Is it possible for one competitor to lower its service quality while higher their price?

High Speed Railway vs Conventional Railway

IO pre, Viola from Poly

Transport market share is strongly affected by pricing, schedule and service.

Island Line: Every 2 minutes
Tuen Ma Line: Every 6 minutes
Bus B1: Every 10 minutes
Bus B2: Every 30 minutes

JAPANESE NATIONAL RAILWAYS

THE FIGURES SHOWN ALONG THE LINES INDICATE TABLE NUMBERS FOR THE SCHEDULES

Service getting worse off

	Shinkansen	Conventional[1]
Time	4h	6h30m
Fee	2280 JPY	1580 JPY
Trains per day	60	35(day train + night train)

1964 First Opened

	Shinkansen	Conventional [No direct service] [Through 5 transfers]
Time	min. 2h	~9h
Fee	13,620JPY	~15000JPY
Trains per day	320	0 direct, but many through transfer

2020

1 【新幹線開業前夜】1964年9月の時刻表から読む東海道本線, https://tetsumin.com/196409-tokaido

Formulate the Question: How will they compete?

Company A [Shinkansen]	Higher Technology
Company B [Conventional]	Lower Technology

Why is this interesting?

From the basic assumption:
2 stage game

Company A
[Shinkansen]

Higher Technology

First Stage:
Company A choose service quality and price
[High quality and high price]

Company B
[Conventional]

Lower Technology

Second Stage:
Company B choose service quality and price [How will it choose?]

1. **Relatively Higher quality and low quality to compete?**
   or
2. **Lower quality and lower quality to avoid competition?**

From the basic assumption: 2 stage game

logy

Company B [Conventional]

Lower Technology

1. Relatively Higher quality and low price to compete?
   or
2. Lower quality and lower price to avoid competition?

However empirical fact is…

Lower quality, Higher price,
Till disappear [Exit the market]

Why this result?

Back to the setting:

(1) Does cost matter?

Company A [Shinkansen]	Higher Technology	High fixed cost	High maintenance cost
Company B [Conventional]	Lower Technology	Low fixed cost	High maintenance cost

Hypothesis (1): Need sufficient ridership to cover the maintenance cost?
Hypothesis (1.x): Maintenance cost depends on service quality C(q)?

Back to the setting:

(2) Internal or external competition?

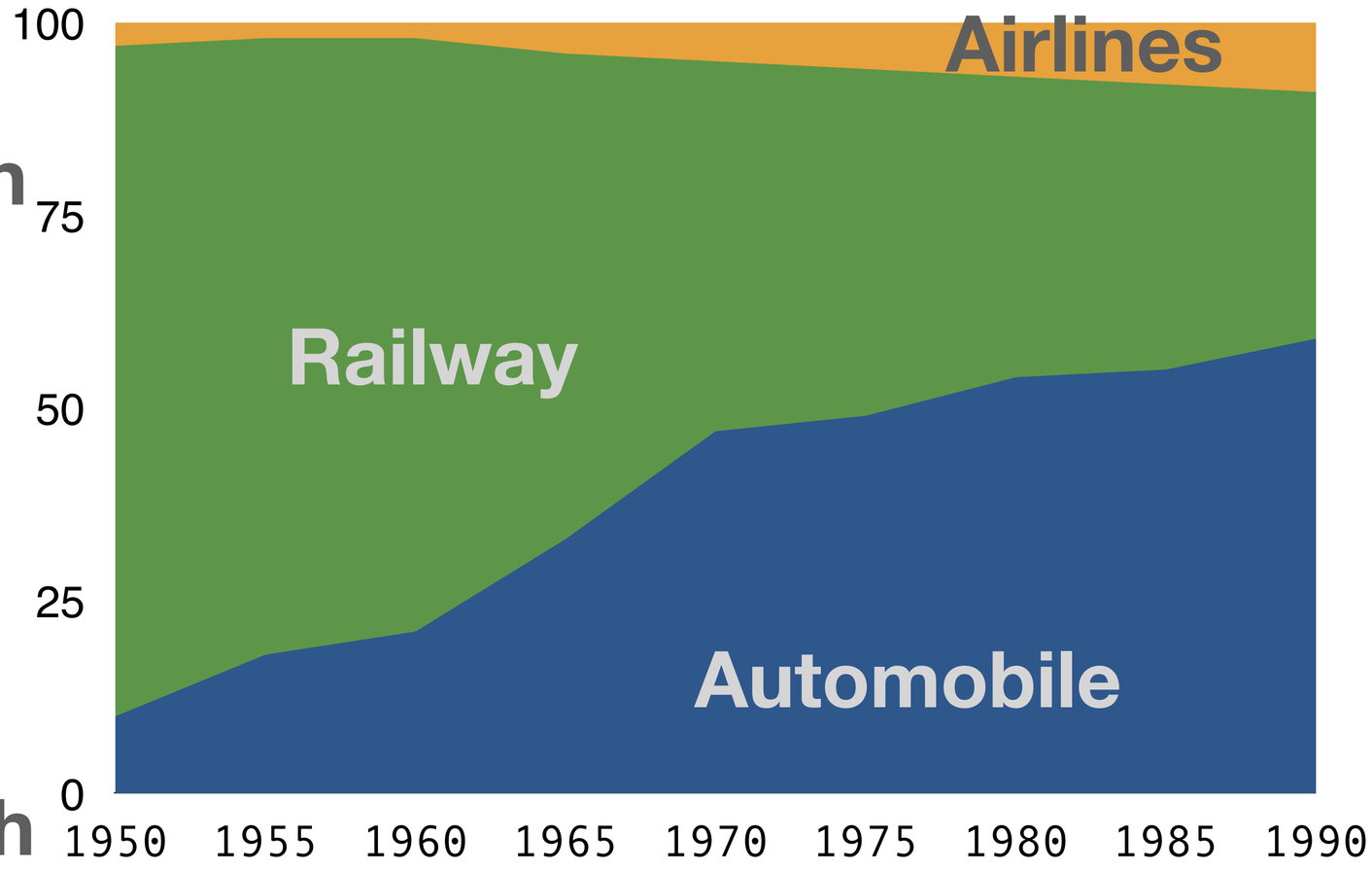
~~Company~~ Department A [Shinkansen]	Higher Technology
~~Company~~ Department B [Conventional]	Lower Technology

Hypothesis (2): The JR company "push" customers to use more expensive service to maximize their revenue by decrease the quality and decrease the supply

Was that possible?

Railway as a whole are facing external competition with **automobile** and **airlines**!

Conventional Line Resources should be used sufficiently to compete with **automobile** and **airlines**



Trend in modal Split of Various Means of Passenger Transportation

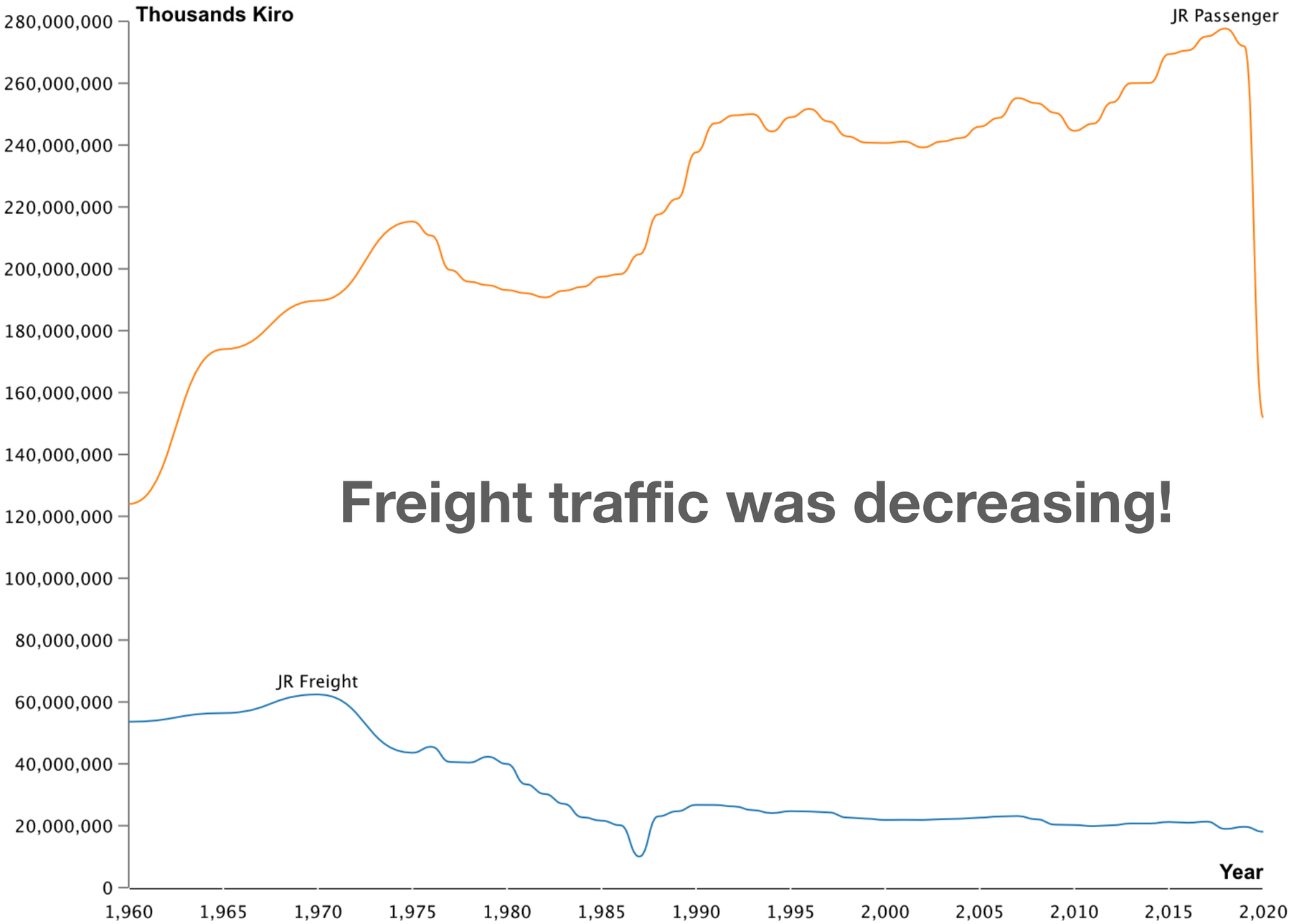
Back to the setting:

(3) Other choice for conventional line?

Conventional Line Service choices:	Long distance transport	Local transport	Freight Transport
Expect Change:	–	+	+

Hypothesis (3): After the advent of Shinkansen, some transporting resource of conventional line is freed

We would expect that the freight transport increases


Thousands Kiro
280,000,000
260,000,000
240,000,000
220,000,000
200,000,000
180,000,000
160,000,000
140,000,000
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
JR Passenger
JR Freight
Freight traffic was decreasing!
Year
1,960
1,965
1,970
1,975
1,980
1,985
1,990
1,995
2,000
2,005
2,010
2,015
2,020

Back to the setting:

(3) Other choice for conventional line?

Conventional Line Service choices:	Long distance transport	Local transport	Freight Transport
Expect Change:	–	+	+
Actual Change:	–	+	–

Hypothesis (3.x): Local Transport is more profitable?

However, if Local Transport is indeed more profitable, why it only held a smaller market share than after?

JNR was spliced into 6 companies for regional operation [For more efficient local train service?]

Shinkansen was gradually upgrading its service [speed, schedule]

More complicated …

Is JR a special case?

Automobile industry was in developing

JNR conventional line network was also extending by years

What is in common

Conventional train service in **France** was **gradually disappearing** after the introducing of **TGV** [Parallel High Speed Railway]

CR [Chinese Railway] is gradually **lifting** conventional train **service fare** [**traditional train** replaced by **CR200J**, same service but more expensive] while **lowering their service quality** [decreasing the service frequency]

Back again to the setting

Consider the divisibility of railway resources

Company A [Shinkansen]	Higher Technology	High fixed cost	High maintenance cost	indivisible
Company B [Conventional]	Lower Technology	Low fixed cost	High maintenance cost	divisible

Hypothesis (1.x.z): Divisibility gives conventional line the flexibility to operate

But how to model that?