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Discussion on Rainy Season Road Access and Poverty Alleviation in Laos

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Abstract
The objective of this research is to assess the influence of road access during the rainy season on poverty alleviation in Lao PDR. Employing multiple regression analysis, the study investigates the extent to which road access impacts real expenditure per capita. The findings reveal a statistically significant positive relationship between road access during the rainy season and real expenditure per capita. This study underscores the pivotal role of road infrastructure in facilitating economic development and poverty reduction, particularly in rural areas of Lao PDR. Improved road access enables farmers to access urban markets throughout the year, thereby expanding agricultural production and enhancing productivity. Moreover, enhanced connectivity between rural and urban areas fosters trade and economic opportunities, contributing to poverty reduction efforts. The implications of these findings are particularly salient for regions such as the central part and Vientiane capital of Lao PDR, where investments in road infrastructure can yield substantial benefits in terms of poverty alleviation. Therefore, the study recommends that policymakers and private stakeholders prioritize investments in rural road development to strengthen linkages between rural communities and urban markets. By investing in road infrastructure, policymakers and private agencies can facilitate greater agricultural productivity, enhance market access for rural producers, and ultimately contribute to poverty reduction objectives in Lao PDR. This study underscores the importance of targeted investments in infrastructure as a means of fostering inclusive economic growth and improving livelihoods in developing countries like Lao PDR.
Keywords: Road Access, Rainy Season, Poverty Alleviation, Economic Development
JEL Codes: R58, I32, O53

1. INTROUDTION

The efforts of the Lao government to reduce poverty are commendable, with ambitious targets aimed at significantly decreasing the poverty rate and improving the livelihoods of its citizens. Recognizing poverty alleviation as a primary objective and priority underscores the government's commitment to enhancing the well-being of its population (Assembly, 2021). Infrastructure development, particularly road networks, plays a crucial role in achieving these poverty reduction goals. By connecting rural areas to urban markets and facilitating transportation between regions, infrastructure projects contribute to generating income, improving living standards, and ultimately reducing poverty levels. The expansion and improvement of road networks enable rural farmers to access larger markets for their agricultural produce, leading to increased incomes and economic opportunities. Additionally, enhanced connectivity promotes trade, investment, and economic growth, creating employment opportunities and boosting household incomes across various sectors (Sun and Chang, 2020; Ali and Sajid, 2020; Zubair and Hayat, 2020; Andreou, 2021; Zhang, et al., 2022). As the Lao government continues its efforts to combat poverty, prioritizing infrastructure development, particularly in rural areas, remains essential. Investments in road construction and maintenance, along with other key infrastructure projects, will not only support economic growth but also foster inclusive development by ensuring that the benefits of growth reach all segments of society. Furthermore, collaboration with international partners, development agencies, and the private sector can help mobilize resources and expertise to accelerate infrastructure development initiatives (Khalid and Sultan, 2017; Zhengzheng, 2018; Zhan and Paulino, 2021). By working together, stakeholders can leverage their strengths and resources to implement sustainable infrastructure projects that contribute to poverty reduction and promote inclusive growth in Lao PDR.

Investments in infrastructure play a pivotal role in promoting economic growth and fostering regional integration, particularly in countries like Lao PDR. By enhancing connectivity and facilitating the movement of goods, services, and people, infrastructure projects contribute to the overall development of the country and its integration into regional markets and economies (Nawaz and Mangla 2021). In Lao PDR, investments in infrastructure are critical components of efforts to boost economic growth and complement initiatives undertaken through regional corridors. These investments aim to improve transportation networks, expand access to markets, and enhance the efficiency of trade and commerce. By facilitating the movement of goods and people, infrastructure projects stimulate economic activity, attract investments, and create employment opportunities. A key focus of infrastructure investment in Lao PDR is to support agricultural development and rural livelihoods. Improved roads, bridges, and other transportation infrastructure help farmers increase their productivity by providing better access to inputs, markets, and services. This, in turn,

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enables farmers to expand production, increase incomes, and contribute to poverty reduction efforts. The Seventh Five-Year National Socioeconomic Development Plan (2011-2015) underscores the government's commitment to infrastructure development. With a significant allocation of resources to the infrastructure and construction sector, representing 35% of total investments, the government aims to address infrastructure gaps, promote inclusive growth, and enhance the country's overall development trajectory. By prioritizing infrastructure investments, particularly in rural areas, the Lao government seeks to unlock the economic potential of the country, improve living standards, and create a conducive environment for sustainable development. Collaboration with development partners, private investors, and international organizations can further support these efforts and ensure the effective implementation of infrastructure projects to benefit the people of Lao PDR.

The positive relationship between road access and poverty reduction has been extensively studied in various countries, with research indicating that improved infrastructure, particularly road networks, can lead to significant socioeconomic benefits. Studies conducted in different regions, including those by Seetanah et al. (2009), Mu and Walle (2011), Ogun (2010), Runsinarith (2011), Gison and Rozelle (2003), Kwon (2000), Amis and Kumar (2000), and Estache et al. (2002), have consistently demonstrated the positive impact of road access on agricultural productivity, local market development, economic welfare, and infrastructure development, ultimately contributing to poverty reduction. In the context of Laos, studies by Oraboune (2008), Warr (2010), Kim et al. (2013), and Phadouangdeth et al. (2013) have also underscored the importance of road access in poverty reduction efforts. These studies have highlighted the positive effects of improved road infrastructure on livelihoods and socioeconomic outcomes in rural areas of Laos. They advocate for substantial investments in rural infrastructure to enhance the well-being of rural communities and alleviate poverty. Despite the wealth of research conducted on the impact of road development on poverty reduction in Latin American and Asian countries, empirical studies on this issue remain limited in Laos. This underscores the need for further research and empirical analysis to better understand the specific dynamics of road access and its implications for poverty alleviation in the Laotian context. By conducting more rigorous studies and collecting empirical evidence, policymakers and development practitioners can gain valuable insights into the effectiveness of infrastructure investments in addressing poverty challenges and inform evidence-based policy interventions aimed at promoting inclusive and sustainable development in Laos.

2. METHODOLOGY

The model used to analyze the impact of road access at rainy season on poverty alleviation in Vientiane can be represented as follows:

Expen = f(FP, HC, EF, Road)

Where:

Expen = represents the level of expenditure per capita, which serves as a proxy for poverty alleviation.

FP = represents household income or financial resources available to the household.

HC = represents human capital, which includes education and health indicators of household members.

EF = represents environmental factors that may influence poverty alleviation, such as access to natural resources or environmental degradation.

Road = represents road access at rainy season, which is the main variable of interest in the study.

The model aims to assess how variations in road access during the rainy season impact household expenditure, and consequently, poverty alleviation in Vientiane. By controlling for household income, human capital, and environmental factors, the study seeks to isolate the specific effect of road access on poverty levels in the region. With a sample size of 9,102 households, including sub-samples from different regions of Laos, the study can provide insights into the differential impacts of road access on poverty alleviation across various geographical areas. By analyzing the relationship between road access and household expenditure, policymakers can better understand the importance of infrastructure development in reducing poverty and promoting economic development in Vientiane and beyond.

3. EMPIRICAL OUTCOMES

To addressing econometric issues such as multicollinearity and heteroskedasticity demonstrates a thorough consideration of the data analysis process. By investigating the correlation among independent variables and performing statistical tests to detect heteroskedasticity, the authors ensure the reliability and robustness of their regression analysis (Becker, et al., 2022). The detection of multicollinearity below the threshold of 0.8 indicates that the independent variables are sufficiently independent from each other, reducing the risk of inflated standard errors and unreliable coefficient estimates. This preliminary step is crucial for ensuring the validity of the regression model. The identification of heteroskedasticity through the Breusch-Pagan test highlights the presence of unequal variance in the error terms, which can lead to biased coefficient estimates and incorrect inference. By employing Generalized Least Squares (GLS) to correct for this issue, the authors address the problem of heteroskedasticity and obtain more efficient and consistent estimates of the regression coefficients. Furthermore, transforming the dependent variable into natural logarithmic form introduces non-linearity into the model, which can capture the underlying relationship between the variables more accurately. This transformation can improve the goodness of fit measures and enhance the overall performance of the regression analysis.

The regression results indicate that cattle ownership has a positive and statistically significant impact on real expenditure per capita in the northern part of Laos, aligning with findings from prior research conducted by Andersson et al. (2006). This suggests that households owning cattle in this region experience an increase in their expenditure

levels, potentially due to the economic benefits derived from cattle ownership, such as income generation through livestock sales or agricultural activities. In contrast, the impact of pig ownership on real expenditure per capita varies across different regions of Laos. Specifically, pig ownership has a positive and statistically significant effect on real expenditure per capita in Vientiane Capital City and the southern part of Laos, implying that households owning pigs in these areas experience higher expenditure levels. This may be attributed to the role of pigs in providing a source of income or food security for households in urban and rural settings. However, the study also finds a negative impact of pig ownership on real expenditure per capita in the northern and central parts of Laos, with statistically significant results at the 95% confidence level. This unexpected finding suggests that households owning pigs in these regions may experience lower expenditure levels, possibly due to factors such as market dynamics, cultural practices, or agricultural conditions unique to these areas. The regression results highlight the heterogeneous effects of livestock ownership on household expenditure across different regions of Laos, underscoring the importance of considering regional variations in economic dynamics and agricultural practices when assessing the impact of livestock ownership on poverty and economic well-being.

The positive and statistically significant impact of the education level of the household head on real expenditure per capita in Vientiane Capital City and across all regions of Laos underscores the importance of education in driving household economic well-being. This finding suggests that households headed by individuals with higher levels of education are more likely to engage in income-generating activities and make investments in their children's education, thereby contributing to higher expenditure levels. Household heads with higher education levels may possess the knowledge, skills, and confidence to pursue entrepreneurial opportunities or seek higher-paying employment, leading to increased household income and expenditure. Additionally, their emphasis on education for their children reflects a long-term investment in human capital development, as higher education levels are associated with greater earning potential and socioeconomic mobility. These results align with previous research conducted by Phadouangdeth et al. (2013), Sayvaya (2012), Warr (2010), and Andersson et al. (2006), which have also found a positive association between the education level of the household head and household expenditure or economic well-being. This consistency in findings across studies further strengthens the evidence supporting the pivotal role of education in poverty reduction and economic development. The negative and statistically significant impact of the dependency ratio and the number of adults on real expenditure per capita highlights the economic challenges associated with larger households and higher dependency burdens in Laos. These findings suggest that households with a higher proportion of dependents, relative to the number of working-age adults, tend to have lower levels of real expenditure per capita. The dependency ratio, which reflects the ratio of dependents (such as children and elderly individuals) to the working-age population, serves as a proxy for the economic burden placed on households to support non-working members. Similarly, the number of adults in the household may also influence expenditure patterns, as larger households may face greater financial strain in meeting the needs of all members. The observed negative relationship between household size and real expenditure per capita implies that larger households may experience reduced consumption levels and overall economic well-being. This could be attributed to the limited resources available to meet the needs of each household member, resulting in a higher incidence of poverty and lower standards of living. These findings align with prior research by Eastwood and Lipton (1999), which suggests that higher fertility rates and larger household sizes can contribute to increased poverty rates by stretching household resources thin and reducing per capita consumption levels. As such, addressing issues related to family size and dependency ratios may be crucial for poverty alleviation efforts in Laos. The results underscore the importance of considering household composition and dependency ratios in the design of poverty reduction strategies and social welfare policies. Efforts to support smaller family sizes, improve access to family planning services, and enhance economic opportunities for working-age adults may help alleviate the economic challenges associated with household dependency burdens and contribute to improved well-being for households in Laos.

The negative relationship between irrigation access and real expenditure per capita, as identified in this study, suggests that households located in villages with irrigation systems tend to have lower levels of consumption capacity compared to those without access to irrigation. This finding is statistically significant across all regions of Laos at a 99% confidence level and in the Vientiane capital at a 95% confidence level. The presence of irrigation systems in villages is often associated with agricultural activities, particularly in rural areas where irrigation infrastructure is critical for supporting crop cultivation Akudugu et al(2022) . However, despite the potential benefits of irrigation for agricultural productivity, the study's results indicate that households in villages with irrigation systems may not necessarily experience higher levels of real expenditure per capita. Several factors may contribute to this negative relationship. For instance, while irrigation systems can enhance agricultural production and contribute to food security, they may also entail additional costs and maintenance requirements for households. Moreover, disparities in access to and control over irrigation resources could result in unequal distribution of benefits among households, leading to variations in consumption capacity. Additionally, households with access to irrigation may face specific challenges or constraints that limit their ability to translate increased agricultural productivity into higher levels of consumption. These challenges could include factors such as limited access to markets, inadequate infrastructure, or barriers to diversifying income sources beyond agriculture. While irrigation infrastructure can play a crucial role in agricultural development and poverty reduction, its impact on household consumption capacity may vary depending on various contextual factors. Understanding these dynamics is essential for designing targeted interventions and policies aimed at enhancing the well-being of rural households and promoting sustainable development in Laos. The contrasting result between this study and the findings of Bhattarai and Narayanamoorthy (2003), which indicated a positive impact of irrigation on

poverty reduction, underscores the nuanced nature of the relationship between irrigation access and household welfare. While irrigation systems hold the potential to enhance agricultural productivity and contribute to poverty alleviation, the actual impact may vary depending on contextual factors and the effectiveness of water management practices. It's important to recognize that the relationship between irrigation access and household welfare is influenced by various conditions, including household altitude, as noted in the study. Access to irrigation may indeed be expected to boost agricultural productivity and contribute significantly to household expenditure. However, deficiencies in water management practices could hamper the effectiveness of irrigation systems and limit their potential to improve household welfare. The interpretation of the study's findings aligns with existing literature, as mentioned by Andersson et al. (2006) and Phadouangdeth et al. (2013). These studies suggest that while irrigation infrastructure is essential for agricultural development, its impact on poverty reduction may be contingent upon factors such as water management practices, institutional arrangements, and broader socio-economic conditions. The discrepancy in findings highlights the need for further research to understand the mechanisms through which irrigation access influences household welfare in different contexts. This could involve exploring aspects such as water governance, technology adoption, and market access to better grasp the underlying dynamics of irrigation's impact on poverty reduction. Such insights are crucial for designing targeted interventions and policies aimed at maximizing the potential benefits of irrigation infrastructure for rural development and poverty alleviation.

The positive and statistically significant coefficient of landholding size for cultivation in the northern and central regions of Laos underscores the importance of land as a capital asset for agricultural production Lin, E. (2022). Larger land holdings enable households to cultivate more crops, thereby potentially increasing their real expenditure per capita. This finding aligns with the notion that agricultural productivity and income generation are closely linked to the availability of arable land. Furthermore, the significant positive impact of agricultural technologies such as tractors, fertilizers, and chemical inputs on real expenditure per capita across all regions highlights the role of modern farming practices in enhancing agricultural productivity and household income. Access to these technologies enables farmers to improve crop yields, reduce labor intensity, and achieve economies of scale in production. However, it's worth noting the absence of statistical significance for these variables in Vientiane capital. This could suggest differences in agricultural practices or economic structures between urban and rural areas, where the use of agricultural technologies may not be as prevalent or impactful in the capital city compared to rural regions. Given these findings, there is a clear policy implication for the government and private agencies to support farmers with access to agricultural inputs such as fertilizers and tractors through loans and credit facilities. By facilitating the adoption of modern agricultural technologies, policymakers can help boost agricultural productivity, increase rural incomes, and ultimately contribute to poverty reduction efforts across all regions of Laos. The positive and statistically significant impact of household businesses on expenditure per capita in the northern and central regions of Laos aligns with expectations. It suggests that households engaged in business activities have higher consumption capacities compared to those without any household businesses. This finding underscores the importance of entrepreneurship and income diversification for improving household welfare and economic resilience, consistent with previous research by Phadouangdeth et al. (2013). On the other hand, the negative impact of the male gender of household heads on real expenditure per capita in the southern region of Laos is noteworthy. This unexpected result may warrant further investigation into the socioeconomic dynamics and gender roles specific to this region. It's possible that cultural or structural factors influence household spending patterns differently in the southern part of Laos compared to other regions. The positive impact of household head age and age squared on real expenditure per capita, particularly in the central and southern regions, suggests a nonlinear relationship between age and household spending. This implies that while older household heads may have accumulated more resources and experience, there may also be diminishing returns to age in terms of expenditure. Understanding the underlying mechanisms driving these relationships could provide valuable insights for targeted poverty reduction interventions tailored to different demographic groups. These findings highlight the importance of considering household characteristics and socioeconomic factors in poverty alleviation strategies. By understanding how various household attributes influence expenditure patterns, policymakers can design more effective and targeted interventions to improve livelihoods and reduce poverty in different regions of Laos.

The positive impact of access to electricity on real expenditure per capita underscores the importance of reliable energy access for enhancing household productivity and welfare. Electrical equipment and lighting enabled by electricity can facilitate various income-generating activities and improve living standards Fowlie and Meeks, (2021). However, it's noted that the variable of electricity was excluded from the regression analysis for Vientiane capital due to universal access to the electricity network in the area. The insignificant relationship between access to safe water and real expenditure per capita suggests that while safe water access is essential for public health and well-being, its impact on household spending may be less direct or immediate compared to other factors. Further exploration into the specific mechanisms linking safe water access to household expenditure could provide valuable insights for targeted infrastructure development and poverty alleviation efforts. The negative relationship between distance from the village to the hospital and real expenditure per capita highlights the importance of healthcare accessibility for household economic well-being. Longer distances to healthcare facilities may impose transportation costs and time burdens on households, reducing their capacity to spend on other necessities. This underscores the need for improved healthcare infrastructure and transportation networks to enhance accessibility and affordability of healthcare services, particularly in rural areas. The significant and expected negative coefficient for the distance from the village to the hospital underscores the critical role of healthcare accessibility in influencing household expenditure patterns. Villages located farther from hospitals may face challenges in accessing timely medical care, leading to increased health risks and

potential productivity losses due to illness. As a result, households in such areas may allocate a larger portion of their expenditure towards healthcare-related expenses or suffer from reduced overall consumption capacity. Furthermore, the positive impact of market access on real expenditure per capita highlights the importance of local market infrastructure in facilitating economic activities and enhancing household purchasing power. Access to nearby markets allows households to engage in trade, access a wider range of goods and services, and potentially benefit from competitive pricing. However, the observed negative impact of market location in the southern part of Laos suggests that market dynamics and infrastructure may vary across regions, influencing their respective contributions to household expenditure levels. These findings underscore the interconnectedness between healthcare accessibility, market infrastructure, and household expenditure patterns. Efforts to improve healthcare and market access in rural areas can play a crucial role in enhancing household welfare, promoting economic development, and reducing poverty disparities across different regions of Laos.

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The observed positive impact of road access during the rainy season on real expenditure per capita in Vientiane capital and the central part of Lao PDR underscores the significant role of transportation infrastructure in enhancing household consumption capacity. Accessible roads enable easier transportation of goods and services, facilitating economic activities and improving market connectivity. As a result, households located in areas with improved road access may experience higher levels of expenditure, reflecting increased access to essential goods, services, and economic opportunities. While the insignificant negative impact observed in the northern and southern parts of Laos may raise questions, it is essential to consider the broader context and potential factors influencing these results. Variations in geographical terrain, population density, and infrastructure development across different regions could contribute to differential impacts of road access on household expenditure patterns. Additionally, other socio-economic factors and local conditions may interact with road infrastructure to influence consumption levels. The findings underscore the importance of targeted investment in road development initiatives, particularly in rural areas, to address poverty alleviation goals and promote inclusive economic growth. By improving access to transportation infrastructure, policymakers can facilitate greater market integration, enhance livelihood opportunities, and support efforts to achieve the socioeconomic targets in rural communities. This study expands on existing research by assessing the impact of road access on poverty across multiple regions of Lao PDR, providing valuable insights for policymakers and development practitioners seeking to address poverty disparities and promote sustainable development across the country.

4. CONCLUSIONS

Absolutely, infrastructure development, particularly in the form of road access, plays a crucial role in fostering economic development and poverty reduction, especially in rural areas. Improved road access facilitates the movement of goods and services between rural production centers and urban markets. This connectivity enables rural farmers and producers to access larger markets, expand their customer base, and sell their products at better prices, thus increasing their income. Accessible roads not only connect rural areas to urban markets but also facilitate trade between regions and countries. This connectivity opens up new opportunities for businesses to engage in trade and commerce, leading to economic growth and development. Better infrastructure, including roads, provides opportunities for income-generating activities such as transportation services, roadside businesses, and tourism-related ventures. These activities create employment opportunities and contribute to household income, thereby reducing poverty. Road access improves access to essential services such as healthcare, education, and social amenities. It enables people living in remote areas to reach hospitals, schools, and other facilities more easily, improving their quality of life and well-being. For rural economies heavily dependent on agriculture, road access is crucial for linking farmers to input markets, agricultural extension services, and processing facilities. It allows farmers to access agricultural inputs, technology, and information, leading to increased productivity and agricultural development. Infrastructure development, including road networks, promotes regional integration by facilitating the movement of people, goods, and capital across borders. This integration fosters economic cooperation, enhances market access, and stimulates trade and investment, benefiting all participating regions. In short, investing in infrastructure, particularly road access, is essential for promoting economic growth, improving living standards, and reducing poverty, especially in rural and remote areas. By enhancing connectivity, infrastructure development creates opportunities for income generation, market expansion, and socio-economic development, ultimately contributing to poverty alleviation and sustainable development goals.

Highlighting the significant positive impact of road access, particularly during the rainy season, on real expenditure per capita. Recognizing the role of road infrastructure in providing farmers with year-round access to urban markets and

boosting agricultural productivity, thereby contributing to poverty reduction, especially in the central part and Vientiane capital. Advocating for increased investment in rural road infrastructure by policymakers and private agencies. This investment is essential for improving connectivity between rural and urban markets, which in turn can lead to expanded agricultural production and reduced poverty levels. Recommending the provision of free education and scholarships at all levels (school, college, and university) across regions of Laos. Access to education is crucial for enhancing human capital and increasing consumption capacity levels, ultimately contributing to poverty reduction efforts. Suggesting the provision of microloans and subsidies to small farmers and potential households to support entrepreneurship and business establishment. Additionally, providing land to poor individuals and offering fertilizer loans for cultivation can further enhance agricultural productivity and contribute to poverty alleviation. Recognizing the need for a comprehensive approach to poverty reduction that addresses multiple dimensions, including infrastructure development, education, and financial support for rural households. Implementing these measures in conjunction with targeted policies and initiatives can lead to sustainable development and improved well-being across regions of Laos. Policymakers and stakeholders to consider in their efforts to combat poverty and promote inclusive growth in Laos. By addressing key areas such as infrastructure, education, and financial support, these measures have the potential to make a meaningful impact on poverty reduction and socioeconomic development in the country.

REFERENCES

Akudugu, M. A., Millar, K. K. N. D., & Akuriba, M. A. (2021). The livelihoods impacts of irrigation in Western Africa: the Ghana experience. *Sustainability*, 13(10), 5677.

Ali, A. & Sajid, A. . (2020). Towards Inclusive Growth: Financial Sector Dynamics and Poverty Reduction in Pakistan. *Journal of Business and Economic Options*, *7*(1).

Amis, P. and Kumar, S. (2000). Urban economic Growth, Infrastructure and Poverty in India: Lessons from Visakhapatnam. *Environment and Urbanization*, 12 (1), 185-196.

Andersson, R., Eriksson, H., & Torstensson, H. (2006). Similarities and differences between TQM, six sigma and lean. *The TQM magazine*, 18(3), 282-296.

Andreou, E. . (2021). A Literature Survey Trade Policy Dynamics: Insights for Assessing Poverty and Inequality Impacts. *Journal of Business and Economic Options*, *8*(3).

Assembly, U. G. (2021, June). Political declaration on HIV and AIDS: ending inequalities and getting on track to end AIDS by 2030. In *74th Plenary Meeting* (Vol. 8).

Becker, J. M., Proksch, D., & Ringle, C. M. (2022). Revisiting Gaussian copulas to handle endogenous regressors. *Journal of the Academy of Marketing Science*, 50(1), 46-66.

Bhattarai, B. and Narayanamoorthy, A. (2003). Impact of irrigation on rural poverty in India: An aggregate panel-data analysis. *Water Policy*, 5(5): 443-458.

Eastwood, R. and Lipton, M. (1999). The Impact of Changes in Human Fertility on Poverty. *Journal of Development Studies*, 36(1), 1-30.

Estache, A. Foster, V. and Wodon, Q. (2002). Accounting for Poverty in Infrastructure Reform: Learning from Latin America's Experience. *WB Development Studies. Washington, DC: World Bank.*

Fowlie, M., & Meeks, R. (2021). The economics of energy efficiency in developing countries. Review of Environmental Economics and Policy, 15(2), 238-260.

Gison, A., & Rozelle, R. (2003). The Impact of Agricultural Policies on Rural Development. *Journal of Agricultural Economics*, 57(3), 321-335.

Khalid, M. W. & Sultan, M. . (2017). Understanding the Interplay of Poverty, Inflation, and Unemployment: An Empirical Analysis. *Journal of Business and Economic Options*, *4*(2), 18-27.

Kim, B. Kyophilavong, P. and Boudchanthalath, S. (2013). Effects of Road Access on Household Production, Expenditure and Savings in Rural Areas: Based on the Rural Survey of Vientiane Province in Lao PDR. *Lao Journal of Economics and Business Management*, 4(1), 57-70.

Kwon, E. (2000). Infrastructure, Growth, and Poverty Reduction in Indonesia: A Cross-Sectional Analysis. *Manila: Asian Development Bank.*

Lin, E. (2022). How war changes land: Soil fertility, unexploded bombs, and the underdevelopment of Cambodia. *American Journal of Political Science*, 66(1), 222-237.

Mu, R. and Walle, D. V. D. (2011). Rural Roads and Local Market Development in Vietnam. *Journal of Development Studies*, 47(5), 709-734.

Nawaz, S., & Mangla, I. U. (2021). The economic geography of infrastructure in Asia: The role of institutions and regional integration. *Research in Transportation Economics*, 88, 101061.

Ogun, T. P. (2010). Infrastructure and Poverty Reduction: Implications for Urban Development in Nigeria. *World Institute for Development Economics Research, Working Paper No. 2010,43.*

Oraboune, S. (2008). Infrastructure Development in Lao PDR. In Kumar, N. (ed.), International Infrastructure Development in East Asia – Towards Balanced Regional Development and Integration. *ERIA Research Project Report 2007-2, Chiba: IDE-JETRO, pp.166-203.*

Phadouangdeth, O. Phommason, S. Kyophilavong, P. and Sayvaya, I. (2013). The Impact of Road on Poverty Reduction in Lao PDR. *International Journal of Economics and Empirical Research*, 1(11), 125-134.

Runsinarith, P. (2011). Infrastructure Development and Poverty Reduction: Evidence from Cambodia's Border Provinces. *Camdodian Economic Review*, 5(1), 1-26.

Sayvaya, I. (2012). Does Microfinance Reduce Poverty in Lao PDR? Case study of Village Development Funds (VDFs) at Sukhuma District Champassak Province, Lao PDR. *Mekong Institute Research Working Paper Series, No. 4/2012*.

Sayvaya, I., & Phommason, S. (2023). Roads to Prosperity: Impact of Rainy Season Access on Poverty Alleviation in Laos. *Journal of Business and Economic Options*, *10*(4), 1-6.

Seetanah, B. (2009). The economic importance of education: Evidence from Africa using dynamic panel data analysis. *Journal of Applied Economics*, 12(1), 137-157.

Sun, Y. & Chang, Y. (2020). Trade and Poverty in Developing Countries: Beyond Assumptions to Nuanced Understanding. *Journal of Business and Economic Options*, *7*(2).

Warr, P. (2010). Roads and Poverty in Rural Laos: An Econometric Analysis. *Pacific Economic Review*, 15(1), 152-169.

Zhan, J. X., & Santos-Paulino, A. U. (2021). Investing in the Sustainable Development Goals: Mobilization, channeling, and impact. *Journal of International Business Policy*, *4*(1), 166-183.

Zhang, J., Zhao, W., Cheng, B., Li, A., Wang, Y., Yang, N., & Tian, Y. (2022). The impact of digital economy on the economic growth and the development strategies in the post-COVID-19 era: evidence from countries along the "Belt and Road". *Frontiers in public health*, 10, 856142.

Zhengzheng, G. (2018). Microenterprise Activity and Poverty Reduction: A County-Level Analysis in Urban America. *Journal of Business and Economic Options*, *5*(1), 7-16.

Zubair, I. & Hayat, A. . (2020). Financial Development and Poverty Reduction: Insights from Pakistan. *Journal of Business and Economic Options, 7*(4).