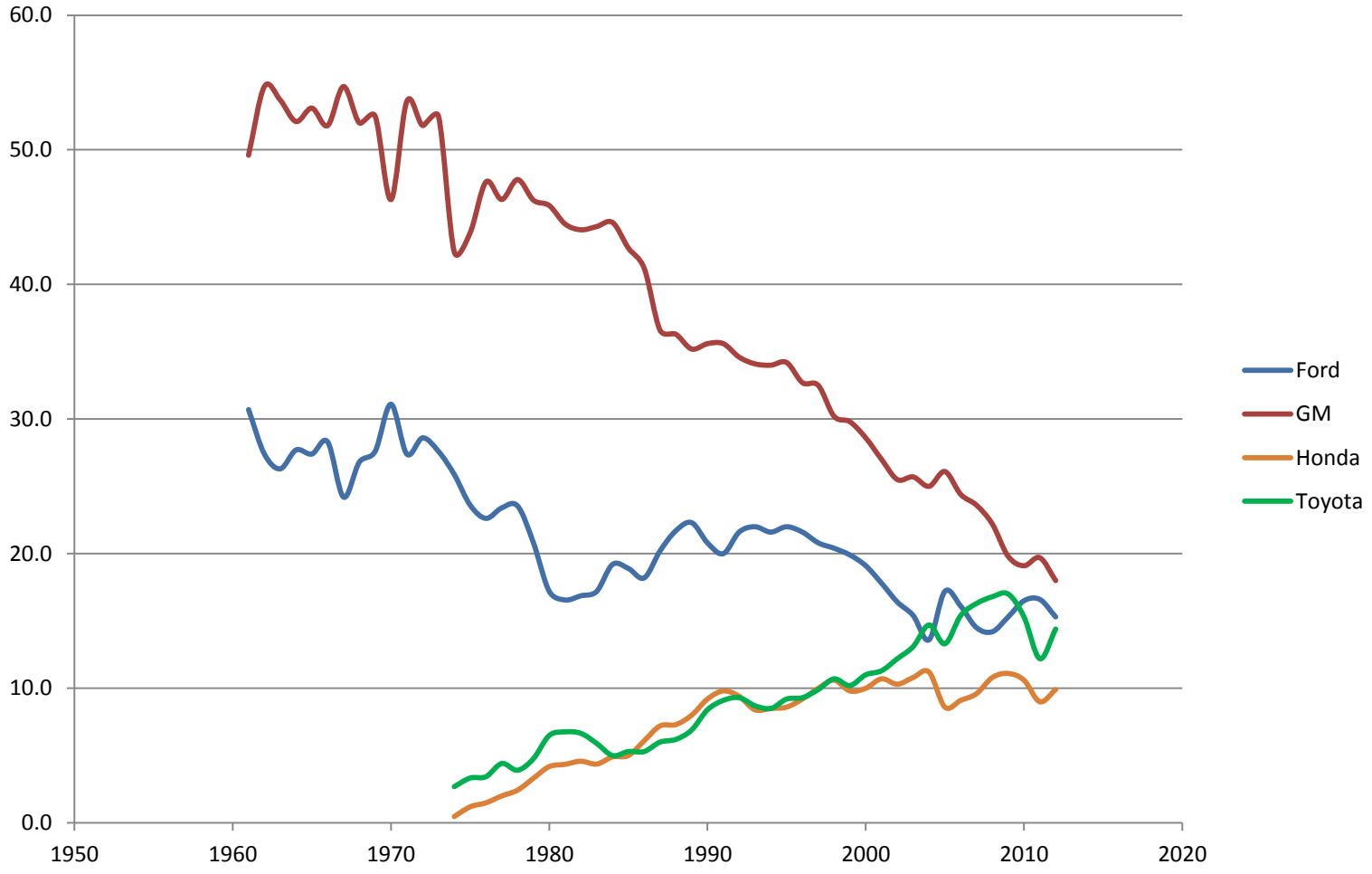
Relational Contracts & the Decline of General Motors

Rebecca Henderson
John & Natty McArthur University Professor
Harvard University
rhenderson@hbs.edu

With Susan Helper

Market Shares in the US Auto Industry



Classic Explanations

- Stupid and/or arrogant senior managers

- High Legacy costs: Labor & health care costs
  - In 2005 Legacy costs were ~$1,600/car

Our Explanation

- Legacy costs reflect GM's collapse in share
  - With 1980 market share, legacy costs ~ $800/car
- Share loss was a function of:
  - Badly designed, expensive cars that were more expensive to develop and manufacture than those of their Japanese rivals
- Which were in turn a symptom of a failure to adopt Japanese design and manufacturing techniques
  - Despite the fact that GM invested heavily in the attempt
- A failure caused by GM's inability to build the necessary relational contracts with its employees and its suppliers

The Symptoms:

- Badly designed, poor quality cars
  - “Noise, vibration, harshness, poor ride…”
  - In the late 1980s and early 1990s, identical cars produced at a GM/Toyota joint venture commanded a 20% premium with a Toyota name plate
  - In 2000 all GM cars sold on average for $3,000 less than Toyotas or Hondas of comparable size and equipment

- Significantly lower design productivity
  - In the late 1980s, the Japanese took **1.7m** adjusted engineering hours to develop at $14,000 car
  - Their US competitors took **3.2m**

Higher production costs

	GM Framingham	Toyota Takaoka
Gross assembly Hours/car	40.7	18.0
Adjusted assembly hours/car	31	16
Assembly defects per 100 cars	130	45
Assembly space/car	8.1	4.8
Average Parts Inventories	2 weeks	2 hours

Productivity at GM's Framingham Plant vs. Toyota's Takaoka Plant, 1986
Womack, Jones and Roos (1990)

A much less effective supply chain

- Supplier contributions accounted for 30% of the difference in total engineering hours/car
- Defect rates amongst parts supplied by Japanese companies were on the order of 1/10th the rate of those supplied by US firms

Why Didn’t GM Catch Up?

- Perception:
  - They didn’t know they were behind.
- Motivation:
  - They knew what to do, but they didn’t want to do it.
- Inspiration:
  - They knew what to do, but they didn’t know how to do it.
- Implementation:
  - They knew they were behind, they knew what to do, they wanted to do it and they had a clear view of what should be done, they worked like mad to do it, but they still couldn’t get the organization to get it done.

A GM Timeline

1950s	A time of dominance: GM is the largest company in the Fortune 500
1960s	The US automobile industry is a collusive oligopoly with competition focused on design features
1970s	The Japanese enter the US market: US automobile companies ignore and/or deride the threat

Problems in Perception v1: 1970s

- Japanese success is:
  - A function of unfairly low Japanese wage costs and bad working conditions
  - The odd preferences of drivers on the East and West coasts that tell us nothing about the mainstream American market
- Reports suggesting that Japanese cars are better quality and/or that their manufacturing process is more efficient are either wrong or misleading

A GM Timeline

1950s	A time of dominance: GM is the largest company in the Fortune 500
1960s	The US automobile industry is a collusive oligopoly with competition focused on design features
1970s	The Japanese enter the US market: US automobile companies ignore and/or deride the threat
1980s	First attempts to respond: Saturn & NUMI founded. A focus on “hard” systems – automation, “JIT”. GM spends more on IT and robots than Toyota’s entire market value

Problems in Perception v2: 1980s

- Japanese success is:
  - A function of the “Toyota Manufacturing System”
  - The extensive use of well designed fixtures
  - The deployment of techniques like “Just in time” using “Kanban”
  - Things one can touch and see

  - *One of the GM managers was ordered, from a very senior level—(it) came from a vice president – to make a GM plant look like NUMMI. And he said, "I want you to go there with cameras and take a picture of every square inch. And whatever you take a picture of; I want it to look like that in our plant. There should be no excuse for why we're different than NUMMI, why our quality is lower, why our productivity isn't as high, because you're going to copy everything you see. …*

Problems in Motivation?

- A weak selection environment?
  - “Soft competition”
- Collusive rents?
  - Why share them?

A GM Timeline

1950s	A time of dominance: GM is the largest company in the Fortune 500
1960s	The US automobile industry is a collusive oligopoly with competition focused on design features
1970s	The Japanese enter the US market: US automobile companies ignore and/or deride the threat
1980s	First attempts to respond: Saturn & NUMI founded. A focus on "hard" systems – automation, "JIT". GM spends more on IT and robots than Toyota's entire market value
1990s	Aggressive attempts to roll out new ways of working meet with skepticism and numerous set backs

What happened?

- Roger Smith (CEO 1981-1990) was widely considered to be a highly competent leader who invested heavily in learning about the Japanese threat
  - Three times “Man of the Year”
  - “One of the 10 best executives in the U.S.”
- 1983+
  - GM launches “Saturn” – a separate division designed to act as an experimental test bed for the latest techniques in design, production and labor relations
- 1984+
  - GM and Toyota cooperate at NUMMI to build cars – a venture explicitly designed to teach GM Japanese production techniques

Very different operating logics

GM

- Workers & suppliers are adversaries
- Knowledge is the province of experts
- Control is best exercised through specifications, tight financial metrics and the use of the spot market

Toyota

- Workers & suppliers are partners
- Knowledge is widely diffused throughout the value chain and across levels
- Control is best structured through long term relationships

Assembly as an Example

	GM	Toyota
Task Specification	Tighten the bolt	Using your left hand, standing facing left, tighten the bolt
Improving the System	A job for supervisors & manufacturing engineers	Everyone's job – most particularly front line workers
Quality is the responsibility of…	Inspectors at the end of the line	Front line workers
Metrics are	Quantifiable, short term and local	Long term, group/team wide, embedded
Data is used for	Control, Incentives	Improvement, Understanding

GM's Labor Relations

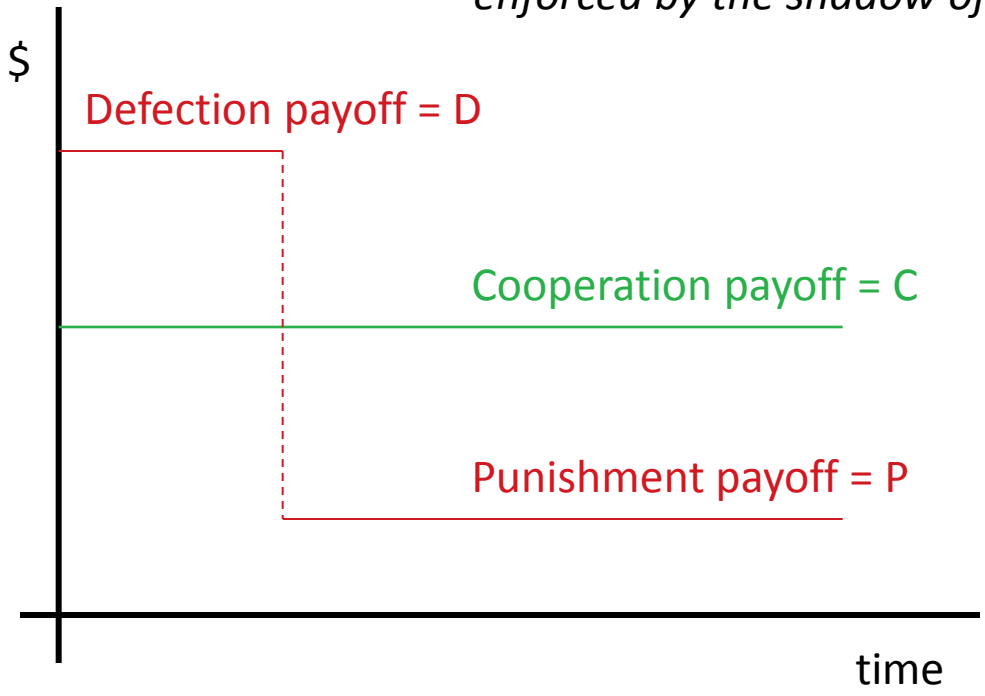
- *In the old days, we fought for job security in various ways: "Slow down, don't work so fast." "Don't show that guy next door how to do your job – management will get one of you to do both of your jobs." "Every now and then, throw a monkey wrench into the whole thing so the equipment breaks down – the repair people will have to come in and we'll be able to sit around and drink coffee. They may even have to hire another guy and that'll put me further up on the seniority list.*

Changing Logics Meant Building Trust

- Long term Incentives
  - Employment security
  - Merit based promotions
  - Reduced status distinctions
  - Performance review
- Skills Development
  - Skills training
  - Selective recruiting
  - Flexible job assignment
- Dense communication & Local problem solving
  - Teamwork
  - Communication
  - Information sharing
  - TQM/Process control

Modeling “Trust”: Relational Contracts

Contracts relying on subjective measures enforced by the shadow of the future



C, C, C, C, … vs. D, P, P, P, …

Why did GM find this so hard?

- Clarity: We don’t understand the contract
  - What does “cooperation” look like? Defection? Punishment?
  - What are my payoffs? What you are yours?

Cooperation, Defection & Punishment in the use of the Andon cord

	Action		
Agent	Cooperate	Defect	**Punish**
Worker	1. Pull the andon cord when worker sees a problem 2. Offer suggestions on improvements to the production process (that might make workers' job redundant)	1a. Never pull the andon cord (out of fear of being punished) 1b. Pull the andon cord to stop the line and avoid work when there is no true problem 2. Keep improvements hidden from co-workers and managers	**1. Sabotage the manufacturing line** **2. Pull andon cord frequently** **3. Engage in absenteeism**
Supervisor	**1. Recognize potential problem when andon cord pulled and aid in problem-solving** **2. Implement improvements without necessarily cutting jobs** **3. Accept authority of work teams to make some shop-floor decisions**	**1. Punish workers for pulling andon cord (even appropriately)** **2. Cut workforce once they discover potential innovations** **3. Interfere in work teams and override their decisions**	**1. Penalize workers (financially or socially) for pulling andon cord** **2. Remove the andon cord**

Why did GM find this so hard?

- Clarity: We don't understand the contract
  - What does "cooperation" look like? Defection? Punishment?
  - What are my payoffs? What you are yours?
- Credibility: I don't believe you will follow through
  - How do we distinguish "downturn" from "defection"?
  - Do the local managers have the same incentives as the CEO?
  - Building standard operating procedures that support the new ways of working

In Summary: Change is hard

- Perception:
  - We don’t know we’re behind.
- Motivation:
  - We know what to do, but we don’t want to do it.
- Inspiration:
  - We know we’re behind, but we don’t know what to do.
- Implementation:
  - We know we’re behind, we have a clear view of what should be done, we are working like mad to do it, but we still can’t get the organization to get it done
  - Because we need to build new relational contracts

Further Research

- Might “purpose driven” firms outperform because they find it easier to build – and to change – relational contracts?