Tianjin are launching the C-NCAP
- Generated consumer interest and awareness in crash test performance of new cars made in China
- But Chinese OEMs concerned about crash worthiness

UMTRI – AAD

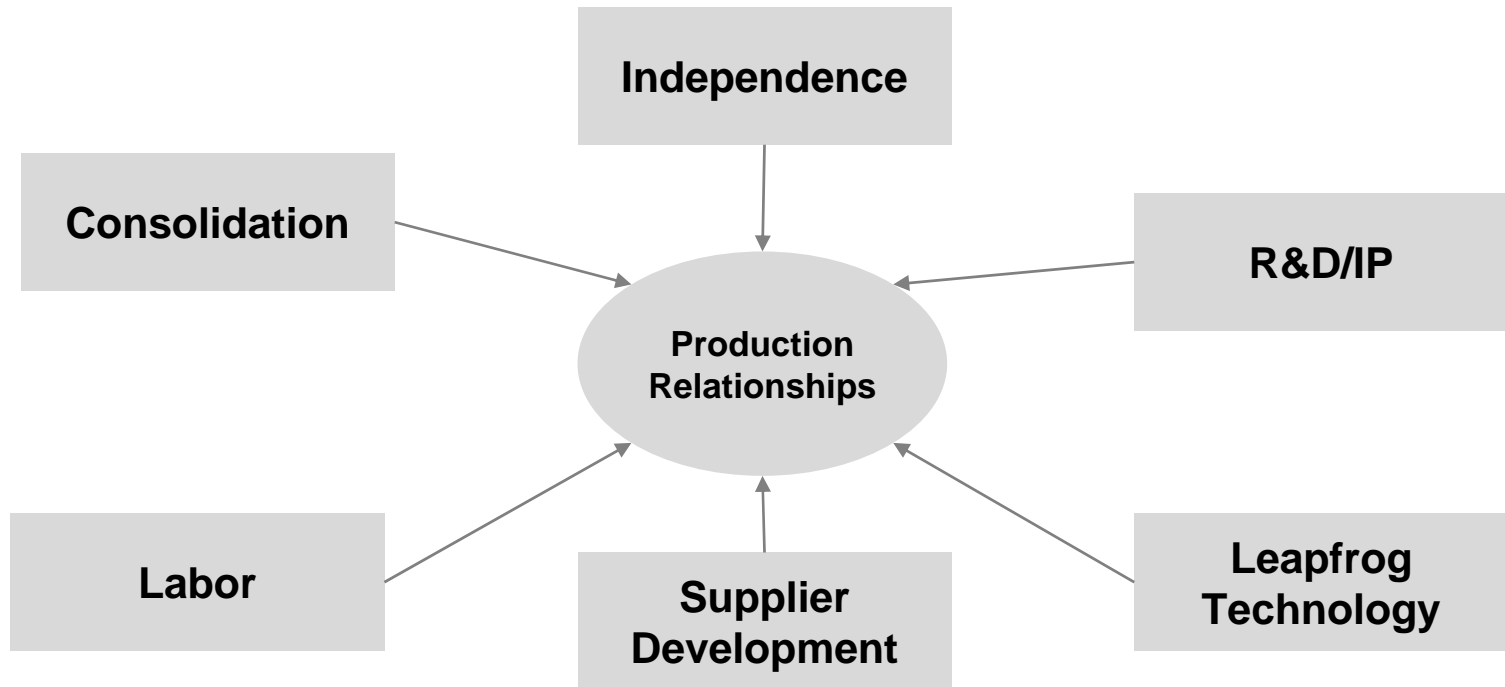
Understanding Chinese Consumers

- Research with the Chinese Academy of Social Sciences:
- Quota sample based on completed interviews with ~500 randomly-selected households per city in 2005
- 2500 households and ~7500 individuals within those households from 5 major cities in China: Shanghai, Wuhan, Shenyang, Xi'an, and Fuzhou.

Agenda

- Market Development
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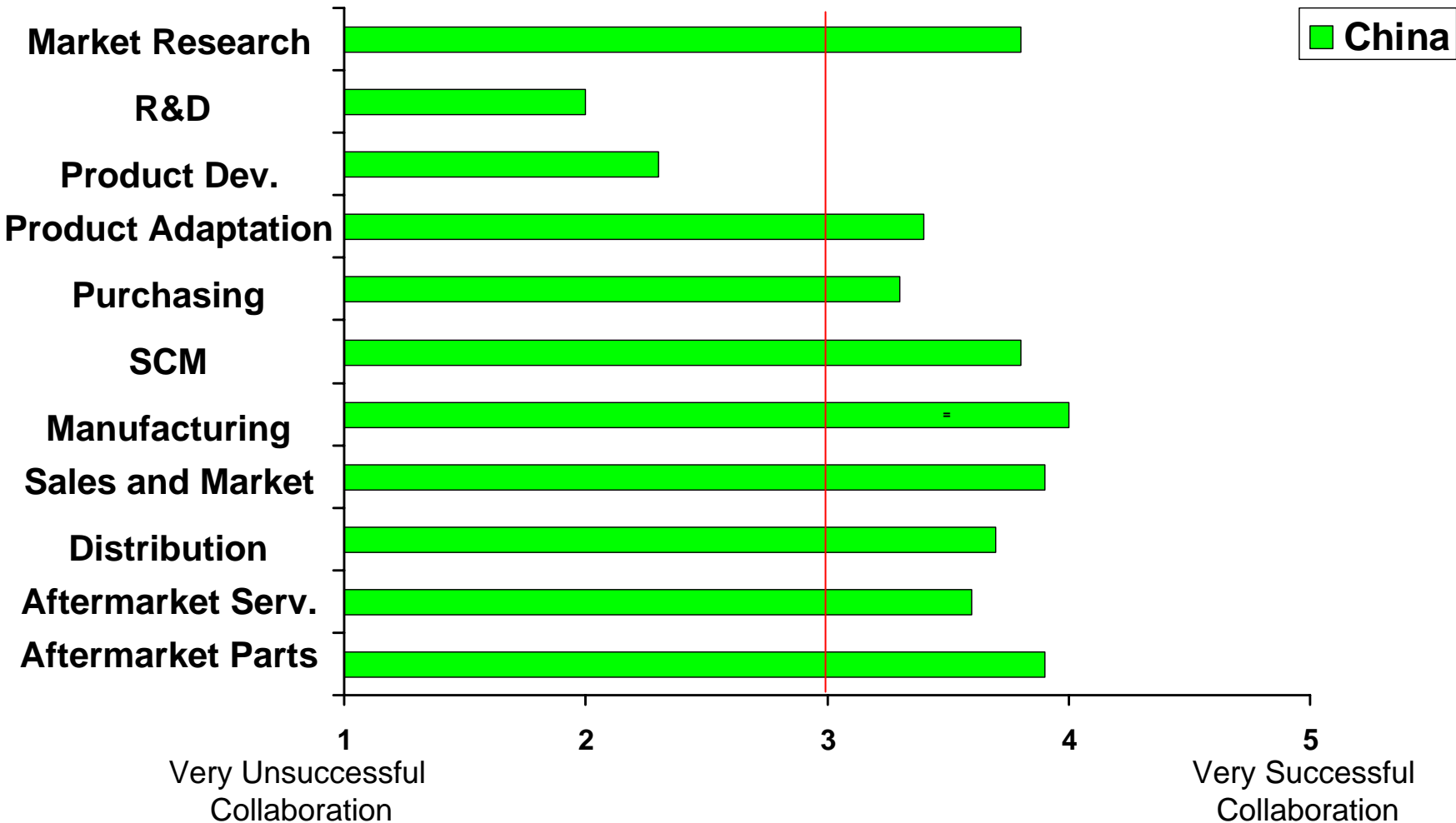
Growth in China will depend on many factors



Recent Changes: Consolidation

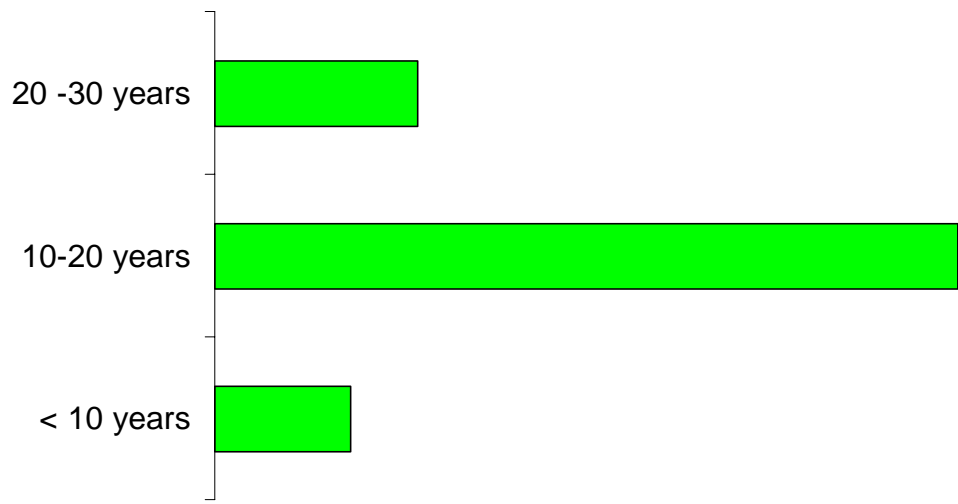
- SAIC/Nanjing
 - Independent brands: SAIC: Roewe (Rover 25/75), Nanjing: MG Brand
 - Integration of Rover engineers into SAIC

Joint Ventures have generally collaborated successfully in most areas except R&D and Product Development



Chinese interviewees see a 10 to 20 year gap between Chinese automakers and suppliers compared with world class companies

How long will it take to close the gap ?



- *“Years of accumulated knowledge is available in large international corporations. Giant gaps exist not only in the technology but also in system and production knowledge, ...”*
- *— Supplier interviewee*

Our Chinese interviewees share their plans to become world-class

- Purchase technologies or the companies that have the needed technologies
- Perform cooperative development with foreign manufacturers or suppliers
- Obtain help from foreign engineering services firms
- Work with global, tier-one suppliers

Recent Changes: Collaboration

- Shanghai Automotive Industry (Group) Corp. (SAIC) and Yuejin Automotive Group Corp. (YAC) signed a framework cooperation agreement
- Shanghai Automobile Gear Works (SAGW) signed a cooperation agreement with Brilliance Auto to jointly develop Dual Clutch Transmissions (DCT) technology.
- Chery/Chrysler; Chery/Fiat

Recent Changes: Independence

- Guangzhou Automobile Industry Group Co., Ltd. (GAIG) is expected to begin mass production of own-brand cars by the end of 2009.
- Ssangyong/SAIC to build in China (diesel engines from Ssangyong/ gas engines from SAIC)

Recent Changes: Independence

- SAIC Motors expects to put 10,000 hybrid vehicles in service by 2010.
- Half of Chery's products are expected to adopt hybrid technology in varying degrees from 2010, and over 20 percent of the products will use new energy as their fuel.

Recent Changes: Independence

- Ballard Power Systems signed an agreement with Shanghai Fuel Cell Vehicle Powertrain Co., Ltd., concerning fuel cell supply and cooperation in the development of fuel cell vehicles for demonstration and field trials in China in 2006 and 2007.

Recent Major Changes: Leadership

- New leadership at FAW
 - The first time a leader was chosen for completely business reasons rather than because of party affiliation

Why no shakeout?

- OEMs supported by local provincial governments as well as national government
- National government not sure which companies will be able to survive in the long term

Supplier Issues

- Chinese OEMs and Suppliers
 - The rush to put out new models means that independent Chinese OEMs must rely on global suppliers, but it increases their costs.
 - Chinese suppliers are learning how to meet the requirements for global OEMs, thus allowing them to become part of a global supply chain.

Supplier Issues

- Global Suppliers:
 - Selling to independent Chinese OEMs gives global suppliers more room to negotiate compared to Western OEMs.
 - Taking the lead in working with multiple independent Chinese OEMs allows global suppliers to do more part and design re-use.

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