Capability Building in China's Auto Supply Chain

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Main Findings

- Autos are unusual: integrative design
- Chinese development is slower, but could well have larger impact
- 'Tiered' system is very important
  - OEMs control the process
  - First tier are world-class, but are squeezed
  - Second tier is improving most rapidly

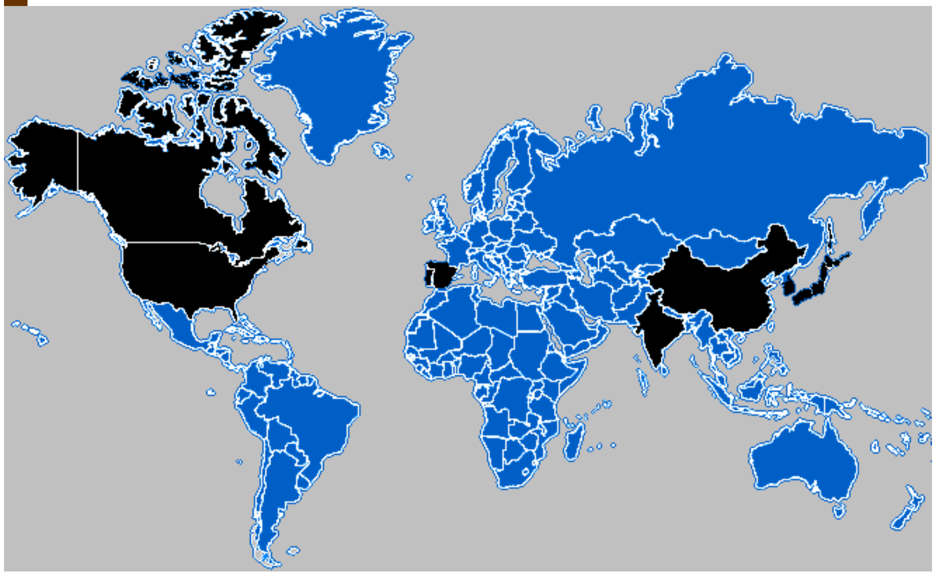
Overview

1. IMVP research project
2. What drives changes?
3. How do firms respond?
4. Importance for Canadian firms?

Our Project

- Collect information directly from plants
- OEMs, brakes, exhausts, seats
- 8 countries
- 2003, 2006-07
- Inquire about: productivity, quality, supply chain, engineering capability, relationships

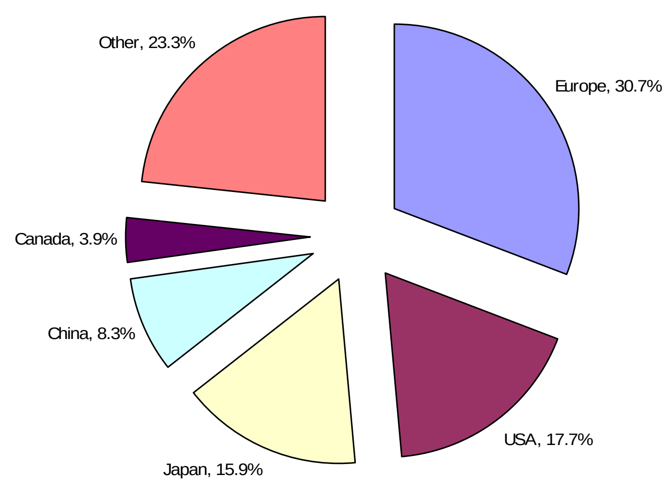
China, India, Japan, Korea, Spain, Portugal, US, Canada



Plants visited in China (2006)

OEM	Number visited	Suppliers visited	Total presence
domestic	1	2	>100,000 (13) <100,000 (9)
JV with Americans	2	6	Ford (2), GM (4), Jeep (0)
JV with Japanese	4	10	Honda (3), Nissan (2), Toyota (2), Suzuki (2), Hyundai (2), Mitsubishi (1)
JV with European	2	6	VW (2), PSA (1), Mercedes-Benz (1), BMW (1), Fiat (1)

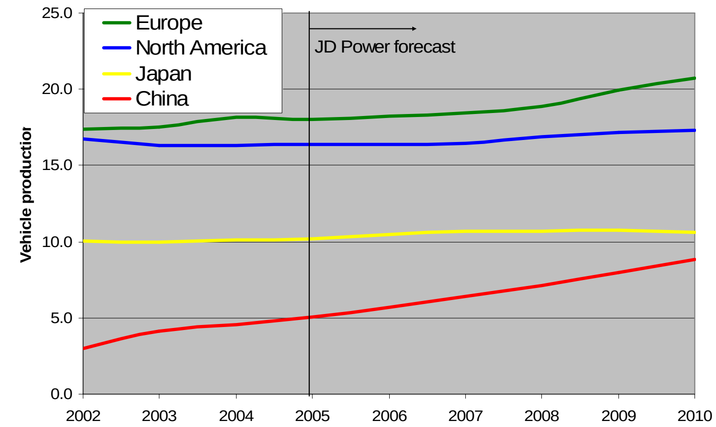
Share of world automobile production



Countries producing 1m+ motor vehicles

	2000	2005	change
USA	12,770,714	12,018,043	-5.9%
Japan	10,144,847	10,799,659	6.5%
South Korea	2,858,378	3,699,350	29.4%
China	**2,008,500**	**5,648,972**	**181.3%**
Germany	5,526,615	5,757,710	4.2%
France	3,351,929	3,547,839	5.8%
Spain	3,032,874	2,753,856	-9.2%
Canada	2,961636	**2,664,749**	**-10.0%**
Brazil	1,671,093	2,458,469	47.1%
UK	1,813,739	1,806,359	-0.4%
Mexico	1,922,889	1,691,878	-12.0%
India	866,863	1,553,194	79.2%
Russia	1,202,589	1,351,194	12.4%
Thailand	458,415	1,097,300	139.4%
Italy	1,738,315	1,038,352	-40.3%
Iran	N/A	1,005,650	N/A

Trends in automobile production



What drives changes in China?

1. Competition in final goods market is heating up
2. Quality convergence with the West
3. Same cost pressures throughout the supply chain as in the West
4. Export potential is appearing

1. Competition in final goods market

- Prod. share of JVs: 42% ('02) → 58% ('05)
- Herfindahl (JVs): 0.194 ('02) → 0.129 ('05)
- Herfindahl (all): 0.073 ('03) → 0.061 ('04)
- Capacity expansions: +29.3% ('03-'04)
- Tighter consumer credit
- Tariff cuts (WTO): 64% ('00) → 25% ('06)

What drives changes in China?

2. Quality convergence with the West

- Latest VW and Toyota retooling brought the 2006 Jetta and Camry into China at the same time as in N.A.
- Exports (JVs): Honda Fit & CR-V, Toyota engines, engines for CAMI plant

3. Cost pressures in the supply chain

Some recent headlines in the news:

"Suppliers feel bite of market slowdown"

"Cooldown chills profits"

"A full year profit decline will be inevitable in 2005"

"As margins thin and pricing competition intensifies, an efficient and developed low-cost assembly and supply base will be essential for financial success"

4. Export potential is appearing

		2000	2003	2005
China	Vehicles	$31m	$114m	$851m
China	Parts	$1,121m	$2,415m	$6,570m
US (excl. NA)	Parts	$7,166m	$5,793m	$6,843m
Japan	Parts	$17,203m	$19,833m	$25,269m

* Vehicles are HS 8703, Parts are HS 8708 (excludes engines, tires,…)

How do firms respond?

1. Cut consumer prices
   → and pay suppliers less
2. Improve productivity
   → potential is limited
3. Bring in better products
   → and insist on production quality
4. Localize production and supply base
   → to exploit low-wages
5. Localize development
   → fit vehicles to local tastes

1. lower prices

- Extreme cost pressures on suppliers
  - Seats: - 5-10%/year
  - More if localization increased
  - Reduce imports continuously: sourcing is evolving: IM > JV > Dom
- At the same time product complexity is increasing (converging to West)

How do firms respond?

2. improve productivity

- Labor productivity: improving slowly
  - Seats ’03-’06: +30-40% (2), complexity up (1)
- Plant size is increasing
  - moderate scale economies
- Wage costs: large differences between domestics and JVs, room for cost saving
- Scrap rates: more scope for improvement

How do firms respond?

3. improve vehicles

- Domestic OEMs demand more technical support from first tier (JV) suppliers (ECU)
- Defect rates (ppm) fall rapidly
  - < 20 for most exhausts
  - < 50 for 5/7 seat makers , < 20 4/7
  - Larger improvement for 2nd tier
- Tailor vehicles to local tastes
  - Requires design capabilities in supply chain

How do firms respond?

4. localize supply chain

- Speed determined by OEMs
  - Many suppliers express frustration (especially given pressures to reduce prices)
- Brake-calipers: ’02-20%, ’03-83%, ’06-93%
- Greater scope for cost reductions than by improving productivity

How do firms respond?

5. localize design

- Tied to vehicle programs
  - More potential with domestic OEMs
- Change designs for manufacturability
  - Long history in automotive sector
- Is happening, but slowly
  - Research centres are starting up
  - Very uneven, some very good 1st tier JVs produce to print
  - Key to exporting

How do firms respond?

Importance for Canadian firms?

1. Three strategies have emerged for JVs in China
2. Domestic Chinese firms should not be ignored
3. Exports from China are on their way
4. OEMs want global suppliers

1. Three strategies for JVs in China

- aggressive localization
- cautious localization
- Integrate in global supply chain

→ Each means very different things for Canadian suppliers

Importance for Canadian firms?

2. Domestic (Chinese) firms

should not be ignored:

- Source even more domestically
- Outsource much design work
- → Piggy-back on supply-chain developed by JVs
- → Provide impetus for local capability building

Importance for Canadian firms?

3. Vehicle exports are on their way

- ➔ Geely was present at the Detroit Motor Show
- ➔ Chery has teamed up with DaimlerChrysler
  (they were already in the process of setting up a dealer network)
- ➔ SAIC (partner of VW and GM in Shanghai): set up an independent venue for export
- ➔ Jiangling (Landwind) and Great Wall (Hover) have tried in Europe
- ➔ Honda exports the *Jazz* from Guangzhou

Importance for Canadian firms?

4. OEMs want suppliers with global reach

Nissan uses (only) the following criteria to put you in its 'potential suppliers' pool:

(note that their keiretsu was largely abolished)

- ❑ World class production quality at lowest cost
- ❑ World class design and redesign capabilities
- ❑ Worldwide reach (production and design)

→ Chinese presence or partners will aid on each count

Importance for Canadian firms?