Ping Fan

Ph.D. Student in Economics, University of Malaya

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Dear Workshop Organizers,

I am writing to apply for the Development Economics and Networks Workshop for early-career researchers. I am a Ph.D. student in Economics at the University of Malaya, and my current research examines urban-rural income inequality, market access, transport networks, and structural transformation in China.

My working paper, *Transport Networks, Market Access, and Urban-Rural Income Convergence in China*, uses a province-year panel of 31 Chinese provinces from 2000 to 2023 to study whether transport networks are associated with changes in provincial urban-rural income gaps. The paper measures the income gap as the ratio of urban residents' per capita disposable income to rural residents' per capita disposable income, and examines the role of transport density, GDP per capita, urbanization, agricultural share, and human capital using province and year fixed effects.

This workshop is especially relevant to my research because it brings together scholars working on development economics, networks, and empirical research design. I would greatly benefit from feedback on how to measure transport-based market access, how to distinguish local network effects from national development trends, and how to sharpen the mechanisms linking spatial networks to rural income growth and inequality.

I have included my current CV, a short statement of motivation and research interests, and my working paper materials for consideration. If shortlisted, the following faculty members may provide recommendation letters:

- Dr. Elya Nabila Abdul Bahri, Senior Lecturer, Department of Economics, Faculty of Business and Economics, Universiti Malaya. Email: elyanabila@um.edu.my.
- Assoc. Prof. Dr. Goh Lim Thye, Department of Economics, Faculty of Business and Economics, Universiti Malaya. Email: ltgoh@um.edu.my.

Thank you very much for considering my application. I would be honored to participate in the workshop and to receive feedback from the organizers and participants.

Sincerely,

Ping Fan

PING FAN

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EDUCATION

University of Malaya | Ph.D. in Economics, Feb 2023-Present

QS World University Ranking 2027: 56.

Completed Doctoral Coursework: Research Methodology; Reading Course; Selected Topics in Economics; Theories and Issues of Development.

University of Malaya | M.A. in Economics, Sep 2018-Sep 2020

Universiti Utara Malaysia | Bachelor of Finance with Honours, Sep 2014-Aug 2018

RESEARCH INTERESTS

Development Economics; Urban-Rural Inequality; Transport Networks; Market Access; Chinese Economy; Applied Microeconometrics.

WORKING PAPER

Transport Networks, Market Access, and Urban-Rural Income Convergence in China

- Uses a province-year panel of 31 Chinese provinces from 2000 to 2023 to study the relationship between transport density and the urban-rural income ratio.
- Examines whether transport networks and market access are associated with urban-rural income convergence, controlling for GDP per capita, urbanization, agricultural share, human capital, province fixed effects, and year fixed effects.

ACADEMIC CONFERENCES AND WORKSHOPS

- 2025: Invited to participate in government-organized programs for overseas doctoral students, including the Beijing Visit Program for Overseas Elite University Ph.D. Students and the Shenzhen doctoral talent program.
- 2023 and 2024: Participated in World Bank research exchange meetings in Kuala Lumpur.
- 2023: Participated in the National Financial Literacy Symposium.

TEACHING EXPERIENCE

Yanching Institute of Technology | Lecturer in Finance, Mar 2021-May 2021

- Taught undergraduate finance courses and received recognition as an Outstanding Lecturer for the semester.
- Supervised more than 20 undergraduate finance theses and reviewed more than 30 theses as a thesis committee member.

PROFESSIONAL EXPERIENCE

Harvest Fund Management, Beijing Headquarters | Manager, Strategic Client Department, Jun 2025-Oct 2025

- Led institutional client development across multiple Chinese regions, covering more than 20 institutional clients and securing cooperation with 15 clients.
- Delivered more than 30 product roadshows and supported product implementation for institutional clients.

Shanghai Black Wing Asset Management Co., Ltd., Beijing Headquarters | Channel Director, Apr 2022-Nov 2022

- Managed distribution channels with major banks and securities firms and supported several fund launches across North, Southwest, and Central China.

Harvest Fund Management, Beijing Headquarters | Wealth Manager, May 2021-Jan 2022

- Prepared more than 200 fund diagnostic reports and supported institutional client development in Beijing.

Capital Securities | Investment Banking Project Assistant, Oct 2020-Feb 2021

- Supported IPO due diligence, project initiation reports, prospectus preparation, industry analysis, and financial statement review.

SKILLS AND CERTIFICATIONS

Technical Skills: Wind, Tonghuashun, EViews, SPSS, Bloomberg, Python, SQL, and Microsoft Office.

Certifications: Securities Qualification Certificate; Fund Qualification Certificate; CFA Level II passed; FRM Part I passed.

Languages: IELTS 7; GRE 328; fluent Malay; strong English reading, writing, listening, and speaking skills.

Statement of Motivation and Research Interests

Ping Fan

I am a Ph.D. student in Economics at the University of Malaya. I am applying to the Development Economics and Networks Workshop because my current research lies at the intersection of development economics, spatial networks, and inequality in China. My doctoral work studies how changes in market access and structural transformation shape provincial urban-rural income gaps. I am especially interested in whether transport networks connect rural households to urban labor and product markets, and under what conditions infrastructure investment contributes to rural income convergence.

My working paper, *Transport Networks, Market Access, and Urban-Rural Income Convergence in China*, uses a province-year panel of 31 Chinese provinces from 2000 to 2023. The paper examines the relationship between transport density, measured as road mileage divided by provincial land area, and the urban-rural income ratio, defined as urban residents' per capita disposable income divided by rural residents' per capita disposable income. The analysis controls for GDP per capita, urbanization, agricultural share, human capital, province fixed effects, and year fixed effects.

The preliminary evidence suggests a strong negative association between transport density and urban-rural income gaps in specifications with province fixed effects. However, this relationship becomes statistically insignificant after controlling for year fixed effects and additional province-year controls. I view this pattern as an important motivation for improving the paper rather than as a final conclusion. It suggests that a simple measure of road density may capture national infrastructure trends, and that the next stage of the project should develop a more theoretically grounded measure of market access based on destination market size, distance, and transport costs.

The workshop would be especially valuable for me because it brings together researchers working on networks, development, and empirical research design. I would benefit from feedback on how to measure spatial network exposure, how to separate local market-access effects from national development trends, and how to sharpen the mechanisms linking transport infrastructure to rural income growth. I would also welcome advice on how to position the paper within the broader literature on networks, labor-market access, and structural transformation.

More broadly, my research interests include development economics, urban-rural inequality, transport networks, market access, Chinese economic development, and applied microeconometrics. I hope to develop a research agenda that uses Chinese data to study questions of broad relevance to development economics: how households in rural areas gain access to markets, how spatial and social networks shape economic opportunity, and how policy can reduce inequality during structural transformation.

Transport Networks, Market Access, and Urban-Rural Income Convergence in China

Working Paper Draft for Workshop Presentation

Abstract

This paper studies whether transport networks shape urban-rural income convergence in China. I use a province-year panel covering 31 Chinese provinces from 2000 to 2023 to examine the relationship between transport density and the provincial urban-rural income ratio. The dependent variable is the ratio of urban residents' per capita disposable income to rural residents' per capita disposable income, with the baseline specification using the log of this ratio. Transport density is measured as road mileage divided by provincial land area. The analysis controls for GDP per capita, urbanization, agricultural share, and human capital, and includes province and year fixed effects. Preliminary results show a strong negative association between transport density and the urban-rural income ratio in specifications with province fixed effects. However, this association becomes statistically insignificant after controlling for year fixed effects and additional province-year controls, suggesting that the simple transport-gap relationship partly reflects common national trends. The paper therefore motivates a richer market-access interpretation: transport networks may matter not simply through local road density, but through effective access to urban labor and product markets.

1. Introduction

China's urban-rural income gap remains one of the central distributional issues in its development process. Although the gap has narrowed in some periods, large differences remain between urban and rural residents' income. Existing explanations emphasize human capital, industrial structure, hukou restrictions, regional development policies, and the pace of structural transformation. This paper studies a complementary mechanism: whether transport networks improve rural access to urban and non-agricultural markets, thereby affecting urban-rural income convergence.

The central question is whether provinces with denser transport networks experience lower urban-rural income gaps. Transport infrastructure can affect rural households through several channels. Better road networks may reduce travel costs, improve access to urban employment, increase market access for agricultural and rural non-agricultural products, and connect rural areas to broader regional demand. If these channels are important, transport networks may raise rural incomes relative to urban incomes and contribute to urban-rural convergence.

At the same time, the relationship is empirically challenging. Transport expansion in China occurred alongside rapid economic growth, urbanization, industrial upgrading, and national policies aimed at rural development. A simple negative correlation between road density and urban-rural income gaps may therefore reflect broader time trends rather than the independent role of transport networks.

2. Data

The analysis uses a balanced province-year panel of 31 Chinese provinces from 2000 to 2023, with 744 observations. The dependent variable is the provincial urban-rural income ratio, defined as urban residents' per capita disposable income divided by rural residents' per capita disposable income. The baseline dependent variable is the log of this ratio, which is equivalent to the log income gap between urban and rural residents.

The main explanatory variable is transport density, measured as road mileage divided by provincial land area. This variable captures the density of the provincial road network. The main controls include log GDP per capita, urbanization rate, agricultural share, and human capital. Agricultural share is measured as the first industry's share of provincial GDP. Urbanization captures the share of the population living in urban areas. Human capital

measures provincial education or skill accumulation.

3. Empirical Strategy

The baseline specification is:

$$ln(Y_{pt}) = \beta\, TransportDensity_{pt} + X'_{pt}\gamma + province\ FE + year\ FE + error_{pt}$$

Province fixed effects control for time-invariant provincial characteristics, including geography, long-run development level, and persistent institutional differences. Year fixed effects control for national shocks, macroeconomic trends, and common policy changes. Standard errors are clustered at the province level.

4. Preliminary Results

Table 1. Transport Density and Urban-Rural Income Gaps

Dependent variable: log urban-rural income ratio	**(1)**	**(2)**	**(3)**	**(4)**
Transport density	-0.186***	0.050	0.019	0.027
	(0.032)	(0.067)	(0.054)	(0.039)
Agricultural share			-0.785*	-0.239
			(0.425)	(0.298)
Urbanization rate			-0.191	-0.007
			(0.164)	(0.101)
Human capital				0.027***
				(0.007)
ln GDP per capita				-0.123***
				(0.048)
Province fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
Observations	744	744	744	744
R-squared	0.714	0.907	0.913	0.939

Notes: The dependent variable is the log of the provincial urban-rural income ratio. Transport density is measured as road mileage divided by provincial land area. Standard errors clustered at the province level are reported in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Column (1) shows that transport density is strongly negatively associated with the urban-rural income ratio after controlling for province fixed effects. After adding year fixed effects in column (2), the coefficient becomes positive and statistically insignificant. Columns (3) and (4) add agricultural share, urbanization, human capital, and GDP per capita. The transport coefficient remains statistically insignificant. The most robust result in the full specification is the negative coefficient on log GDP per capita.

5. Interpretation

The preliminary findings suggest that transport density alone is not yet sufficient to establish a robust relationship between transport networks and urban-rural income convergence. The negative association in simpler specifications is absorbed by year fixed effects, indicating that common national trends play an important role. This is not necessarily a failure of the research question. Rather, it suggests that the key empirical challenge is to distinguish local transport-network effects from nationwide infrastructure expansion and macroeconomic convergence.

The next stage of the paper will therefore move beyond simple road density and construct a more theoretically grounded market-access measure. A stronger measure would weight accessible destination markets by their economic size and travel cost. This measure would better capture whether a province is connected to large urban and non-agricultural markets.

6. Contribution

This paper contributes to development economics by studying how spatial infrastructure shapes rural income convergence during structural transformation. It contributes to network economics by treating transport infrastructure as a spatial network that connects rural households to urban labor and product markets. It also contributes to the literature on Chinese inequality by examining whether provincial transport networks help explain variation in urban-rural income gaps.

7. Policy Implications

The preliminary results suggest caution in assuming that road expansion automatically reduces urban-rural inequality. Infrastructure may matter, but its effect likely depends on whether it improves effective market access for rural households. Policies that combine transport investment with labor-market access, rural education, employment services, and non-agricultural job creation may be more effective than infrastructure expansion alone.

8. Next Steps

The next version of the paper will improve the analysis in four ways. First, it will construct a market-access index based on destination market size and transport cost. Second, it will test whether transport networks affect rural income more strongly than urban income. Third, it will examine heterogeneity by agricultural dependence, human capital, and baseline development level. Fourth, it will explore lagged transport effects, since infrastructure may affect income convergence gradually rather than immediately.

9. Conclusion

This paper provides early evidence on the relationship between transport networks and urban-rural income convergence in China. While simple specifications show a strong negative association between transport density and income gaps, the relationship is not robust to national time trends. The project therefore reframes the key question around market access: under what conditions do transport networks help rural households connect to urban growth? This question is well suited for a development economics and networks workshop, where feedback on measurement, identification, and mechanism design would substantially improve the paper.