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50 Years of Rural Labour Productivity: A Systematic Review of Economic Literature

Abstract

This study presents a systematic review of the economic literature on rural labour productivity over the past fifty years, using bibliometric and network analysis to identify prevailing themes and research patterns. The review addresses three central questions: (1) What are the main research threads in rural labour productivity? (2) Which countries, journals, and publications are pivotal in this field? (3) How does rural labour productivity research remain relevant to modern economic analysis and policy? Drawing from 207 scientific articles indexed in the Scopus database, our analysis reveals five primary research themes: [1] Economic structure, policy, and labour dynamics; [2] Social, cultural, and human capital factors; [3] Land use and agricultural practices; [4] Infrastructure, urbanisation, and economic growth; and [5] Environmental sustainability and technological support. Additionally, the network analysis identifies the United States, China, India, and several European countries as key collaborators in advancing rural productivity research, with promi-

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ment journals including *World Development* and *Journal of Development Economics*. The findings underscore the field's relevance in addressing ongoing rural-urban disparities, gender and social equity issues, and sustainable development challenges. This review highlights future research opportunities, particularly in underrepresented regions and in exploring the longitudinal impacts of rural labour productivity on economic growth.

Keywords: labour productivity, rural areas, systematic literature review, bibliometric analysis, network analysis

JEL codes: J43, O13, R11, Q12, O18

Introduction

Rural labour productivity is a cornerstone of economic development, particularly in regions where a substantial portion of the population is employed in agriculture and other rural industries. Disparities in productivity between rural and urban labour markets not only influence migration patterns but also shape income distribution and impact national economic growth trajectories. Recent studies have revealed how the use of modern technology can impact labour productivity in agriculture (Aihoun-ton & Christiaensen 2024; Mamchur & Studinska 2024; Thann et al. 2025; Yamashita et al. 2024; Zhu et al. 2025). Understanding the factors underpinning rural labour productivity is essential for policymakers striving to reduce rural-urban divides and foster inclusive economic growth. Radło & Tomeczek (2022) highlight the complexity of labour productivity, pointing to multiple determinants such as human capital, economic cycles, and regional disparities. However, a gap remains in systematically synthesising how these factors specifically affect productivity in rural labour markets and how regional variations influence outcomes.

This article systematically explores the dominant research themes in rural labour productivity, offering a comprehensive view of how economic structures, social factors, and policy interventions intersect to influence productivity in rural settings. We aim to synthesise existing literature from the past five decades, highlighting major threads, geographic focal points, and thematic

clusters that characterise the field. In addressing this objective, we attempt to provide answers to three central research questions: [RQ1] What are the main research threads in economic studies on rural labour productivity? [RQ2] Which countries, journals, and publications play pivotal roles in advancing rural labour productivity research? [RQ3] How does the study of rural labour productivity remain relevant to modern economic analysis and policy?

This study adopts a systematic literature review combined with bibliometric and network analysis to capture influential research from the Scopus database spanning 1974 to 2024. This dual approach enables us to examine publication patterns and identify key networks of collaboration, research themes, and trends over time. Our network analysis covers 207 scientific articles, identifying international co-authorship patterns, journal connections, and key thematic clusters. Additionally, we conduct an in-depth review of the 50 most-cited articles to gain deeper insights into the core factors driving rural labour productivity. Following established bibliometric methodology, we apply co-authorship, bibliographic coupling, and keyword co-occurrence analyses to uncover connections and thematic clusters in the literature.

Modern rural labour productivity is a multifaceted issue. Five main research themes are identified in this article: [1] Economic structure, policy, and labour dynamics; [2] Social, cultural, and human capital factors; [3] Land use and agricultural practices; [4] Infrastructure, urbanisation, and economic growth; and [5] Environmental sustainability and technological support. Economic development and rapid technological progress create new challenges and opportunities, and even remote rural locations are impacted by fluctuations in the interdependent global markets.

This article is structured as follows: Section 1 introduces the study's background, objectives, and significance. Section 2 details the methodology, including data selection criteria and the analytical framework employed to systematically review and interpret the literature. Section 3 presents the main results, encompassing co-authorship networks, journal clusters, and keyword analysis to identify core themes. Finally, Section 4 concludes with reflections on the importance of rural labour productivity research and suggests areas for future investigation in this evolving field.

Methodology

Data selection process

The bibliometric data selection process follows the standard set in earlier studies (Tomeczek 2023). For the bibliometric part of the analysis, we focus exclusively on scientific articles indexed in the Scopus database (Elsevier 2024). To locate the relevant publications and ensure bias-free selection, the following advanced search query string is used: (TITLE-ABS-KEY (labor W/3 productivity) AND TITLE-ABS-KEY ("rural") AND SUBJAREA (econ OR busi OR deci) AND DOCTYPE (ar OR re) AND LANGUAGE (English) AND PUBYEAR > 1973 AND PUBYEAR < 2025). This search query string finds scientific articles where the title, abstract, or keywords include the searched-for words: "labour" and "productivity" (proximity operator: separated by no more than three other words), and "rural." The articles must be published in English and assigned to any of the following economic categories: Economics, Econometrics and Finance (econ), Business, Management and Accounting (busi), or Decision Sciences (deci). The focus of the analysis is on the last half-century of economic scientific articles (1974–2024). The cutoff point of 2024 is May, when the Scopus search was conducted. The prepared dataset has 207 scientific articles (including three review articles).

For the systematic literature review, we select the top 50 articles with the highest citation efficiency. Citation efficiency is defined by Uddin et al. (2012, p. 695) as the number of citations received by an article divided by its age. In this study, we add one year to the publication age since the dataset also includes articles published in 2024. TABLE 1 lists the top 50 articles on rural labour productivity published between 1974 and 2024. Each entry summarises core findings on various determinants of productivity, including land reforms, sectoral transitions, infrastructure access, urbanisation, energy transition, seasonal work patterns, health and nutrition, financial access, land fragmentation and consolidation, the influence of social capital and migration, and gender discrimination. These studies offer insights into how social, economic, environmental, and policy factors impact productivity across diverse geographic contexts, with emphasis on countries such as China, India, regions in Africa, and Latin America. A more detailed analysis of these publications, including an extraction of key themes related to fac-

tors influencing rural labour productivity, is provided in the results section of this article. The larger versions of the graphs, the lists of keywords, and the list of all 207 articles on rural labour productivity (including the top 50 analysed in the systematic literature review) are available in the associated dataset (Radło & Tomeczek 2024).

Table 1. Top 50 economic articles on rural labour productivity (1974–2024)

Author/s (Date)	Main Findings
Arthi et al. (2018)	– Traditional survey methods overestimate work hours on farms. – Weekly surveys reduce recall and cognitive bias.
Begum Sadaquat & Sheikh (2011)	– Gender discrimination limits women's access to better-paid agricultural roles in Pakistan. – Social barriers and low education keep women in low-productivity sectors.
Binswanger-Mkhize (2013)	– Limited labour flow from agriculture to other sectors in India restricts productivity growth. – Insufficient support for structural transformation.
Bu & Liao (2022)	– Land property rights reform in China boosted rural entrepreneurship. – Increased start-ups by professional farmers and urban residents, with better land access and financing options.
Cai (2018)	– Reforms in China allowed labour mobility from agriculture, increasing productivity. – Reduction of migration barriers enhances resource allocation.
Cai & Wang (2008)	– Reducing surplus labour boosts agricultural productivity and reduces rural-urban income gaps in China. – Labour-saving technologies are adopted as surplus labour decreases.
Collier & Dercon (2014)	– Focusing solely on smallholder farms may limit productivity. – Permitting diverse farm models improves efficiency.
Cornia (1985)	– Small farms achieve higher productivity through intensive labour use in surplus conditions. – Larger farms benefit from better credit access for technological improvements.
De Janvry & Sadoulet (2010)	– Increased agricultural productivity helps reduce poverty where agriculture is the main occupation. – Public investments in agriculture enhance growth.
Deolalikar (1988)	– Labour productivity in South India is more responsive to nutrition status than calorie intake. – Chronic malnutrition impacts long-term productivity.

Author/s (Date)	Main Findings
Dercon & Gollin (2014)	– Low agricultural productivity in sub-Saharan Africa limits regional development. – Infrastructure and service access are critical productivity constraints.
Diao et al. (2017)	– Sectoral shifts from agriculture to services and manufacturing reduce poverty, especially for rural women.
Djido & Shiferaw (2018)	– Income diversification enhances overall productivity but may reduce agricultural productivity due to labour shifts, highlighting the need for policies that mitigate such trade-offs.
Dubbert (2019)	– Contract farming boosts productivity and price margins for small farms.
Emran & Shilpi (2018)	– Higher agricultural productivity raises wages but reduces reliance on hired labour. – Rainfall variability influences productivity.
Fafchamps & Quisumbing (1999)	– Education improves off-farm income but has a limited impact on on-farm productivity. – Gender differences affect productivity impacts.
Glaeser & Xiong (2017)	– Urbanisation correlates with economic growth due to human capital accumulation.
Glaser & Diele (2004)	– Seasonal changes impact productivity in mangrove crab fisheries in Brazil.
Hamory et al. (2021)	– Individual selection biases affect productivity gap measurements between sectors.
Imbert et al. (2022)	– Rural-urban migration increases labour intensity in manufacturing but can reduce overall productivity.
Jacoby (1995)	– Women's agricultural productivity in Côte d'Ivoire makes polygyny economically beneficial.
Jha et al. (2009)	– Calorie and micronutrient deficits in rural India trap workers in low productivity.
Jia & Petrick (2014)	– Land fragmentation in China reduces productivity and encourages off-farm work.
Kaczan (2020)	– Road expansion in India promotes non-farm employment and reduces reliance on forests.
Krey et al. (2012)	– Urban productivity in Asia is higher due to a denser population and better resource use.
Kuijs & Wang (2006)	– China's growth model favours industrial investment, exacerbating rural-urban income inequality.
LaFave & Thomas (2017)	– Height as an early-life indicator correlates with productivity in Indonesia.
Lanjouw (2001)	– Non-farm employment in rural El Salvador reduces poverty but may lower on-farm productivity.

Author/s (Date)	Main Findings
Lipton (1980)	– Rural-urban migration initially raises rural productivity but increases income inequality.
S. Liu et al. (2018)	– Mechanisation and land consolidation could boost productivity in Chinese agriculture.
Y. Liu et al. (2020)	– Non-farm employment growth in Vietnam has led to wage and productivity increases in agriculture.
Mahadevan et al. (2017)	– Tourism-led growth in Indonesia boosted productivity more effectively than cash transfers.
Maji et al. (2021)	– Incomplete energy transitions lower productivity in India due to health impacts, especially on women.
McCullough (2017)	– Measured per hour, productivity gaps in agriculture decrease, suggesting underemployment.
Minale (2018)	– Negative productivity shocks in China increase migration and off-farm work as coping mechanisms.
Minami & Ma (2010)	– China has surplus agricultural labour, with potential productivity gains through migration.
Nagler & Naudé (2017)	– Rural non-farm entrepreneurship productivity is higher in urban or male-owned businesses.
Nguyen et al. (2019)	– Remittances increase farm productivity in Vietnam, while migration without remittances lowers it.
Rathi & Vermaak (2018)	– Electrification in rural India and South Africa boosts productivity, particularly for women.
Ruben & Van Den Berg (2001)	– Non-farm employment in Honduras reduces poverty and diversifies income sources.
Salvati & Carlucci (2011)	– Sustainable practices in Italy support productivity, while environmental degradation lowers it.
Serrano-Cinca & Gutiérrez-Nieto (2014)	– Microfinance targeting the poorest enhances productivity despite high costs, with technology reducing expenses.
Shi (2018)	– Migration reduces agricultural productivity in China due to labour shortages, though off-farm income helps financially.
Van Den Broeck et al. (2021)	– Income from agricultural self-employment in Tanzania improves household nutrition.
Vandecasteele et al. (2018)	– Proximity to urban areas in Ethiopia increases agricultural productivity through wage and rental incentives.
Wen (1993)	– The Household Responsibility System in China significantly increased productivity compared to the communal system.
Whalley & Zhang (2007)	– Hukou restrictions in China reduce productivity by limiting labour mobility to productive regions.
Zhang et al. (2020)	– Land rental markets in China improve productivity by enabling land consolidation.

Author/s (Date)	Main Findings
Zhang et al. (2021)	– Land rental markets benefit small farmers in China by enabling expanded farm operations.
Zhu & Luo (2010)	– Migration in China increases rural household income, reducing poverty but sometimes widening inequality.

Source: Own elaboration based on (Arthi et al. 2018; Begum Sadaquat & Sheikh 2011; Binswanger-Mkhize 2013; Bu & Liao 2022; Cai 2018; Cai & Wang 2008; Collier & Dercon 2014; Cornia 1985; De Janvry & Sadoulet 2010; Deolalikar 1988; Dercon & Gollin 2014; Diao et al. 2017; Djido & Shiferaw 2018; Dubbert 2019; Emran & Shilpi 2018; Fafchamps & Quisumbing 1999; Glaeser & Xiong 2017; Glaser & Diele 2004; Hamory et al. 2021; Imbert et al. 2022; Jacoby 1995; Jha et al. 2009; Jia & Petrick 2014; Kaczan 2020; Krey et al. 2012; Kuijs & Wang 2006; LaFave & Thomas 2017; Lanjouw 2001; Lipton 1980; S. Liu et al. 2018; Y. Liu et al. 2020; Mahadevan et al. 2017; Maji et al. 2021; McCullough 2017; Minale 2018; Minami & Ma, 2010; Nagler & Naudé 2017; Nguyen et al. 2019; Rathi & Vermaak 2018; Ruben & Van Den Berg 2001; Salvati & Carlucci 2011; Serrano-Cinca & Gutiérrez-Nieto 2014; Shi 2018; Van Den Broeck et al. 2021; Vandecasteele et al. 2018; Wen 1993; Whalley & Zhang 2007; Zhang et al. 2020, 2021; N. Zhu & Luo 2010).

Network analysis

The network analysis is conducted using a popular open-source bibliometric software called VOSviewer (van Eck & Waltman 2010). Specifically, we construct three types of networks: co-authorship network (international collaboration), bibliographic coupling network (scientific journals), and keyword co-occurrence network (text mining of titles and abstracts).

Co-authorship of articles is a documentation of scientific collaboration, which can be represented in forms of co-authorship networks (Newman 2001, 2004). As a staple of modern bibliometric analysis, international collaboration networks are used to analyse international co-authorship ties between authors based on their affiliation (Barbosa & Ferreira-Lopes 2021; Quevedo et al. 2023; Szczech-Pietkiewicz et al. 2023). Such networks identify the geographic distribution of researchers and quantify the strength of collaborative activities. Our international collaboration network comprises nodes (vertices) representing the country of the institution an author is affiliated with, and weighted edges (links) representing the number of co-authored scientific articles.

The bibliographic coupling network, as conceptualised by Kessler (1963) and further explored in recent studies (Tomeczek 2023; Yadav et al. 2022),

uses nodes to represent scientific journals, with edges signifying references shared between them.

Keyword co-occurrence networks are commonly used for knowledge mapping (Lee & Su 2010; Oliveira et al. 2022; Szczech-Pietkiewicz et al. 2023). The results of such networks identify the main topics and thematic clusters of scientific analysis in the analysed period. Nodes represent keywords, and edges represent the co-occurrence of two keywords in an article. Scopus supplies a list of author keywords and index keywords for the articles. However, of the top 50 articles available in our dataset, only 40 have author keywords, and 35 have indexed keywords. Since the number of articles analysed in this review is relatively small, we chose to use keywords determined by text mining of titles and abstracts (counting method: full; threshold occurrence: five or more; relevance score: top 60%). VOSviewer's text mining capabilities are based on the Apache OpenNLP library (van Eck & Waltman 2023). The co-occurrence network "is a two-dimensional map in which terms are located in such a way that the distance between two terms can be interpreted as an indication of the relatedness of the terms. In general, the smaller the distance between two terms, the stronger the terms are related to each other. The relatedness of terms is determined based on co-occurrences in documents" (van Eck & Waltman 2011, p. 1). The details of the procedure are available in van Eck and Waltman (2011, 2023).

Results

Co-authorship and bibliographic coupling network

Figure 1 shows the international collaborative ties between countries that authored at least three articles in the analysed dataset of 207 articles. It displays the international co-authorship network for 207 articles, showing collaborative ties between countries involved in research on rural labour productivity. The network highlights the central role of the United States and China as major hubs of collaboration, each with distinct patterns of international partnerships. The United States shows strong connections with European countries, such as Germany, the Netherlands, and the United Kingdom, as well as with Canada and South Africa, indicating a broad, global research network across both developed and emerging economies.

China, meanwhile, demonstrates notable collaborative ties with India, forming a concentrated network in the Asian region. Other countries like Germany, Japan, Sweden, and Belgium are also present in the network, contributing to the overall connectivity, but with fewer links compared to the major hubs. This network reflects the global nature of research on rural labour productivity and the importance of cross-border partnerships in advancing knowledge in this field.



Figure 1: International co-authorship network (207 articles)

Source: Own elaboration based on the Scopus database.

Figure 2 explores the bibliographic coupling between scientific journals that published at least three articles in the analysed dataset. This network visualises the interconnections between journals based on shared references, highlighting prominent journals and their thematic relationships. The journal *World Development* appears central in the network, indicating its significant role in rural labour productivity and related economic studies, frequently cited across different publications. It connects strongly to other influential journals, including the *Journal of Development Economics*, *Economic Development and Cultural Change*, and *China Agricultural Economic Review*, indicating common themes in development and agricultural economics. *Food Policy and Agricultural Economics (United Kingdom)* are also key nodes in the network, suggesting a focus on agricultural productivity and policy implications. The *World Bank Economic Review* shows connections

with journals focused on development and economic growth, indicating its influence on global economic studies. This graph highlights the interdisciplinary nature of rural labour productivity research, with journals from development economics, agricultural economics, and policy analysis frequently sharing references, reflecting the field's diverse scholarly base.

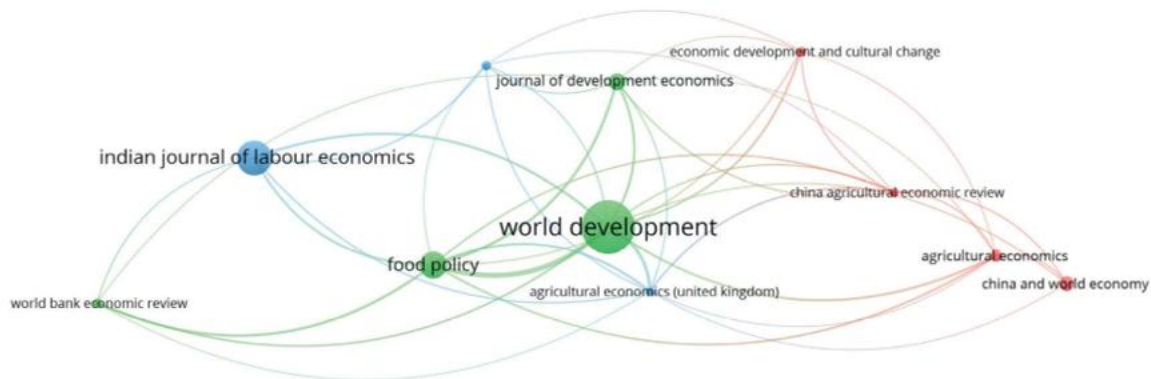


Figure 2: Bibliographic coupling network (207 articles)

Source: Own elaboration based on the Scopus database.

Main themes and keyword co-occurrence network

Table 2 provides a list of authors and index keywords that occurred in at least four articles. The keywords are unstandardised; for example, “labour unstandardized, e.g. “labour productivity” and “labor productivity” are treated as separate keywords.

The central keyword “labour productivity” appears 60 times, and the variant spelling “labor productivity” 16 times. Combined, this topic is mentioned a total of 76 times. The geographical diversity of the research is also significant. Besides India and China, which are key regions, substantial attention is given to areas such as Asia, Africa, and Eurasia. The research also focuses on specific countries like Tanzania, Pakistan, and Ethiopia. The interest in specific countries or regions can be attributed to their large rural populations and dynamic economic changes directly affecting labour productivity in agriculture and other rural sectors.

Other key topics include “productivity” (20 occurrences), “employment” (19 occurrences), “rural area” (18 occurrences), “agricultural labour” (16 oc-

currences), "agriculture" (15 occurrences), "agricultural production" (13 occurrences), "poverty" (13 occurrences), "economic growth" (12 occurrences), "labour market" (12 occurrences), and "rural development" (12 occurrences). These keywords highlight the importance of analysing various aspects of rural economies, including overall productivity, employment structures, agricultural labour characteristics, and living conditions. The recurring focus on agriculture and economic growth suggests a comprehensive approach that considers both the economic and social dimensions of rural life.

Table 2. Most prolific author and index keywords (207 articles)

Rank	keyword	occurrences	Rank	keyword	occurrences
1	labour productivity	60	32	sub-Saharan Africa	7
2	rural economy	22	33	total factor productivity	6
3	India	21	34	wage determination	6
4	China	20	35	economic development	5
5	productivity	20	36	education	5
6	employment	19	37	gender	5
7	rural area	18	38	household survey	5
8	agricultural labour	16	39	income	5
9	labour productivity	16	40	inequality	5
10	agriculture	15	41	informal sector	5
11	agricultural production	13	42	labour mobility	5
12	poverty	13	43	labour market	5
13	economic growth	12	44	nutrition	5
14	labour market	12	45	rural areas	5
15	rural development	12	46	rural-urban migration	5
16	Asia	9	47	Tanzania	5
17	Africa	8	48	agricultural worker	4
18	agricultural development	8	49	developing world	4
19	agricultural productivity	8	50	Ethiopia	4
20	Eurasia	8	51	food industry	4
21	agricultural labour productivity	7	52	health status	4
22	developing country	7	53	income distribution	4

Rank	keyword	occurrences	Rank	keyword	occurrences
23	household income	7	54	labour	4
24	human capital	7	55	off-farm employment	4
25	investment	7	56	Pakistan	4
26	labour migration	7	57	poverty determinant	4
27	labour supply	7	58	small and medium-sized enterprise	4
28	manufacturing	7	59	structural transformation	4
29	migration	7	60	surplus labour	4
30	poverty alleviation	7	61	wage gap	4
31	South Asia	7	62	women's employment	4

Source: Own elaboration based on the Scopus database.

Figure 3 illustrates the main themes in rural labour productivity research through a network of co-occurring keywords (text mining). Each colour represents a cluster of related concepts, with larger keywords indicating topics more central within each cluster. This network reveals both the primary research areas and their intersections.

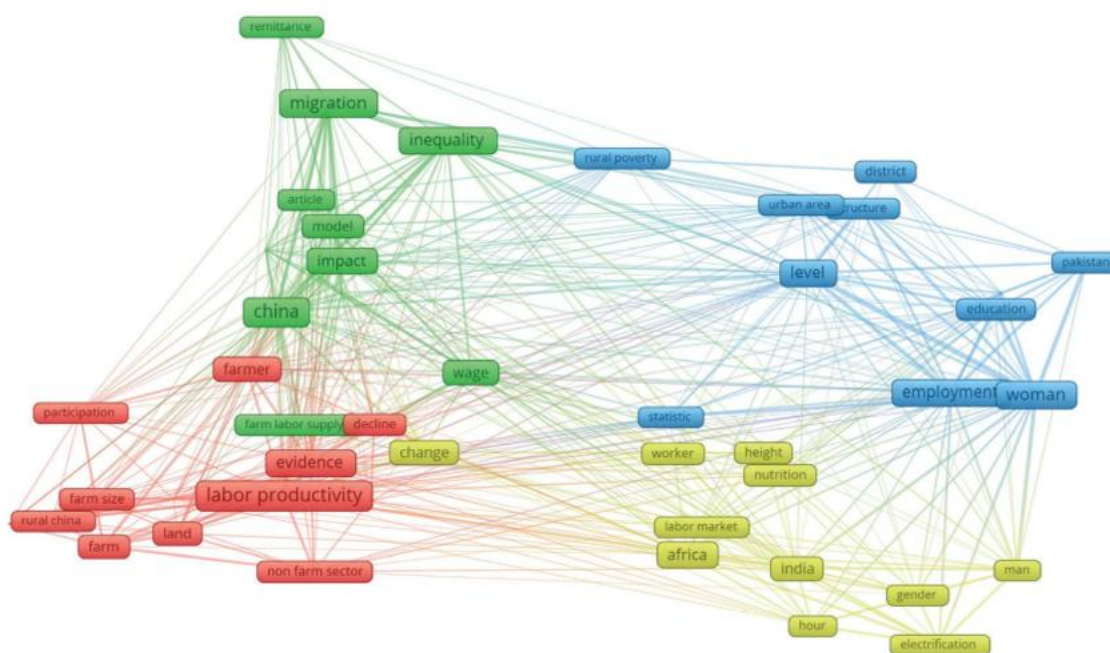


Figure 3: Keyword co-occurrence network (top 50 articles)

Source: Own elaboration based on the Scopus database.

The Green Cluster is anchored by the keyword "China," suggesting that rural productivity research frequently focuses on China's rural and agricultural dynamics. This cluster includes "Migration," "Inequality," "Wage," and "Impact," indicating a strong interest in how labour mobility, income disparities, and economic impacts influence rural productivity. "Remittance" and "Article" appear smaller, suggesting their relevance but with less frequent mention. This grouping highlights that migration and wage structures are central to the productivity discourse in China, with studies often addressing economic mobility and income inequality.

The Red Cluster is centred around "Labour productivity," with other prominent terms including "Evidence," "Farmer," and "Farm." "China" also reappears here, reinforcing its importance in discussions on agricultural productivity. Smaller terms like "Non-farm sector," "Participation," and "Decline" indicate interest in broader rural labour dynamics, such as shifts between farm and non-farm work. Additionally, the Yellow keyword "Change" appears in proximity, suggesting an overlap in research topics related to economic transitions in agricultural productivity studies. This cluster reflects research aimed at measuring and improving productivity in agricultural settings, with China serving as a frequent focal point.

In the Blue Cluster, keywords like "Employment," "Woman," "Level," and "Education" highlight gender roles, education, and social structures as critical factors in rural labour productivity. Specific geographic mentions, such as "Pakistan," imply a focus on regions where gender and educational access directly impact rural labour markets. Terms like "Urban area" and "Structure" suggest that studies in this cluster examine the influence of gender and social factors on both employment levels and economic structure.

The Yellow Cluster focuses on themes concerning infrastructure, health, and social dynamics in rural labour productivity. The largest keywords in this cluster are "Africa," "India," and "Change," indicating a strong regional emphasis on these areas, particularly in terms of transformative social and economic developments in rural settings. This cluster includes additional keywords like "Gender," "Electrification," and "Nutrition," which reflect topics such as access to clean energy, improvements in health, and the gendered aspects of productivity in rural labour markets. The presence of "Height," "Labour market," "Worker," and "Man" further highlights the focus on labour force characteristics and how infrastructural and health improvements –

such as better nutrition and electrification – can enhance productivity. Together, this cluster emphasises research on the intersection of infrastructure, health, and labour force dynamics, with particular attention to how these factors support productivity growth and socioeconomic changes in rural areas, especially in regions like Africa and India.

Each cluster's proximity suggests thematic overlaps, reflecting the complex interdependencies in rural productivity research. For instance, the proximity of the Green and Red Clusters implies that migration, labour supply, and farm productivity are often interconnected, especially in the context of Chinese agricultural studies. Similarly, Yellow and Blue Clusters are closely linked, highlighting that social factors, gender roles, and infrastructure development are frequently studied together, as improvements in infrastructure (like electrification) can enhance educational and employment opportunities, particularly for rural women.

In summary, Figure 3 reveals a comprehensive picture of rural labour productivity research, where core topics like migration, labour supply, social structures, health, and infrastructure intersect across regions, with a significant focus on China and India. This network underscores the importance of addressing productivity from both economic and social perspectives, showing that enhancing rural productivity involves interwoven solutions across labour, gender, infrastructure, and economic policy domains.

The data presented in Table 3 synthesises the main research threads in rural labour productivity, organised into five broad themes: [1] Economic structure, policy, and labour dynamics; [2] Social, cultural, and human capital factors; [3] Land use and agricultural practices; [4] Infrastructure, urbanisation, and economic growth; and [5] Environmental sustainability and technological support. These clusters encompass a range of influential studies, each focusing on critical factors that contribute to or inhibit productivity in rural economies.

Economic structure, policy, and labour dynamics examine how policy reforms and economic structure influence labour mobility and productivity. Key studies in this area include works by Binswanger-Mkhize (2013), Cai (2018), Cai & Wang (2008), Diao et al. (2017), McCullough (2017), Minaile (2018), Minami & Ma (2010), Shi (2018), and Whalley & Zhang (2007). These studies highlight the need to eliminate institutional barriers, such as China's hukou system, to facilitate labour shifts from agriculture to high-

er-productivity sectors, ultimately narrowing income gaps. Research on income diversification and non-agricultural employment by Djido & Shiferaw (2018), Lanjouw (2001), Nguyen et al. (2019), Ruben & Van Den Berg (2001), and Zhu & Luo (2010) shows that while diversification stabilises household income, it may limit agricultural productivity, impacting farm productivity. Institutional reforms, such as those detailed by Wen (1993) through China’s Household Responsibility System (HRS), have significantly enhanced productivity by improving resource management. Likewise, land property rights reform in China has stimulated rural entrepreneurship, driving start-ups among professional farmers and urban residents by enhancing access to land and financing (Bu & Liao 2022).

Social, cultural, and human capital factors explore how social structures and human capital investments impact productivity. Research by Begum Sadaquat & Sheikh (2011), Jacoby (1995), Nagler & Naudé (2017), Fafchamps & Quisumbing (1999), and Van Den Broeck et al. (2021) reveals that social factors like gender discrimination and family structures (e.g. polygamy) limit productivity by restricting access to education and wage equality, particularly for women. The human capital aspect is also critical, with studies by Deolalikar (1988), LaFave & Thomas (2017), Jha et al. (2009), and Van Den Broeck et al. (2021) emphasising the long-term effects of health and nutrition on productivity. These studies highlight that chronic malnutrition can substantially hinder productivity, especially in regions with limited healthcare.

Table 3. Key research threads on rural labour productivity and their groupings

Topics	Studies	Description
[1] Economic Structure, Policy, and Labour Dynamics		
Economic Structure, Policy, and Labour Mobility	Binswanger-Mkhize (2013), Cai (2018), Cai & Wang (2008), Diao et al. (2017), McCullough (2017), Minale (2018), Minami & Ma (2010), Shi (2018), Whalley & Zhang (2007)	These studies highlight the importance of policy and structural reforms, such as removing barriers to mobility (e.g. China’s hukou system), which enable labour migration to more productive sectors and reduce income inequality.
Income Diversification and Labour Allocation	Djido & Shiferaw (2018), Lanjouw (2001), Nguyen et al. (2019), Ruben & Van Den Berg (2001), Zhu & Luo (2010)	Diversifying income sources and moving to non-agricultural employment increase economic stability for households but may limit agricultural productivity. There is a need for policies that mitigate such trade-offs.

Topics	Studies	Description
Institutional Re-forms and Structural Changes	Wen (1993), Bu & Liao (2022)	China's HRS significantly improved productivity by enhancing resource management, showcasing the effectiveness of institutional reforms compared to communal systems. Similarly, land property rights reform in China has spurred rural entrepreneurship, encouraging start-ups among professional farmers and urban residents by improving land access and financing opportunities.
[2] Social, Cultural, and Human Capital Factors		
Social and Cultural Determinants of Productivity	Begum Sadaquat & Sheikh (2011), Jacoby (1995), Nagler & Naudé (2017), Fafchamps & Quisumbing (1999), Van Den Broeck et al. (2021)	Social and cultural factors like gender discrimination and family structure (e.g. polygamy) impact agricultural productivity, especially in terms of women's access to education and wage disparities.
Human Capital, Health, and Nutrition	Deolalikar (1988), LaFave & Thomas (2017), Jha et al. (2009), Van Den Broeck et al. (2021)	Health, including chronic malnutrition, and investments in early childhood (e.g. height as an indicator of nutrition) have long-term effects on productivity, especially in regions with limited access to healthcare.
[3] Land Use and Agricultural Practices		
Production Model, Farm Size, and Market Integration	Collier & Dercon (2014), Cornia (1985), Dubbert (2019)	Diversity of production models and access to credit improve productivity, and commercial farms and microfinance support overall productivity.
Land Fragmentation and Consolidation	Jia & Petrick (2014), S. Liu et al. (2018), Zhang et al. (2020), Zhang et al. (2021)	Land fragmentation reduces productivity, but consolidation and land rental systems support better labour allocation and productivity, especially for small farms.
[4] Infrastructure, Urbanisation, and Economic Growth		
Infrastructure, Seasonality, and Market Access	Dercon & Gollin (2014), Emran & Shilpi (2018), Glaeser & Xiong (2017), Kaczan (2020)	Access to infrastructure, such as roads, reduces reliance on natural resources and supports employment diversification, while seasonal agricultural fluctuations affect income stability.
Urbanisation, Energy Use, and Economic Growth	Krey et al. (2012), Kuijs & Wang (2006), Vandecasteele et al. (2018)	Urbanisation and proximity to urban markets increase agricultural productivity and crop intensification, which, in turn, support economic growth.
[5] Environmental Sustainability and Technological Support		
Energy Transition and Health	Maji et al. (2021), Rathi & Vermaak (2018)	Access to clean energy improves health, particularly for women, and thus enhances productivity. Transitioning to electricity reduces biomass dependency and improves work efficiency.

Topics	Studies	Description
Environmental Quality and Agricultural Productivity	Salvati & Carlucci (2011)	Sustainable practices support agricultural productivity, while environmental degradation reduces productivity, particularly in economically disadvantaged regions.
Financial Structures and Technological Support	Serrano-Cinca & Gutiérrez-Nieto (2014)	Microfinance targeting the poorest can boost farm productivity despite high operational costs, and technology and subsidies are recommended to improve efficiency and reduce costs.

Source: Own elaboration.

Land Use and Agricultural Practices addresses the impact of farm size, production models, and land consolidation on productivity. Collier & Dercon (2014), Cornia (1985), and Dubbert (2019) highlight how diverse production models and market integration boost productivity, especially when credit and microfinance support are available. However, studies on land fragmentation by Jia & Petrick (2014), Liu et al. (2018), Zhang et al. (2020), and Zhang et al. (2021) indicate that while small, fragmented farms may struggle with efficiency, land consolidation and rental systems can enhance productivity by optimising resource use, particularly for small farms.

Infrastructure, Urbanisation, and Economic Growth emphasises the influence of infrastructure and urbanisation on rural productivity. Research by Dercon & Gollin (2014), Emran & Shilpi (2018), Glaeser & Xiong (2017), and Kaczan (2020) highlights that access to infrastructure like roads and market connectivity reduces reliance on natural resources, stabilises income, and facilitates employment diversification. Additionally, studies by Krey et al. (2012), Kuijs & Wang (2006), and Vandecasteele et al. (2018) reveal that urbanisation and proximity to cities boost productivity by encouraging crop intensification and providing access to profitable markets, supporting economic growth in rural regions.

Environmental Sustainability and Technological Support focuses on the role of clean energy, sustainable practices, and financial structures in enhancing productivity. Maji et al. (2021) and Rathi & Vermaak (2018) show that transitioning to clean energy sources like electricity improves health, particularly for women, by reducing dependence on biomass and thereby enhancing work efficiency. Salvati & Carlucci (2011) illustrate that environmental deg-

radation negatively impacts productivity, while sustainable practices support agricultural output, especially in economically disadvantaged areas. Lastly, research by Serrano-Cinca & Gutiérrez-Nieto (2014) underscores the role of microfinance and technological innovation in increasing efficiency and reducing operational costs in agriculture, which is particularly valuable in resource-limited settings.

Together, these studies provide a comprehensive look at the factors shaping rural labour productivity and identify potential areas for policy intervention to foster sustainable growth and improve productivity outcomes in rural economies.

Conclusions

This study addresses the three central research questions concerning rural labour productivity to synthesise the existing economic literature from the past five decades. First, we identify five main research threads in the literature: [1] Economic structure, policy, and labour dynamics; [2] Social, cultural, and human capital factors; [3] Land use and agricultural practices; [4] Infrastructure, urbanisation, and economic growth; and [5] Environmental sustainability and technological support. These clusters reflect the complexity of rural labour productivity and the intersecting economic, social, and environmental factors that drive it. Key areas within these threads include labour migration, gender and social equity, technological advancement, and sustainable practices, revealing a nuanced understanding of productivity beyond traditional agricultural outputs.

Second, the countries, journals, and publications advancing rural labour productivity research emphasise a global collaboration pattern, with the United States, China, India, and several European countries (e.g. Germany, the Netherlands, and the United Kingdom) at the forefront. China's extensive focus on rural labour dynamics, migration, and land reform policies emphasises its significant role in this field. Influential journals like *World Development*, the *Journal of Development Economics*, and *Food Policy* frequently serve as conduits for these studies, linking research across development economics, rural studies, and policy analysis.

Third, the relevance of rural labour productivity research to modern economic analysis and policy is underscored by the persistent rural-urban disparities and evolving rural labour structures in an increasingly interconnected global economy. As rural areas face structural changes due to urbanisation, technological innovation, and environmental challenges, this research provides a basis for policies promoting rural development and inclusive growth.

In conclusion, this review highlights the relevance of rural labour productivity research for addressing global challenges, from poverty alleviation and economic inequality to gender equity and sustainable development. The combination of traditional farming practices and institutions with new-age technologies and inclusivity-related growth in human capital provides exciting opportunities for economic analyses. Future research could benefit from a deeper exploration of regional variations, particularly in underrepresented areas like Latin America and parts of Africa, as well as from longitudinal studies that track changes over time in response to policy interventions. Addressing gaps in data availability and standardising methodologies across studies may further enhance the practical impact of rural labour productivity research for policymakers and practitioners focused on sustainable and inclusive rural development.

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