



Opposing Opinion of High-Speed Railway Is Helpful for Poverty Alleviation

Public Finance

2023

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01

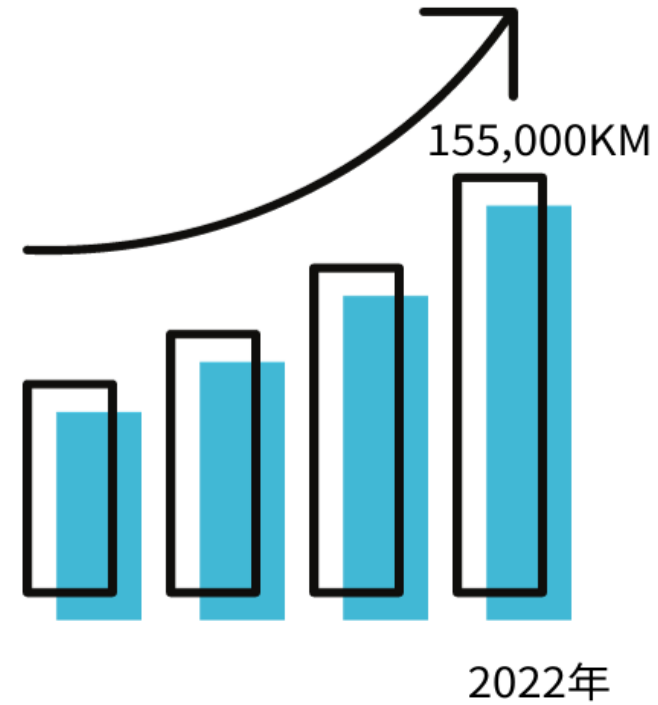
Background



The Great Success, but for Peripheral Regions...?



Figure: China's high-speed rail network in 2020



By the end of 2022, China's railway length was reported to reach **155,000 km**, including 42,000 km of high-speed railway. In the new era, the length of a high-speed railway has increased by **351.4%**, and the world's largest high-speed railway network has been built.

02

Analysis



Outline

Two Major Aspects

Before the development of high-speed railway

rent-seeking + highway IV figure

heavy financial burden

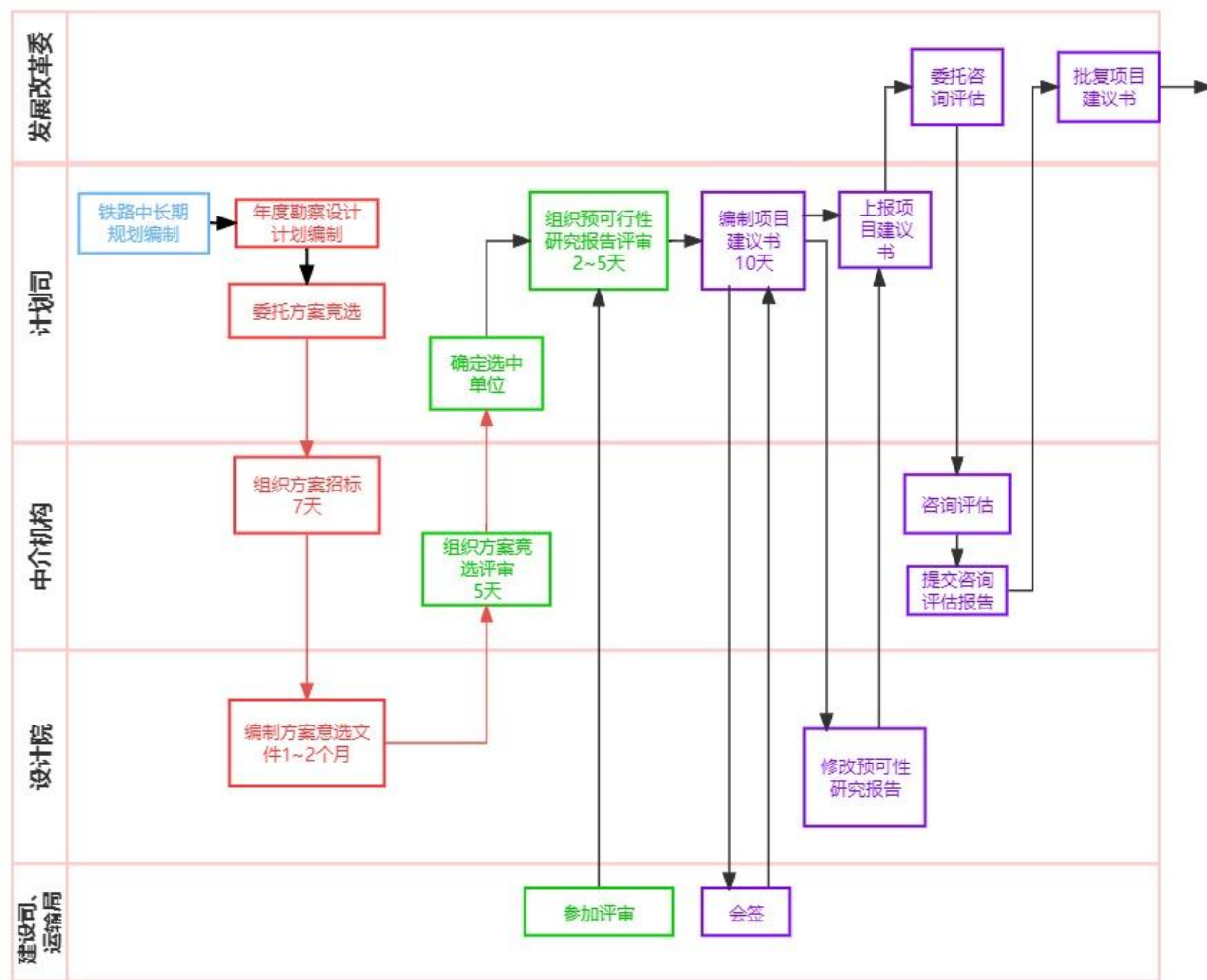
After the development of high-speed railway

Urban siphon root: Improve the convenience of traffic

Considering the direct impact of high-speed fail
- limited usage for people from left-behind areas

The Crowded-Out Green Trains

Before: Hard to Get Quota



Corruption?



Source: Faber RES 2014

Figure: Flow chart of railway capital construction project (Project Proposal Stage)

Before: Heavy Finance Burden

- High-speed rail construction is **not** within the **poverty alleviation program**.

（二）“十二五”目标

- 干线公路**框架基本形成。
- 农村公路通畅**水平显著提升。
- 客货运输服务水平明显提高，班车服务城乡的范围进一步扩大。
- 公路安全水平**和应急保障能力进一步提高。

- The construction and operation of a high-speed rail system requires a **large amount of capital** and poor areas often could not afford such investment.

集中连片特困地区公路交通主要发展指标

指 标	2010年	2015年	2020年
具备条件的县城通二级及以上公路比例（%）	83.4	98	100
国道二级及以上公路比例（%）	49.6	65	80
国道沥青（水泥）混凝土路面铺装率（%）	54.5	70	85
具备条件的乡镇通沥青（水泥）路比例（%）	95.4	100	100
具备条件的建制村通沥青（水泥）路比例（%）	57.5	85	100
乡镇拥有等级客运站比例（%）	46.8	85	100
建制村建有汽车停靠点（招呼站、候车亭牌）比例（%）	18.2	80	100
具备条件的乡镇客运班车通达率（%）	94.6	100	100
具备条件的建制村客运班车通达率（%）	67.0	85	100

Source: Outline of the Planning for Poverty Alleviation in Transport Construction in Contiguous Poverty-stricken Areas (2011-2020)

After: Urban Siphon (虹吸)

- The high-speed railway brings convenience to commute
- Less developed areas
 - Young labors are easier to leave
 - More economic activity (young labors) was shifting to the cities



Source: Imaginechina

全国留守儿童

6103万



每5名儿童中就有一个是留守儿童

留守儿童



37.7%



21.88%

<https://www.zcool.com.cn/work/ZMzAwMzIOMDA=.html>

Data in 2018

After: Urban Siphon

- **People who move to cities**

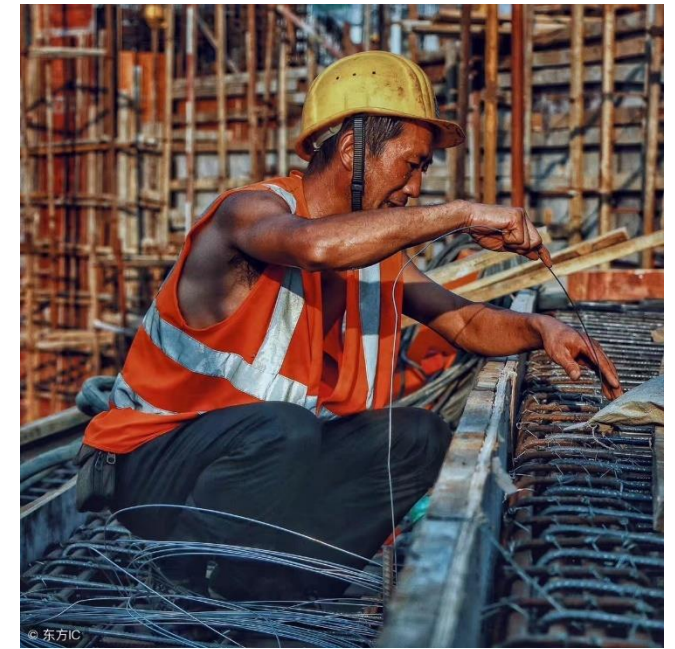
Those who want to shake off poverty are **not better off** in the short term

- **Income & Expenditure perspective**
 - the saturated city labor markets
 - high expenditures, living costs in the city
- **Social services perspectives**
 - lacking hukou
- **not neglectable discrimination**

2022年冬，我在临沂城送外卖

邢斌

Delivering work is very hard...



Source: Imaginechina



Figure: Delivery guy in the rain

Empirical Evidence

Table 2: The Impact of High-Speed Rail on County Economic Outcomes (OLS)

	Dependent Variables					
	Ln GDP		Ln GDP Per Capita		Ln Fixed Asset Investment	
	2005-2009	2002-2009	2005-2009	2002-2009	2005-2009	2002-2009
HSR04*After		-0.04 (0.03)		-0.08 -0.07		-0.07 (0.05)
HSR07*After	-0.04*** (0.01)	-0.05*** -0.02	-0.05*** (0.01)	-0.05*** -0.01	-0.10** (0.04)	-0.11*** (0.04)
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Province*Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.99	0.98	0.92	0.91	0.89	0.90
Observations	4,689	7,498	4,614	6,431	3,953	6,327

GDP decreases

GDP and per capita GDP in peripheral counties declined by 4-6 percent, about 336 million to 503 million yuan per year.

Table 5: The Impact of High-Speed Rail on County Economic Outcomes (2SLS)

	Dependent Variables					
	Ln GDP		Ln GDP Per Capita		Ln Fixed Asset Investment	
	2005-2009	2002-2009	2005-2009	2002-2009	2005-2009	2002-2009
HSR04*After		-0.08** (0.03)		-0.06 (0.09)		-0.10 (0.07)
HSR07*After	-0.04*** (0.01)	-0.04*** (0.01)	-0.06*** (0.01)	-0.05*** (0.01)	-0.10*** (0.04)	-0.11*** (0.04)
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Province*Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.99	0.98	0.92	0.91	0.89	0.90
Observations	4,689	7,498	4,614	6,431	3,953	6,327

Empirical Evidence

Table 3: Network Connection Effects among Peripheral Counties

Dependent Variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		OLS	OLS	LCP IV	LCP IV	Euclid IV	Euclid IV	Both IVs	Both IVs	Both IVs
		No Controls	With Controls	No Controls	With Controls	No Controls	With Controls	No Controls	With Controls	With Controls
Change ln(IndGVA) 1997-2006	Connect	-0.0529 (0.0418)	-0.0356 (0.0499)	-0.284** (0.118)	-0.304** (0.145)	-0.246* (0.148)	-0.287* (0.154)	-0.272*** (0.0965)	-0.297*** (0.108)	-0.297** (0.121)
	Obs	1302	1280	1302	1280	1302	1280	1302	1280	1280
	R ²	0.242	0.255							
Change ln(NonAgGVA) 1997-2006	Connect	-0.0411 (0.0335)	-0.0266 (0.0375)	-0.243** (0.0983)	-0.252** (0.117)	-0.270** (0.122)	-0.296** (0.131)	-0.251*** (0.0877)	-0.268*** (0.0969)	-0.268*** (0.0946)
	Obs	1285	1262	1285	1262	1285	1262	1285	1262	1262
	R ²	0.27	0.284							
Change ln(GovRevenue) 1997-2006	Connect	-0.0497* (0.0285)	-0.0914*** (0.0295)	-0.0542 (0.109)	-0.223* (0.120)	-0.175 (0.117)	-0.315** (0.132)	-0.0926 (0.0893)	-0.257*** (0.0996)	-0.257*** (0.100)
	Obs	1290	1285	1290	1285	1290	1285	1290	1285	1285
	R ²	0.275	0.334							
Change ln(GDP) 1997-2006	Connect	-0.00204 (0.0245)	-0.0144 (0.0276)	-0.106 (0.0830)	-0.177* (0.0942)	-0.178 (0.112)	-0.254** (0.116)	-0.127 (0.0824)	-0.203** (0.0886)	-0.203** (0.080)
	Obs	1297	1272	1297	1272	1297	1272	1297	1272	1272
	R ²	0.228	0.264							
Change ln(AgGVA) 1997-2006	Connect	-0.00344 (0.0210)	-0.00790 (0.0220)	0.000194 (0.0631)	-0.0252 (0.0789)	-0.0305 (0.0672)	-0.0597 (0.0728)	-0.00865 (0.0545)	-0.0371 (0.0630)	-0.0371 (0.0654)
	Obs	1335	1313	1335	1313	1335	1313	1335	1313	1313
	R ²	0.202	0.208							

Source: Faber RES 2014

Direct Impacts: Low Demand

PART 01

Although high-speed rail is able to save a lot of time, the fare of high-speed rail is **unaffordable** for poor areas.

PART 02

The axle load and line matching of high-speed EMUs determine that high-speed rail **cannot able to carry goods** on a large scale.

High Ticket Price

Income of rural residents in poverty-stricken areas in 2019:

2019年贫困地区农村居民收入情况

指 标	收入水平 (元)	名义增速 (%)
人均可支配收入	11567	11.5
工资性收入	4082	12.5
经营净收入	4163	7.1
财产净收入	159	16.5
转移净收入	3163	16.3

Source: NBSPRC

Based on the working day of eight the average hourly income of the population in poor areas is 5.7835 yuan.

High Ticket Price

High-speed railway fare:

Rail Lines	Starting and Ending Points	Bullet Trains	
		Firs class	2nd class
衡柳线	衡阳东 - 柳州	0.49	0.31
柳南客专线	柳州 - 南宁	0.59	0.37
南广线（南宁 - 梧州南）	南宁 - 梧州南	0.49	0.31
南广线（梧州南 - 广州南）	梧州南 - 广州南	0.49	0.31
邕北线	南宁东 - 北海	—	0.31
钦防线（钦州北 - 防城港北）	钦州北 - 防城港北	—	0.31
南昆客专线	南宁 - 昆明南	—	0.31
昆玉河线（昆明南 - 玉溪）	昆明南 - 玉溪	0.8	0.5
广昆线	昆明 - 广通北	—	0.37

票种	票价率[元/（人 公里）]
硬座客票 Hard-seat tickets	0.05861（基础）
软座客票 Soft seat tickets	0.11722
市郊客票 City ticket	单程 0.04982

Since 2019’ s CPI with 2009 as the base year is about 128.16, we can calculate the lowest cost for a 300km mileage trip between these two alternative modes:

$300 \times 0.31 - 300 \times 0.05861 \times 1.2816 = 70.4656$

The extra time cost of riding the green train:

$5.7835 \times (10 - 1.5) = 49.1597$

$49.15975 < 70.4656$

Source:12360 CHINA RAILWAY

NO train freight Function

In addition to cheap fares, the Green Train also offers the convenience of transporting goods.

- Goods carried by small traders and hawkers.
- A carriage dedicated to the transportation of goods, such as coal, apples



Source: Qian Haifeng "Green Trains "

03

Conclusion



Suggestions



Source: <https://sichuan.scol.com.cn/>

- **Central government**
protect green train lines
- **Local government**
emphasize on the local economic vitality

Reference

- [1] Yu Qin. “No county left behind?” The distributional impact of high-speed rail upgrades in China. *Journal of Economic Geography*, 2017, 17(3):lbw013.
- [2] Wang, Z. Ma, Xiao. (2022). *Localized bargaining: the political economy of China's high-speed railway program*. Oxford University Press. ARPE 1, 9 (2022).
- [3] Benjamin Faber; Trade Integration, Market Size, and Industrialization: Evidence from China's National Trunk Highway System, *The Review of Economic Studies*, Volume 81, Issue 3, 1 July 2014, Pages 1046–1070



Thank You !