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Foreign Direct Investment, Financial Development, Human Capital and Labor Productivity: A Global Perspective

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Abstract: The study examines the impact of foreign direct investment, human capital, and financial development on labor productivity, utilizing data from 2000 to 2019 and panel data from 180 economies. The estimation technique used in the study is GMM, which helps to solve the problems of endogeneity and unobserved heterogeneity. The findings indicate that foreign direct investment, human capital, and financial development have a positive and significant relationship with labor productivity. The square term of human capital also shows a positive relationship with labor productivity, indicating increasing returns. This study contributes to the literature by examining the roles of structural and financial factors using robust techniques. Furthermore, the study's results offer important policy recommendations, suggesting that the government should invest in projects to develop education and financial infrastructure to achieve high productivity gains.

Keywords: Foreign Direct Investment, Human Capital, Financial Development, Labor Productivity, Trade Openness, System GMM.

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1. Introduction

Both developed and developing economies focus on boosting labor productivity, as it is a key part of their development strategies. Workers' real income must be stable so they can purchase a variety of goods and services, maintain high living standards, and improve their welfare. Achieving this depends on increasing productivity rates. This study examines whether foreign direct investment (FDI), human capital (HK), and financial development (FID) influence labor productivity (LBPROD) across different economies over time. Additionally, this paper explores how FDI affects LBPROD and whether this effect is shaped by FID and HK, using a panel dataset from 2000 to 2019 and a dynamic estimation technique. This study finds a strong positive impact of FDI, HK, and FID on LBPROD across economies.

Labor productivity (LBPROD) is the main factor that indicates the competitiveness and growth rate of an economy, which helps with global comparisons and predicting the performance of any firm or economy (Udo-Aka, 1983). Therefore, higher productivity rates depend on how efficiently different resources are used to produce most of the goods that a country's population will eventually need (Ukeje, 2000). Productivity is defined as "a ratio of the volume of input used in production." Korableva et al. (2019) state that higher LBPROD is not only an economic process but also shortens the time needed to produce any merchandise. Since the early 1990s, most developing economies in Asia have integrated with the global economy, taking advantage of the opportunities globalization offers. As a result, these economies have experienced higher growth rates compared to those in Latin America and Africa. European economies are experiencing a slowdown in labor productivity rates, partly due to labor market policies that favored low-skilled labor over capital (Artus et al., 2004). Several factors can negatively impact LBPROD, such as poor labor skills and lack of experience, inadequate equipment, resource shortages, and mismanagement at the site (Chang & Wo, 2017; Mahamid, 2014).

Foreign direct investment (FDI) plays a central role in boosting employment opportunities, capital accumulation, economic competitiveness, and profit-making prospects for developing economies (Gui-Diby, 2016; Li & Tanna, 2017). FDI inflows are considered resource

packages that provide easy access to different markets and technological know-how (Kumar, 2005), which increases LBPROD. Various studies indicate the positive impact of FDI on LBPROD, such as those by (Chen et al., 2011; Crespo & Fontoura, 2007; Ng, 2007; Li & Tanna, 2017).

A number of researchers, such as Levchenko et al. (2009) and Aitken & Harrison (1999), scrutinize the impact of FDI on LBPROD as pessimistically related. FDI influences LBPROD through various mechanisms. One such mechanism is technological transfer, where international firms introduce new production methods, innovative machinery, tools, and entrepreneurial practices to the host economies. This, in turn, leads to an increase in the efficiency levels of local workers. Another channel is knowledge spillovers, which occur when domestic firms learn new techniques, skills, and modernize tactics by communicating with or analyzing international firms. FDI can substantially enhance market competitiveness by compelling local firms to increase their productivity in order to survive. In some cases, development in human training and HK offered by international firms primarily enhances labor skills and LBPROD. These mechanisms help explain that the effect of FDI on LBPROD is not solely based on financial factors; rather, it is rooted in improvements in knowledge and production structure.

Financial development can promote aggregate productivity growth when supported by a well-organized legal system (Beck & Levine, 2002). There are many channels through which FID can influence LBPROD, including easy credit access, which enables investments in technological processes and infrastructure that ultimately boost LBPROD. Additionally, better capital allocation shifts resources toward more valuable ventures and productive sectors. Moreover, improved financial systems provide better management tools for risk, helping to mitigate financial risks in trade and industry. Productivity growth results from development in the stock market, which is facilitated by FID (Udomkerdmongkol et al., 2012). According to Das & Guha-Khasnobis (2008), when credit is properly allocated within the financial system, it acts as a link between the financial and real sectors, increasing productivity rates in both. The positive impact of FID on productivity has been confirmed by many scholars, such as Guillaumont Jeanneney et al., (2006); Beck &

Levine, (2002); Gehringer, (2013). Cecchetti & Kharroubi (2012) examine the nonlinear effect of FID on productivity growth.

HK is one of the key factors that can influence LBPROD in various ways, and the main components of HK include health, education, and skills. Over the past five decades, many researchers have observed how HK can boost employee productivity. The most valuable resource in any country is the stock of human capital within its citizens (Jibir et al., 2023). HK is one of the most important resources needed for the effective functioning of any individual (Pfeffer, 1995). According to Backer (1975), investing in education yields fruitful returns in the future and increases an individual's productivity (Dittman et al., 1976). As a result, productivity improved when workers with better health, knowledge, technical skills, and expertise could perform their tasks more efficiently (Bong, 2009). Much endogenous growth theory (EGM) emphasizes that skill accumulation enhances workers' absorptive capacity, fosters innovation, and boosts labor productivity. Therefore, highly skilled and educated workers can easily adopt new technologies, thereby improving LBPROD in multiple ways (Forbes & Davis, 2010). Human resources serve as a driving force in the production process of both individuals and organizations (Chang & Woo, 2017).

Health is considered one of the key factors that can influence an economy's output level. It is believed that healthy people are better workers, with more physical ability, lower turnover, and less absenteeism (Well, 2007), which results in higher worker productivity. The positive link between HK and income is a major finding in social sciences (Deming, 2022). When workers earn higher wages, they are more motivated to work, leading to increased productivity. Many studies demonstrate a positive impact of HK and LBPROD; (Afrooz et al., 2010; Arshad et al., 2015; Fleisheret et al., 2011; Qu & Cai, 2011). The economy's steady growth in the twenty-first century is largely due to improvements in HK (Barrett & O'Connell, 2001).

This study aims to investigate the effects of various factors influencing labor productivity. It critically analyzes the impact of FDI, HK, and FID on LBPROD. The study focuses on key determinants of LBPROD, such as trade openness (TO), industrial value added (INVA), and capital intensity (KI); therefore, INVA and KI are considered to influence LBPROD. This research strengthens the argument by incorporating precise measures to ensure the robustness of results and more reliable conclusions.

Additionally, policy recommendations based on the findings will be provided to assist economies in enhancing their LBPROD. Furthermore, it finds that the relationship between FDI, FID, HK, and LBPROD can be improved if policymakers implement more effective policies affecting LBPROD, and it provides a deeper understanding of how peripheral and structural issues are interconnected to produce economic outcomes.

The structure of the research is organized as follows: Section II provides a brief literature review of previous studies. Section III discusses the data source and methodology. Section IV presents the findings and discussions. Section V concludes the research with the final remarks.

2. Literature Review

Before discussing the study methods for this investigation, it was necessary to identify notable previous research work in this subject area. In this section, we will review the existing literature on the effects of FID, FDI, and HK on LBPROD across various micro and macro-level studies.

In early studies, the crucial role of HK in productivity growth has been well recognized by the works of Schultz (1961), Becker (1964), and Welch (1970). According to human capital theory, education, health, and training improve the LBPROD by providing relevant skills and knowledge and increasing their potential salary through lifetime earnings (Becker, 1964). Furthermore, Nelson & Phelps (1966) note that highly skilled workers are more productive than low-skilled workers. Lucas (1988) emphasizes that there are two sources of HK: first, existing education, and second, learning by doing. Human capital stock and production are directly linked; investment in human capital stock heavily depends on the current human capital stock. As a result, timely investment becomes more valuable as HK increases, thereby boosting the productivity of economies and labor (Delsen & Schonewille, 1999).

Some theories support this connection by showing that improvements in health and higher education levels can lead to better LBPROD, aided by increased technological absorption and efficiency. Others have observed how human capital influences LBPROD, but this depends on various factors such as technological development or institutional quality. This difference in findings highlights the need for a more refined framework that considers interaction outcomes and economic structures. Neoclassical theorists like Solow (1956) and Romer (1986) have emphasized the role of human capital in growth, viewing it as

a key input for development that provides a steady growth rate when linked with technological progress. Later, a new Expanded Growth Model (EGM) was introduced in economic literature, focusing on the importance of human capital. The EGM states that investing in human capital not only encourages growth but also supports long-term productivity gains.

From a theoretical perspective, the connection between HK and LBPROD is considered well-established based on both the Solow and endogenous EGM models. These theories help explain how significantly HK influences variation in LBPROD. They also indicate that an increase in HK should positively affect LBPROD. This relationship is something that this study will empirically examine.

In the study conducted by Aggrey et al. (2010), the LBPROD of East African manufacturing firms was measured using data from 2002 to 2003, collected from 403 manufacturing firms across East African countries, with the generalized least squares method. The results show that skilled and educated workers positively impact LBPROD. Later, from 2009 to 2012, the influence of HK on LBPROD in the Malaysian economy was analyzed using a fixed effects GLS model. The estimated results indicate that improvements in education and health are crucial for achieving higher productivity growth (Arshad & Ab Malik, 2015).

The research by Baharin et al. (2020) is another significant contribution in this area. They examined the impact of HK on LBPROD for the Indonesian economy from 1981 to 2014 using the ARDL estimation model. The results show that primary and secondary education have a significantly positive effect on LBPROD, while tertiary education is negatively related. The study also suggests that the quality of HK is a challenge for the Indonesian economy to increase LBPROD. In a similar study conducted by Ezoji et al. (2019), using a composite model approach (ARDL model) for the period 1974-2014, they observed that all variables have a positive and significant impact on LBPROD in the long run. The policy implication is that if a nation's current stocks are low, then they should increase their stock of HK, and good HK helps boost per capita output and LBPROD.

Furthermore, Wang et al. (2022) estimated the agricultural productivity of farm labor and HK in the US and found that educational attainment is the main factor that positively increases labor quality, and continuous investment in HK in the workforce can maintain sustainable agricultural productivity growth. These empirical results of the study

show a positive effect of HK on LBPROD, thus providing empirical support for our findings that show similar results.

Similarly, research on FDI as a key factor influencing LBPROD is available in the literature. An advocate of Solow's Growth Model (SGM) analyzed the potential benefits of FDI inflows to an economy through the transfer of technological knowledge, new and improved production methods, integration with global value chains, and easier access to foreign markets. These benefits generate positive externalities, such as spillover effects of knowledge, experience, skills, and proficiency (Hale & Long, 2006). Modern EGM highlight the importance of foreign knowledge and information for long-term growth, and for this purpose, imports, technology spillovers, knowledge transfer, and skill development are among the main channels (Grossman & Helpman, 1991; Romer, 1986) driving increases in growth and productivity. Heckscher-Ohlin's and Porter's competitive advantage models demonstrate the firm foundation of FDI as a basis for economic development and success, leading to higher productivity growth (Aregbesola, 2014).

Even with a strong theoretical background, the empirical evidence remains mixed. Some findings indicate a positive effect of FDI on LBPROD when the host economy has a better absorptive capacity. Others indicate that restricted technology transfer and the crowding out of local organizations have a negative impact on LBPROD. These conflicting results suggest that the effect of FDI on LBPROD depends on many additional factors. This study not only examines the positive influence of FDI on LBPROD but also explores how this relationship is affected by moderating variables. FDI, by spreading technological know-how, expertise, and efficient production practices, can lead to an increase in LBPROD within the host economy. According to the EGM framework provided by Romer (1990), these benefits for the host economy depend solely on its absorptive capacity.

Furthermore, the empirical study conducted by Asada (2020) estimated the impact of FDI, trade, and LBPROD on Vietnam's economy from 1990 to 2017. The ARDL model results indicate that the relationship between FDI, trade, and LBPROD is significantly positive. The study also concludes that if domestic firms adopt new advanced technologies and close the technology gap, it could improve firm performance and LBPROD. Similarly, Le et al. (2019) investigate the effects of FDI and HK

development on Vietnam's LBPROD from 1986 to 2014 using the ARDL approach. They found that in the long run, FDI and HK development had a significant positive impact on LBPROD (Le et al., 2019).

Li & Tanna (2019) argue that improving institutional quality is more important than HK development for understanding the productivity gains from FDI in developing economies. The results for 51 developing economies from 1984 to 2010 indicate that the impact of FDI on productivity growth is weak, and the productivity response to FDI depends on absorptive capacity to achieve increases. Barrios & Strobl (2002) reached a similar conclusion for Spain from 1990 to 1998, showing that firms' absorptive capacity plays a key role in determining whether they can benefit from FDI-related externalities, with firms possessing sufficient capacity able to gain positive spillovers. Orji et al. (2022) analyzed firm-level data from West African economies between 2006 and 2018. These studies collectively conclude that FDI has a significant positive effect on LBPROD, consistent with our findings.

Financial Development (FID) refers to improvements in the value and effectiveness of financial intermediaries' services. Building on this foundation, some theoretical perspectives have been developed that link FID to various labor market outcomes, with channels expected to operate through investment and savings (Zoaka & Güngör, 2023). Many studies demonstrate connections between the financial market and productivity, such as investment, capital formation, and overall productivity. Numerous studies indicate that advancements in finance and increased access to capital boost investment (Arcand et al., 2015; Joyce & Suryo Prabowo, 2020), which in turn enhances economic growth and LBPROD. FID encourages firm production by enhancing capital and labor inputs rather than relying solely on more advanced technology (Pagano & Pica, 2012). With the opening of stock markets to international investors and during periods of market liberalization, LBPROD grows at a faster rate compared to real wages in developing economies (Chari et al., 2012).

FID and HK enable industrialists to participate in certain activities that promote growth through productivity improvements. In domestic economies, both play a crucial role in mitigating the impact of external shocks (DemirgüçKunt et al., 2005). In traditional growth theory, growth is driven by the development of the financial sector through capital accumulation. According to the EGM, an increase in productivity is stimulated by the creation of knowledge. Benhabib & Spiegel (2000) state that FID boosts capital accumulation and productivity growth.

According to the Financial Intermediation Theory, financial institutions play a crucial role in eliminating asymmetric information and lowering transaction costs by creating a more efficient allocation of capital. Furthermore, according to EGM, financial institutions also enhance innovation levels and productivity rates by providing loans on favorable terms for the accumulation of capital, skills, and education. Still, a strong theoretical foundation exists. Some studies suggest positive effects of FID on the LBPROD, especially in economies with improved institutional systems and better HK, while others predict that FID leads to credit misallocation, limits financial inclusion, and thus diminishes the positive impact of FID on LBPROD.

The empirical findings of Zanetti (2015) provide insights into potential factors that influence how external shocks affect the labor market. It shows that a positive financial shock, facilitated by improved loan recovery, leads to higher labor wages and productivity. A lower likelihood of loan default encourages businesses to issue more debt and provide less collateral, which ultimately results in increased investment. As a result, firms hire more people, leading to higher wages and LBPROD. Zoaka & Güngör (2023) examine the effect of FID and capital accumulation on LBPROD in the sub-Saharan African region by analyzing data from 1990 to 2018. The cross-section autoregressive distributed lag estimation indicates that FID and capital accumulation enhance LBPROD. To analyze the long-term relationship between financial institutions, output, and the unindustrialized sector in Pakistan from 1971 to 2011, Barucca et al. (2021) and Shahbaz & Islam (2011) use the ARDL and Cobb-Douglas production methods. The results suggest that government efforts to promote output growth in the agricultural sector can improve efficiency in the financial sector, ultimately increasing productivity.

Iheonu et al. (2020) employ the Granger causality test to examine the relationship between FID and domestic investment in Western African states. The results suggest that FID should be used as a key policy tool to boost domestic investment. When domestic investment increases, it can lead to a recovery in productivity rates. As a result, Sayfollahi & Hazeri (2019) explore the relationship between FID and LBPROD using Dynamic Panel Data techniques based on the Generalized Method of Moments (GMM) in Middle Eastern and North African countries from 2000 to 2014. The findings show that, aside from the level of FID, all other variables were significant. Using the nonparametric stochastic frontier data envelopment approach, which utilizes provincial panel data from 1990 to 2009, Han & Shen (2015) examine the relationship between FID and efficiency

improvements, as well as technological progress. The results indicate that, rather than efficiency change alone, FID significantly promotes TFP growth through technological advancement.

Another study by Guillaumont Jeanneney et al. (2006) considers an association between FID, economic efficiency, and productivity growth; the estimated results of the dataset covering 29 provinces over the period from 1993 to 2001 by using GMM indicate that FID has significantly contributed to productivity growth of the Chinese economy, primarily by way of the efficiency gains it brings about. Based on the above results, the following hypotheses were made. The empirical results of the various researchers are similar to our own findings. This current study contributes empirically by demonstrating that the FID will positively affect LBPROD when balanced by robust factors. These results substantiate the neoclassical and EGM approaches by providing a more comprehensive understanding of the fact that a well-functioning financial system acts as the primary driver of productivity growth.

On the basis of above studies following hypotheses are made.

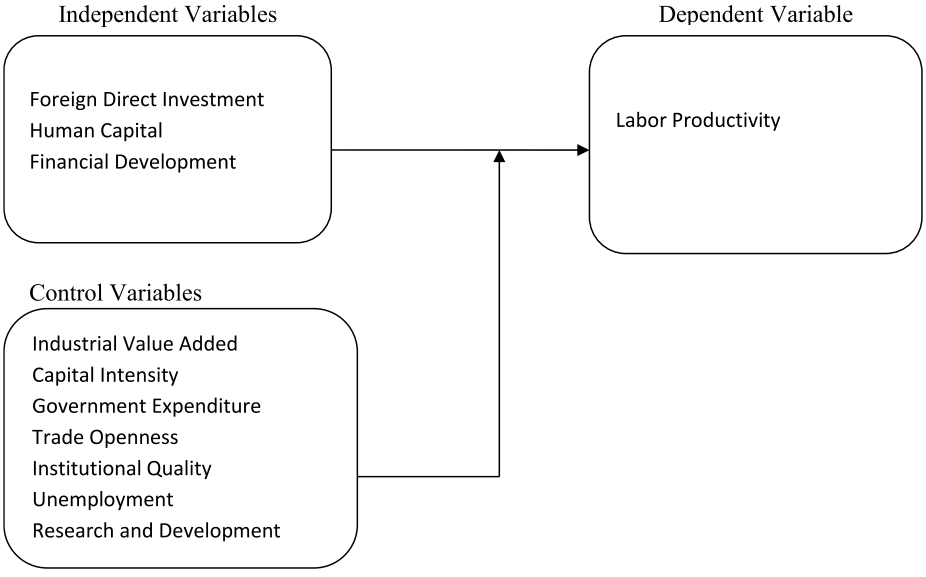
Hypothesis 1: Does FDI have a positive and significant relationship with LBPROD?

Hypothesis 2: Does FID lead to enhanced LBPROD?

Hypothesis 3: Does HK have a positively significant impact on LBPROD?

Based on the above literature, the following conceptual model has been developed.

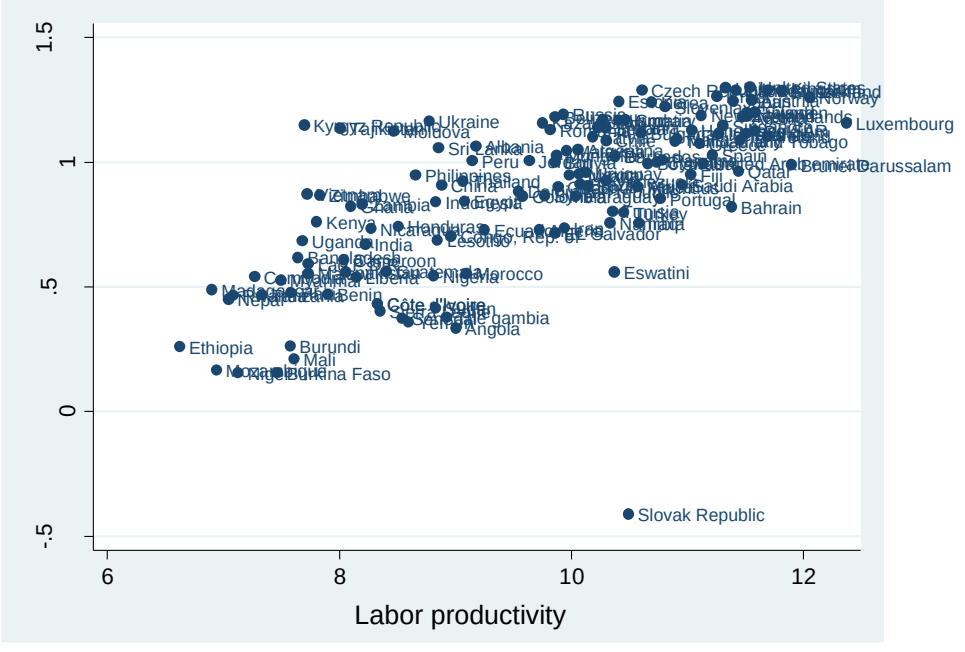
Figure 1: Schematic model of the conceptual framework.



Source: This figure is constructed by the author.

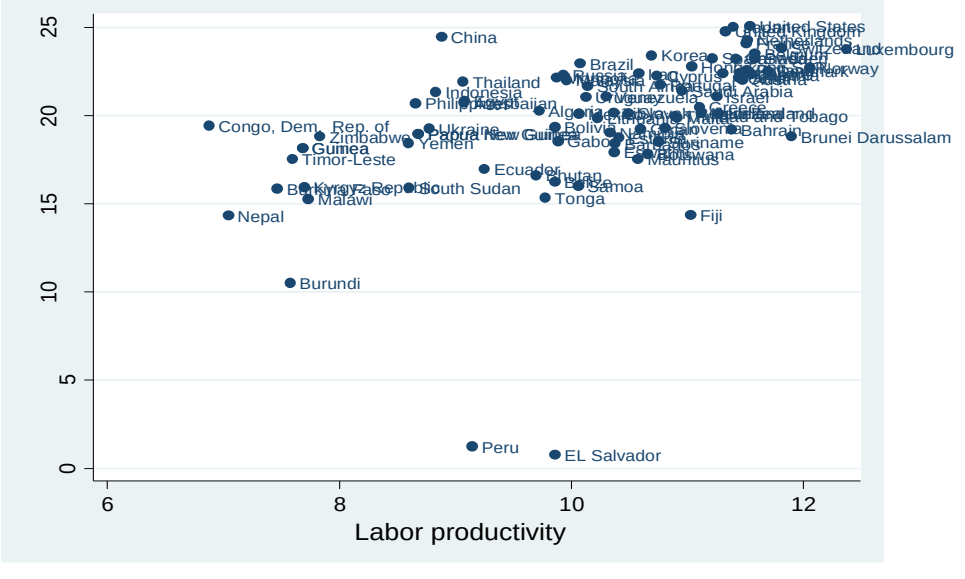
The current study draws on well-established growth theories, which strengthen the conceptual framework by highlighting the connection between peripheral drivers, the economy's inherent capacity, and productivity growth. Solow emphasized that capital accumulation and technology diffusion primarily occur through FDI, which serves as a key driver of productivity. The EGM concentrates on internal drivers, including HK, FID, TO, INVA, R&D, UNEMP, KI, and IQ, all of which are vital for sustaining long-term productivity growth. The Schumpeterian Innovation Theory also highlights that easy access to credit and information enables workers and industries to innovate and achieve higher productivity levels. All these theories support the influence of HK, FDI, and FID on LBPROD by illustrating the strong relationship between external and internal factors impacting LBPROD. The various graphs then depict the trend between HK, FDI, and FID in relation to LBPROD.

Figure 2: Human Capital and Labor Productivity



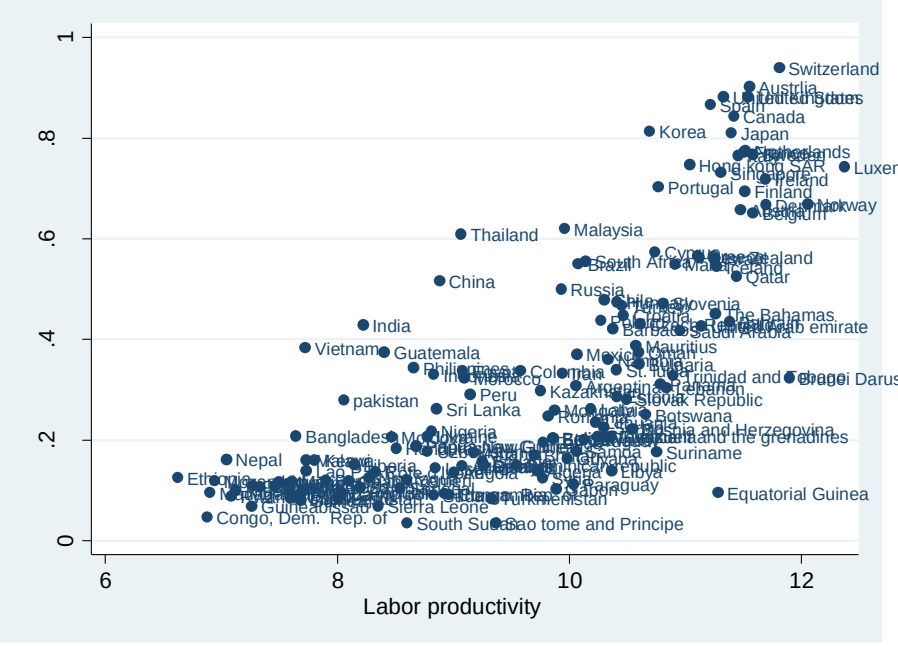
Source: International Labour Organizational and Penn World Table.

Figure 3: Foreign direct investment and Labor Productivity



Source: International Labour Organization and World Development Indicators (World Bank).

Figure 4: Financial Development and Labor Productivity



Source: These graphs are constructed by the author.

3. Methodology and Data

Analytically, the relationship between foreign direct investment, financial development, and human capital on labor productivity in a panel setting can be described as in Equation 1:

$$LBPROD_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 FID_{it} + \beta_3 HC_{it} + X_{it} + \mu_{it} \quad (1)$$

where LBPROD is labor productivity, FDI is foreign direct investment, FID is financial development, HK is human capital, X_{it} are the control variables, and μ_{it} is the error term. The model used in this study for empirical analysis is based on a sample of 181 countries worldwide, with data spanning the period from 2000 to 2019. There are gaps in the dataset and variations that cover different developing and emerging economies. To improve the accuracy and reliability of the estimates, this article combines data from advanced, developing, and emerging economies into a single panel dataset. This approach ultimately increases the sample size and improves the analysis. The determinants of LBPROD have been selected based on the work of El-Ghamrawy (2014), Bagci (2010), Samargandi (2018), Sarwar et al. (2021), and Kpognon et al. (2022).

The complete regression model of the study is given as follows in Equations 2 and 3:

$$LBPROD_{it} = \alpha_0 + \alpha_1 FDI_{it} + \alpha_2 FID_{it} + \alpha_3 HK_{it} + \alpha_4 TOPEN_{it} + \alpha_5 INVA_{it} + \alpha_6 INQ_{it} + \alpha_7 R\&D_{it} + \alpha_8 KL_{it} + \alpha_9 GXP_{it} + \alpha_{10} UNEMP_{it} + \mu_{it} \quad (2)$$

$$LBPROD_{it} = \gamma_0 + \gamma_1 FDI_{it} + \gamma_2 FID_{it} + \gamma_3 HC_{it} + \gamma_4 SQHC_{it} + \mu_{it} \quad (3)$$

where LBPROD = Output per worker; FDI = Foreign direct investment; FID = Financial development; KL = Human capital; TO = Trade openness; INQ = Institutional quality; INVA = Industry value added; KI = Capital intensity; UNEMP = Unemployment; GEXP = Government expenditures; R&D = Research and development; SQHC = Square of HK.

Finally, i denotes the list of 181 economies of the world, with the period denoted by t varying from 2000 to 2019.

The fixed effects instrumental variable technique, as described by Anderson and Hsiao (1982) in their GMM, has been employed in the study. This method can address unobserved fixed effects by using a lag of dependent variables to control for endogeneity. It is particularly useful in estimating dynamic models, which is why this GMM estimation approach is chosen over fixed and random effect models. The GMM employed internal instruments, making it suitable for the structure of our dataset. System GMM reduces bias, performs well with small sample sizes, and enhances effectiveness when the variables in the model are constant, as it combines equations at both differences and levels. Additionally, to test robustness, address heteroskedasticity, and improve the reliability of estimates, we use the G2SLS method. The two-step System GMM (Blundell & Bond, 1998) is utilized to achieve better estimation results and handle heteroskedasticity, which is primarily present in the panel data set. This approach provides more reliable estimates when the cross-sectional dimension exceeds the time dimension. Still, the basic GMM is the methodology that we are employing, with G2SLS and System GMM as robustness checks.

The goal of this study remains to examine the impacts of FDI, HK, and FID on LBPROD. In this study, LBPROD is a dependent variable. LBPROD includes all the major factors that influence productivity (Sharpe,

2004). Productivity is measured at both the firm and aggregate levels, but this article focuses on the aggregate level. There are various factors that determine productivity, but the LBPROD determinants used here are FDI, HK, FID, KI, INVA, GEXP, and INQ. Labor market performance shows how the economy functions (Savvas et al., 2011), and LBPROD is an important outcome of the labor market. LBPROD determines how efficiently goods and services are produced, reflecting competitiveness and welfare standards. According to Krugman (1997), productivity becomes critically important in the long run.

HK is one of the essential tools that enhance LBPROD. Healthy, educated, and skilled laborers are more productive than unskilled laborers; thus, HK boosts LBPROD (Afrooz et al., 2010). The endogenous growth model suggests that when educated and highly skilled labor combines with physical capital, it improves worker and organizational productivity and efficiency. Solow's output growth model (1956) states that labor and units of physical capital are some of the key inputs on which the productivity of any firm or economy depends. Additionally, (Barro, 1991; Becker et al., 1990; Lucas, 1988; Nelson & Phelps, 1966) analyzed that labor quality is a significant factor in increasing economic productivity. This demonstrates that HK has a positive effect on LBPROD. In production, Schultz (1961) said that HK can increase a firm's assets and improve LBPROD to maintain a competitive advantage. Mankiw et al. (1992) pointed out that the production process in any economy increases with an expanding workforce.

FID is an indicator of growth in the financial industry (Bui, 2019). FID boosts productivity growth through its impact on effective organizational practices (Guillaumont Jeanneney et al., 2006). In the context of endogenous growth, Romer (1986) examines the link between FID and productivity, showing that endogenous technological progress and its positive externalities lead to a constant return to capital. The endogenous model by Greenwood & Jovanovic (1990) highlights the importance of financial intermediaries in speeding up productivity growth by two main roles: gathering information about investment projects and improving investment efficiency by providing funds for ventures with the highest expected returns. Therefore, modern economic theories suggest that productivity is the primary driver of economic growth. In this context, the role of FID in enhancing productivity is more significant than factor accumulation.

FDI is a vital part of economic progress and foreign economic systems. For emerging and low-income economies, it is considered one of the main funding sources. With new technologies and effective management, FDI can improve average LBPROD (Ng, 2007). As nations grow and industrialize, inward FDI promotes integration into the global economy by stimulating and increasing foreign trade flows, ultimately helping the economy to grow and boost LBPROD. In the least developed economies, where education levels, financial intermediation, and technological know-how are weak, FDI inflows could enhance productivity (Mold, 2003). The AK growth model, developed by Harrod (1939), Domar (1946), and further expanded by Frankel (1962) and Romer & Frankel (1999), explains that countries with sufficient FDI access will eventually enable firms to adopt new advanced technologies, which may lead to higher LBPROD and overall economic development.

The study also controlled for several variables to analyze their relationship with LBPROD. According to Wagner (1876), GEXP is an endogenous variable used to stimulate the economy (Ngobeni & Muchopa, 2022). Keynes (1936) stated that if GEXP increases, it will lead to increased private spending, which in turn accelerates business activities and boosts output growth. However, increased GEXP on public goods improves the spending of economic agents and production activity. On the other hand, Mankiw (2015) supports Keynes's theory that an increase in GEXP results in higher output levels. Therefore, the government must use GEXP more effectively to achieve rapid production growth (Riedl, 2010). If public expenditure on the main economic sector is carried out by the state, creating new job opportunities (Ernawati et al., 2021), it also stimulates LBPROD.

INVA is a key indicator of LBPROD. Industries play a vital role in economic development (Naudé, 2016). An increase in INVA will boost revenues and demand for industrial products, goods, and services, which will accelerate the production process and employment rate (Jamaliah, 2016). For rapid industrial activity, the government should foster a competitive environment that stimulates demand for industrial products, enhances industrial output (Asgari et al., 2021), and promotes LBPROD. The industrial sector significantly contributes to economic growth by increasing value added and improving overall welfare, thereby raising LBPROD. The experiences of advanced and emerging economies show a clear connection between national growth and the expansion of the manufacturing sector (Banjoko et al., 2012), leading to improved LBPROD.

KI is one of the main factors that can influence LBPROD. KI enhances a company's performance and labor productivity. Variations in LBPROD across many industries are linked to differences in capital intensity levels (Bagger et al., 2014). KI influences wage dispersion and productivity rates. Capital-intensive enterprises require higher skill levels from workers compared to labor-intensive ones (Goldin & Katz, 1998). Capital-intensive firms offer workers opportunities to develop more skills, earn higher wages, and increase their productivity (Datta et al., 2005). According to Kaplinsky (1995), capital-intensive sectors show higher investment and production rates than labor-intensive sectors; a lack of capital results in lower output growth. When more capital is needed to produce certain products, an economy has the opportunity to export those products at a larger scale, thereby increasing LBPROD (Alleyne & Subramanian, 2001).

TO is another control variable used in our study. Economies can benefit from trade through comparative advantage, which involves producing and trading goods with low opportunity costs (Ricardo, 1895). According to the theory of absolute advantage, nations with access to foreign markets can maximize gains from increased productivity, aided by the division of labor (Smith, 1776). Through specialization and labor division, economies achieve the greatest productivity gains. Therefore, trade plays a key role in improving both the welfare and productivity of economies. TO enhances knowledge spillover and boosts the production process and LBPROD (Edwards, 1998). According to Ricardo, trade allows economies to produce goods at lower costs than others through specialization, which is a fundamental tool for increasing productivity (Kunst & Marin, 1989).

TO may have a negative relationship with LBPROD, as noted by Kang & Suwannarat (2024). This argument suggests that TO leads to deindustrialization when imports surpass exports, displacing local workers' jobs. If local workers lack the necessary skills and training, they find it difficult to operate new machinery, adapt to new technologies, or acquire new knowledge. As a result, productivity decreases.

The quality of institutions and the institutional environment are seen as essential factors for productivity (Islam, 2008). Responsible governance fosters the development of social infrastructure, which boosts productivity levels. Additionally, del Río (2018) noted that the quality of regulation and government efficiency improved LBPROD (Mustafa & Jamil, 2018). Capital accumulation is enhanced by INQ and influences firm

employment and productivity rates (Rodríguez-Pose & Ketterer, 2019). Economies with higher INQ are more likely to secure property rights for individuals, leading to increased productivity growth (North, 1991). When political and economic institutions are strengthened effectively, economies tend to experience higher productivity growth (Rigobon & Rodrik, 2005).

Unemployment is one of the main control variables that can affect LBPROD. According to Veblen's theory of unemployment, in the short term, due to pressure and innovation, there may be a rise in the LBPROD rate, but in the long term, there is a decline in productivity because of decreased worker motivation and less investment by firms. The results of Amassoma & Nwosa, (2013), affirm that UNEMP has an insignificant effect on LBPROD.

Research and development are the most important control variables that can influence LBPROD. Innovation occurs because of R&D, which then leads to increased LBPROD over time. Likewise, many new growth theories and endogenous growth theory emphasize that new ideas are generated through R&D and have a positive impact on the production process and LBPROD (Khan & Rehman Khattak, 2014).

3.1 Data and Descriptive Statistics

To study the impact of FID, FDI, and HK on LBPROD, the panel data of 181economies from the period 2000 to 2019 have been collected from different sources. Table 1 provides descriptions of the variables and their data sources. Table 2 contains descriptive statistics of the variables included in the study.

Table 1: Variables Description, Data Sources and Expected Sign

Variable	Description	Data Source	Expected Sign
	Dependent Variable		
LBPROD	Output per worker (GDP constant 2011 international $ in PPP)	ILO Stat (2025)	
	Independent Variables		
Foreign Direct Investment (FDI)	Foreign direct investment net (BoP, current US$)	WDI (2025)	+/-
Human Capital (HK)	Average years of schooling and rate of return on education	Penn world table (2025)	+
Financial development(FID)	Ratio of private credit to GDP	IMF (2025)	+/-

Variable	Description	Data Source	Expected Sign
Trade Openness (TO)	Trade as a percentage of GDP	WDI (2025)	+/-
Unemployment (UNEMP)	Unemployment with advanced education (% of total labor force with advanced education)	WDI ((2025)	+/-
Government Expenditures(GEXP)	Government expenditures (as a ratio to GDP)	IMF ((2025)	+/-
Capital Intensity (KI)	Capital stock per worker	WDI ((2025)	+/-
Institutional quality (IQ)	Institutional Quality	ICGR (2025)	+/-
Industrial Value Added (INVA)	Industry(including construction), value added (% of GDP)	WDI (2025)	+/-
Research and development (R&D)	Research and development expenditure (% of GDP)	WDI (2025)	+/-

Source: Author's calculations.

Table 2: Descriptive statistics

Variable	mean	std	min	max
PL	9.466	1.473	6.134092	12.477
FID	0.315	.234	0.000	1.000
KI	11.374	1.463	7.620	14.006
INQ	4.011	0.223	2.933	4.441
FDI	20.092	5.945	-0.504	26.109
TO	4.334	0.605	-1.787	6.093
INVA	2.948	0.816	-3.147	4.635
R&D	-0.613	1.277	-5.214	4.317
UNEMP	1.558	0.649	-1.049	3.410
HK	0.851	0.326	-0.503	1.471
GEXP	3.382	0.412	0.625	4.648
HK^2	1.701	0.653	-1.007	2.941

Source: Author's calculations.

Table 3: Result of Estimation

Variable	GMM		G2SLS		System GMM	
	COEFF	P>|z|	COEFF	P>|z|	COEFF	P>|z|
FDI	0 .008	0.001	0.005	0.046	0.041	0.026
HK	0.833	0.051	1.309	0.001	0.767	0.083
FID	0.136	0.008	0.185	0.008	0.767	0.005
KI	0.301	0.013	0.209	0.039	0.403	0.059
TO	-0.103	0.058	-0.088	0.001	0.124	0.226
INVA	0.235	0.000	0.109	0.050	0.195	0.355
UNEMP	-0.048	0.018	-0.008	0.000	-0.070	0.366
R&D	0.113	0.059	0.119	0.010	0.102	0.217
INQ	0.079	0.550	-0.241	0.035	0.759	0.010
GEXP	0.225	0.002	0.083	0.017	0.472	0.056

Variable	GMM		G2SLS		System GMM	
	COEFF	P>|z|	COEFF	P>|z|	COEFF	P>|z|
AR1					0.081	
AR2					0.739	
Sargan test					0.116	
Hassan test	0.582				0.764	
Prob>F			0.000			
UIDTEST	0.002					

Source: Author's calculations.

Table 4: Result of estimation with Square Term

Variables	GMM		G2SLS		System GMM	
	COEFF	P>|z|	COEFF	P>|z|	COEFF	P>|z|
FDI	0.007	0.038	0.007	0.052	0.106	0.010
FID	0.673	0.001	0.569	0.000	0.365	0.026
HK^2	0.379	0.071	0.333	0.071	-1.988	0.005
HK	1.047	0.003	0.679	0.055	1.889	0.003
UIDTEST	0.0747					
AR1					0.061	
AR2					0.809	
SARGEN TEST					0.062	
Hassan test	0.1423				0.953	
Prob>F			0.000			

Source: Author's calculations.

4. Results and Discussion

Tables 3 and 4 present the results of the estimation for 181 economies, respectively. The F-test results are highly significant. The under-identification test (UIDTEST) indicates that the estimated equations are identified. The study includes the results of Hansen J statistics, the Sargan test, and AR1 and AR2. The null hypothesis of the Hansen J statistic is accepted, which suggests that the instruments are valid in all cases. The estimated results for the full sample show that all variables significantly influence LBPROD. The results are theoretically consistent and robust across all regressions.

FDI is regarded as one of the most stable sources of capital and leads to improvements in the host country (Karentina, 2019). It increases competition, enhances the performance of domestic firms, creates jobs, and boosts labor productivity (Li & Tanna, 2018). These findings align with the theoretical prediction that emphasizes FDI's role in increasing LBPROD in host economies. Our estimated results show that FDI has a significant impact on LBPROD across different estimations. Additionally, our

empirical findings are consistent with those of (Blomström & Persson, 1983; Chen & Démurger, 2002; Le et al., 2019). According to Newman et al. (2015), FDI improves firm production efficiency through competition and maximizing LBPROD. FDI creates job opportunities, facilitates capital accumulation and commercial growth, promotes professional management, and contributes to higher productivity rates.

Fryges & Wagner (2008) find that HK is a multidimensional concept for all economies; it includes health, education, training, and organizational supervision, which enhance the knowledge, proficiency, capability, and social assets of labor, leading to increased labor and firm productivity (Marimuthu et al., 2009). Our results are consistent with human capital theory, which states that HK is a major determinant that positively and significantly affects LBPROD. HK^2 is also included in model 3, highlighting that HK^2 will contribute to improved LBPROD. These findings align with those of Sarwar et al. (2021), Fleisher et al. (2011), Samargandi (2018), and Asghar et al. (2017). The empirical results of this study show a positive and significant effect of HK on LBPROD, supported by SGM and Becker's Human Capital Theory. Solow emphasizes that when there is an improvement in HK, it promotes growth by increasing the effectiveness of labor inputs. Becker (1964) points out that investment in workers' education raises LBPROD, which is also reflected in our empirical findings.

The squared term of human capital is also included in the model to examine its effect on LBPROD. The results from the GMM and instrumental variable approach show a positively significant relationship between HK^2 and LBPROD. HK, which includes worker skills and education, helps achieve higher productivity levels. The results from the System GMM indicate that HK^2 has a significant negative relationship with LBPROD. This aligns with the concept of diminishing returns to human capital, supported by the human capital and EGM, suggesting that initially, human capital boosts LBPROD, but after a certain point, it decreases LBPROD due to institutional frictions, skill mismatch, labor market imperfections, or over-education. This demonstrates an inverted U-shaped relationship between them. This divergence highlights the importance of using dynamic estimation methods like System GMM, which address endogeneity and panel-specific issues, and help in examining the relationship and ensuring the robustness of this analysis.

According to Levine (1997), economies with stronger financial systems tend to allocate funds to sectors that foster innovative products

and improve production processes. Promoting investment in both human and physical capital will boost LBPROD. Our estimated results indicate that FID has a positive and significant influence on LBPROD across all specifications. These findings are consistent with the work of Levine & Zervos (1998), Beck & Levine (2002), Samargandi (2018), and Sayfolahi & Hazeri (2017). Our empirical analysis aligns with the Endogenous Growth Theory, which emphasizes the role of financial institutions in fostering innovation and productivity growth through better investment efficiency and easier access to credit. These results strengthen both neoclassical and endogenous growth theories by providing additional evidence that a well-functioning financial system contributes to productivity growth.

Masriani (2022) indicates that GEXP reflects government policy. Post-Keynesian theory suggests that GEXP creates additional demand for goods and services produced within an economy, thereby boosting firm capacity and productivity (Arestis, 2012; Kregel, 1994). The results of our study indicate that GEXP has a positive and significant impact on LBPROD. Our findings align with those of Linnemann & Uhrin (2016) and Bose et al. (2007), which state that an increase in public spending leads to an increase in LBPROD.

The regression results are only somewhat consistent with the empirical findings, which indicate that TO has an inverse relationship with LBPROD, as its coefficient is significant and negative in the G2SLS and standard GMM but not the System GMM specification. According to Vukšić (2016), Konings & Vandenbussche (1995), and Stiglitz (2000), TO has a detrimental effect on economic development by limiting a country's economic activity in certain industries, thereby reducing knowledge spillovers and LBPROD.

Economic theories suggest that increasing the use of capital in the production process enhances labor efficiency, enabling workers to produce more goods in less time, which leads to improved labor productivity (Heshmati & Rashidghalam, 2018). Our study's empirical findings show that KI has a positive relationship with LBPROD. Ahmed (2007) states that the impact of capital on productivity growth is greater in capital-intensive production compared to labor-intensive manufacturing (Dias, 1991; Heshmati & Rashidghalam, 2018; Mohapatra, 2022), which reported similar results. If more capital is required to produce a certain product, there is a greater chance for an economy to export that product on a larger scale, thereby increasing LBPROD (Alleyne & Subramanian, 2001).

The industrial sectors of the economy play a significant role in economic development, and increases in value-added will lead to improvements in LBPROD. Our results indicate that LBPROD is positively influenced by INVA, a finding that is statistically significant in the G2SLS and standard GMM specifications, but not in the System GMM specification. Similar findings were reported by Samargandi (2018), Karami et al. (2019), and Mushtaq et al. (2022), demonstrating a positive relationship between INVA employment and increased LBPROD.

Our empirical results align with the theoretical background provided by New Institutional Economics (North, 1990) and EGM (Romer, 1990), indicating that better INQ improves firm and labor productivity by reducing transaction costs, enforcing different contracts, and providing a better environment that enhances investment and economic efficiency, leading to increased LBPROD, but this is only statistically significant in the System GMM specification. These empirical findings are consistent with the work of Farooq et al. (2020), Bjornskov and Meon (2010), and Ulubasoglu and Doucouliagos (2004); their results suggest that INQ, such as effective government and legal quality, creates an environment beneficial to economic performance. The findings imply that INQ will play an important role in accelerating LBPROD.

The EGM determined that UNEMP is one of the main labor market problems that can affect LBPROD, mainly because the internal mechanisms influence it. When unemployment rises, it reduces worker confidence, skill accumulation, and innovation activity, which inversely affect LBPROD, showing that as UNEMP increases, LBPROD decreases—similar to the findings of Ozturk et al. (2020) and Bräuninger & Pannenberg (2002). However, the results for UMEMP were not statistically significant in any of the specifications.

The next main control variable in our study is research and development (R&D), which is one of the significant sources of LBPROD. Our estimation results align with the findings of Audretsch and Belitski (2020) and Pieri et al. (2018), which demonstrate that R&D facilitates the development of new production methods, leading to improved worker efficiencies and productivity as highlighted by the EGM (Romer, 1990). However, our result was only statistically significant in the G2SLS and standard GMM, but not the System GMM specification.

5. Conclusions and Policy Implications

In this study, we employ the GMM technique to examine the impact of FDI, FID, and HK on LBPROD, utilizing data from 2000 to 2019. Additionally, to assess robustness and reliability, the study also employs system GMM, which provides the most appropriate estimation results when the cross-sectional dimension is large relative to the time dimension. The generalized Two-Stage Least Squares approach is suitable because it uses an external instrument and yields consistent results. By comparing the findings from GMM and Two-Stage Least Squares, the study confirms that the sign and significance of the main variables are more trustworthy.

The results of the estimation technique show that our empirical findings align with the theoretical predictions of gains from SGM and EGM. Additionally, the results indicate that FD, FDI, HK, GEXP, and R&D have a significantly positive impact on LBPROD in the GMM model. This further confirms that investment in technological projects, knowledge, and innovation will enhance LBPROD. Consistent with human capital theory, human capital is a key factor that can substantially impact labor productivity on a large scale. Our study also supports the hypothesis that FID, FDI, and HK play a significant role in accelerating LBPROD. These empirical findings reaffirm the theoretical foundations and highlight their importance in explaining the cross-country dynamics of productivity.

In our study, TO has a significantly negative relationship with LBPROD in some specifications. This primarily results from inadequate industrial capacity, a lack of technological expertise, and limited export-oriented openness. To address this issue, policymakers should implement strategies that promote the development of local industries, improve export competitiveness, and invest heavily in projects that enhance worker skills and enable economies to maximize trade benefits. However, better industrial and educational policies, combined with gradual and planned trade integration, will allow workers to enjoy greater productivity gains from TO.

Furthermore, policymakers must emphasize that quality education, skills, and continuous learning are essential for workers to secure better jobs that align with labor market needs, rather than solely focusing on increasing education levels or years of schooling. The government should strengthen institutional frameworks that reduce diminishing returns to human capital and enhance productivity growth. The results of this study enable us to identify several policy recommendations relevant for

policymakers to create an environment conducive to productivity increases. The findings suggest that human capital is crucial in boosting LBPROD. Therefore, policymakers should focus on adopting various measures to improve human capital, as it is the backbone of all economies and plays a key role in strengthening export structures. The government should also use flexible protectionist measures. Policymakers need to implement policies and regulations that support overall economic development by enhancing institutional quality.

References

Afrooz, A., Rahim, K.B.A., Noor, Z. B. M., and Chin, L. (2010). Human capital and labor productivity in food industries of Iran. *International Journal of Economics and Finance*, *2*(4), 47-51.

Aggrey, N., Eliab, L., and Joseph, S. (2010). Human capital and labor productivity in East African manufacturing firms. *Current Research Journal of Economic Theory*, *2*(2), 48-54.

Aitken, B.J., and Harrison, A.E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American Economic Review*, *89*(3), 605-618.

Alleyne, T., and Subramanian, A. (2001). *What does south africa's pattern of trade say about its labor market?* (No. 148). International Monetary Fund, African Department.

Amassoma, D., and Nwosa, P.I. (2013). The impact of unemployment rate on productivity growth in Nigeria: An error correction modeling approach. *International Journal of Economics and Management Sciences*, 2(8), 1-13

Anderson, T.W., and Hsiao, C. (1982). Formulation and estimation of dynamic models using panel data. *Journal of econometrics*, *18*(1), 47-82.

Arcand, J.L., Berkes, E., and Panizza, U. (2015). Too much finance?. *Journal of Economic Growth*, *20*(2), 105-148.

Aregbeshola, A.R. (2014). Foreign direct investment and institutional adequacy: New Granger causality evidence from African countries. *South African Journal of Economic and Management Sciences*, *17*(5), 557-568.

Arestis, P. (2012). Fiscal policy: A strong macroeconomic role. *Review of Keynesian Economics*, (1), 93-108.'

Arshad, M.N.M., and Ab Malik, Z. (2015). Quality of human capital and labor productivity: A case of Malaysia. *International Journal of Economics, Management and Accounting*, *23*(1).

Artus, P., Cette, G., Garnier, O., and France. Conseil d'analyse économique. (2004). *Productivité et croissance*. La Documentation Française.

Asada, H. (2020). Effects of foreign direct investment and trade on labor productivity growth in Vietnam. *Journal of Risk and Financial Management*, *13*(9), 204.

Asgari, M., Hoshmand, S., and TR Piruj. (2021). Factors affecting the production of machinery and equipment industries. *Quarterly Journal of Industrial Economics Researches*, *5*(15), 93-108.

Asghar, N., Danish, M.H., and Rehman, H. (2017). Human capital and labour productivity: A Case Study of District Lahore. *Journal of the Punjab University Historical Society*, *30*(1), 147-163.

Audretsch, D.B., and Belitski, M. (2020). The role of R&D and knowledge spillovers in innovation and productivity. *European Economic Review*, *123*, 103391. . https://doi.org/10.1016/j.euroecorev.2020.103391

Bagci, K. (2010). Export diversification and productivity growth. *European Trade Study Group, Retrieved*, *5*, 2015.

Bagger, J., Christensen, B.J., and Mortensen, D.T. (2014, January). Wage and labor productivity dispersion: The roles of total factor productivity, labor quality, capital intensity, and rent sharing. In *2014 Meeting Papers* (Vol. 473, pp. 1-61).

Baharin, R., Syah Aji, R.H., Yussof, I., and Mohd Saukani, N. (2020). Impact of human resource investment on labor productivity in Indonesia. *Interdisciplinary Journal of Management Studies*, *13*(1), 139-164.

Banjoko, S.A., Iwuji, I.I., and Bagshaw, K. (2012). The performance of the Nigerian manufacturing sector: A 52-year analysis of growth and retrogression (1960-2012). *Journal of Asian Business Strategy*, *2*(8), 177-191.

Barrett, A., and O'Connell, P.J. (2001). Does training generally work? The returns to in-company training. *ILR Review*, *54*(3), 647-662.

Barrios, S., and Strobl, E. (2002). Foreign direct investment and productivity spillovers: Evidence from the Spanish experience. *Weltwirtschaftliches Archiv*, *138*(3), 459-481.

Barro, R.J. (1991). Economic growth in a cross section of countries. *The Quarterly Journal of Economics*, *106*(2), 407-443.

Barucca, P., Mahmood, T., and Silvestri, L. (2021). Common asset holdings and systemic vulnerability across multiple types of financial institution. *Journal of Financial Stability*, *52*, 100810.

Beck, T., and Levine, R. (2002). Industry growth and capital allocation: Does having a market-or bank-based system matter? *Journal of Financial Economics*, *64*(2), 147-180.

Becker, G.S. (1964). Human capita. New York: National Bureau of Economic Research.

Becker, G.S. (1975). Investment in human capital: effects on earnings. In Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Second Edition, pp. 13-44, National Bureau of Economic Research.

Becker, G.S. (1975). Investment in human capital: Effects on earnings. In Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Second Edition, pp. 13-44. National Bureau of Economic Research.

Becker, G.S., Murphy, K. M., and Tamura, R. (1990). Human capital, fertility, and economic growth. *Journal of Political Economy*, *98*(5, Part 2), S12-S37.

Benhabib, J., and Spiegel, M.M. (2000). The role of financial development in growth and investment. *Journal of Economic Growth*, *5*(4), 341-360.

Bjørnskov, C., and Méon, P.G. (2013). Is trust the missing root of institutions, education, and development? *Public Choice*, *157*(3), 641-669.

Blomström, M., and Persson, H. (1983). Foreign investment and spillover efficiency in an underdeveloped economy: Evidence from the Mexican manufacturing industry. *World Development*, *11*(6), 493-501.

Blundell, R., and Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115-143.

Bong, M. (2009). Age-related differences in achievement goal differentiation. *Journal of Educational Psychology*, *101*(4), 879.

Bose, N., Haque, M.E., and Osborn, D.R. (2007). Public expenditure and economic growth: A disaggregated analysis for developing countries. *The Manchester School*, *75*(5), 533-556.

Bräuninger, M., and Pannenberg, M. (2002). Unemployment and productivity growth: an empirical analysis within an augmented Solow model. *Economic Modelling*, *19*(1), 105-120.

Bui, M.T.T. (2019). International migration and foreign direct investment within Southeast Asia. *Asia-Pacific Journal of Regional Science*, *3*(3), 731-755.

Cecchetti, S.G., and Kharroubi, E. (2012). Reassessing the impact of finance on growth.

Chang, C.K., and Woo, S. (2017). Critical review of previous studies on labor productivity loss due to overtime. *KSCE Journal of Civil Engineering*, *21*(7), 2551-2557.

Chari, A., Chen, W., and Dominguez, K.M. (2009). *Foreign ownership and firm performance: Emerging-market acquisitions in the United States* (No. w14786). National Bureau of Economic Research.

Chen, T., Kokko, A., and Tingvall, P.G. (2011). FDI and spillovers in China: non-linearity and absorptive capacity. *Journal of Chinese Economic and Business Studies*, *9*(1), 1-22.

Chen, Y., and Démurger, S. (2002). Foreign direct investment and manufacturing productivity in China. *CEPII Research Project on the Competitiveness of China's Economy*.

Crespo, N., and Fontoura, M.P. (2007). Determinant factors of FDI spillovers–what do we really know? *World Development*, *35*(3), 410-425.

Das, P. K., and Guha-Khasnobis, B. (2008). Finance and growth: An empirical assessment of the Indian economy. In *Financial Development, Institutions, Growth and Poverty Reduction*, pp. 120-140. London: Palgrave Macmillan UK.

Datta, D.K., Guthrie, J.P., and Wright, P.M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal*, *48*(1), 135-145.

Delsen, L., and Schonewille, M. (1999, September). Human capital and labour productivity. In Integration of Institutions and endogenous growth. Paper for the EALE conference in Regensburg.

Deming, D.J. (2022). Four facts about human capital. *Journal of Economic Perspectives*, *36*(3), 75-102.

Demirgüç-Kunt, A., Maksimovic, V., and Beck, T. (2005). Financial and legal constraints to growth: Does firm size matter? University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship.

Dias, S. (1991). Factors affecting the productivity of manufacturing sector in Sri Lanka: A spatial analysis. *GeoJournal*, *23*(2), 113-120.

Dittman, D.A., Juris, H.A., and Revsine, L. (1976). On the Existence of Unrecorded Human Assets: An Economic Perspective. *Journal of Accounting Research*, 49-65.

Domar, E.D. (1946). Capital expansion, rate of growth, and employment. *Econometrica, Journal of the Econometric Society*, 137-147.

Edwards, S. (1998). Openness, productivity and growth: What do we really know? *The Economic Journal*, *108*(447), 383-398.

El-Ghamrawy, T. (2014). The Impact of Trade Openness on Employment and Wages in Egypt's Manufacturing Sector. The Egyptian Center for Economic Studies, Working Paper, (176).

Ernawati, E., Tajuddin, T., and Nur, S. (2021). Does government expenditure affect regional inclusive growth? An experience of implementing village fund policy in Indonesia. *Economies*, *9*(4), 164.

Ezoji, A., Arani, A.A., Vaez Mahdavi, M.R., and Jahangard, E. (2019). The impact of human capital (health and education) on labor productivity; A composite model approach-a case study of Iran. *Iranian Economic Review*, *23*(2), 373-397.

Farooq, A., Arshi, S., Sattar, N., and Khalil, A. (2020). An empirical relationship between human capital, institutional quality, and economic growth in Pakistan. *Forman Journal of Economic Studies*, *16*.

Fleisher, B.M., Hu, Y., Li, H., and Kim, S. (2011). Economic transition, higher education and worker productivity in China. *Journal of Development Economics*, *94*(1), 86-94.

Forbes, C.T., and Davis, E.A. (2010). Curriculum design for inquiry: Preservice elementary teachers' mobilization and adaptation of science curriculum materials. *Journal of Research in Science Teaching*, *47*(7), 820-839.

Frankel, Jeffrey A. and David H. Romer. 1999. Does trade cause growth? American Economic Review, *89*(3), pp. 379-399.

Frankel, M. (1962). The production function in allocation and growth: A synthesis. *The American Economic Review*, *52*(5), 996-1022.

Fryges, H., and Wagner, J. (2008). Exports and productivity growth: First evidence from a continuous treatment approach. *Review of World Economics*, *144*(4), 695-722.

Gehringer, A. (2013). Growth, productivity and capital accumulation: The effects of financial liberalization in the case of European integration. *International Review of Economics and Finance*, *25*, 291-309.

Goldin, C., and Katz, L.F. (1998). Human capital and social capital: The rise of secondary schooling in America, 1910 to 1940.

Greenwood, J., and Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, *98*(5, Part 1), pp. 1076-1107.

Grossman, G.M., and Helpman, E. (1991). Trade, knowledge spillovers, and growth. *European Economic Review*, *35*(2-3), 517-526.

Gui-Diby, S.L. (2016). Essays on the Impact of Foreign Direct Investments in Africa (Doctoral dissertation, Université d'Auvergne-Clermont-Ferrand I).

Guillaumont Jeanneney, S., Hua, P., and Liang, Z. (2006). Financial development, economic efficiency, and productivity growth: Evidence from China. *The Developing Economies*, *44*(1), 27-52.

Hale, G., and Long, C. (2006). What determines technological spillovers of foreign direct investment: evidence from China.

Han, J., and Shen, Y. (2015). Financial development and total factor productivity growth: Evidence from China. *Emerging Markets Finance and Trade*, *51*(sup1), S261-S274.

Harrod, Roy F. (1939), An Essay in Dynamic Theory. *The Economic Journal*, 49, pp. 14–33.

Heshmati, A., and Rashidghalam, M. (2018). Labour productivity in Kenyan manufacturing and service industries. In *Determinants of Economic Growth in Africa* (pp. 259286). Cham: Springer International Publishing. https://doi.org/10.1016/j.sbspro.2016.060

Iheonu, C.O., Asongu, S.A., Odo, K.O., and Ojiem, P.K. (2020). Financial sector development and Investment in selected countries of the Economic Community of West African States: Empirical evidence using heterogeneous panel data method. *Financial Innovation*, *6*(1), 29.

Islam, N. (2008). Determinants of productivity across countries: An exploratory analysis. *The Journal of Developing Areas*, *42*(1), 201-242.

Jamaliah, F. (2016). The Effect of Investment to Value Added Production, Employment Absorption, Productivity, and Employees' Economic Welfare in Manufacturing Industry sector in West Kalimantan Province. *Procedia-Social and Behavioral Sciences*, *219*, 387-393. https://doi.org/10.1016/j.sbspro.2016.05.060.

Jibir, A., Abdu, M., and Buba, A. (2023). Does human capital influence labor productivity? Evidence from Nigerian Manufacturing and Service Firms. *Journal of the Knowledge Economy*, *14*(2), 805-830.

Joyce, P.G., and Suryo Prabowo, A. (2020). Government responses to the coronavirus in the United States: immediate remedial actions, rising debt levels and budgetary hangovers. *Journal of Public Budgeting, Accounting and Financial Management*, *32*(5), 745-758.

Kang, D., and Suwannarat, P. (2024). The Impact of Trade Openness, FDI and Domestic Factors on Labour Productivity in China. *วารสาร สังคมศาสตร์ ปัญญาพัฒน์*, *6*(4), 95-114.

Kaplinsky, R. (1995). Technique and system: The spread of Japanese management techniques to developing countries. *World Development*, *23*(1), 57-71.

Karami, J., Rasoulinezhad, E., and Shokri, S.A. (2019). Discussion on Russia-Iran bilateral trade in the modern Era with emphasis on Russia's economy. *Journal of World Sociopolitical Studies*, *3*(1), 161-198.

Karentina, R. (2019). The spillover effects of foreign direct investment on labor productivity. *Economic Journal of Emerging Markets*, 32-45.

Keynes, J.M. (1936). William Stanley Jevons. In *Essays in Biography*, pp. 109-160. London: Palgrave Macmillan UK.

Khan, J., and Rehman Khattak, N.U. (2014). The significance of research and development for economic growth: The case of Pakistan.

Konings, J., and Vandenbussche, H. (1995). The effect of foreign competition on UK employment and wages: evidence from firm-level panel data. *Review of World Economics*, *131*(4), 655-672.

Korableva, O.N., Kalimullina, O.V., and Mityakova, V.N. (2019). Designing a System for Integration of Macroeconomic and Statistical Data Based on Ontology. *Advances in Intelligent Systems and Computing*, 998, p. 157-165

Kpognon, K.D., Atangana Ondoa, H., Bah, M., and Asare-Nuamah, P. (2022). Fostering labour productivity growth for productive and decent job creation in Sub-Saharan African countries: The role of institutional quality. *Journal of the Knowledge Economy*, *13*(3), 1962-1992.

Kregel, J.A. (1994). The viability of economic policy and the priorities of economic policy. *Journal of Post Keynesian Economics*, *17*(2), 261-277.

Krugman, P. (1997). Is capitalism too productive. *Foreign Aff.*, *76*, 79.

Kumar, N. (2005). Liberalisation, foreign direct investment flows and development: Indian experience in the 1990s. *Economic and Political weekly*, 1459-1469.

Kunst, R. M., and Marin, D. (1989). On exports and productivity: a causal analysis. *The Review of Economics and Statistics*, 699-703.

Le, N.H., Duy, L.V.Q., and Ngoc, B.H. (2019). Effects of foreign direct investment and human capital on labour productivity: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business*, *6*(3), 123-13.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, *35*(2), 688-726.

Levine, R., and Zervos, S. (1998). Capital control liberalization and stock market development. *World Development*, *26*(7), 1169-1183.

Li, C., and Tanna, S. (2017). FDI spillover effects in China's manufacturing sector: new evidence from forward and backward linkages. In *International Conference on Applied Economics*, pp. 203-222. Cham: Springer International Publishing.

Li, C., and Tanna, S. (2019). The impact of foreign direct investment on productivity: New evidence for developing countries. *Economic Modelling*, *80*, 453-466.

Li, C., and Tanna, S. K. (2018). The Role of Foreign Direct Investment in Less-Developed Countries. In *Foreign Direct Investments (FDIs) and Opportunities for Developing Economies in the World Market* (pp. 46-65). IGI Global Scientific Publishing.

Linnemann, L., and Uhrin, G. B. (2016). Government spending shocks and labor productivity.

López, R.A. (2005). Trade and growth: Reconciling the macroeconomic and microeconomic evidence. *Journal of Economic surveys*, *19*(4), 623-648.

Lucas, R.E. (1988). On the mechanics of economic growth.

Mankiw, G. (2015). Economists actually agree on this: The wisdom of free trade. *New York Times*, *24*.

Mankiw, N.G., Romer, D., and Weil, D.N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, *107*(2), 407-437.

Marimuthu, M., Arokiasamy, L., and Ismail, M. (2009). Human capital development and its impact on firm performance: Evidence from developmental economics.

Masriani, Y.T. (2022). Strategi regulasi perpajakan upaya mengatasi inflasi harga tanah. *Owner: Riset dan Jurnal Akuntansi*, *6*(4), 3959-3966.

Mohapatra, R., and Lama, B. (2024). An analysis of the determinants of productivity of Assam tea growers. *SN Business and Economics*, *4*(12), 152.

Mold, A. (2003). Foreign Direct Investment for Development: Maximising Benefits, Minimising Costs.

Mushtaq, M., Ahmed, S., Fahlevi, M., Aljuaid, M., and Saniuk, S. (2022). Globalization and employment nexus: Moderating role of human capital. *Plos one*, *17*(10), e0276431.

Mustafa, G., and Jamil, M. (2018). Testing the governance-productivity nexus for emerging Asian Countries.

Naudé, W. (2016). Is European entrepreneurship in crisis? (No. 9817). IZA Discussion Papers.

Nelson, R.R., and Phelps, E.S. (1966). Investment in humans, technological diffusion, and economic growth. The American Economic Review, *56*(1/2), 69-75

Newman, C., Rand, J., Talbot, T., and Tarp, F. (2015). Technology transfers, foreign investment and productivity spillovers. *European Economic Review*, *76*, 168-187.

Ng, T.H. (2007). Foreign direct investment and productivity: Evidence from Sub-Saharan Africa. *Unpublished paper (Vienna: UNIDO).*

Ng, T.H. (2007). Foreign direct investment and productivity: Evidence from Sub-Saharan Africa. *Unpublished paper (Vienna: UNIDO)*.

Ngobeni, E., and Muchopa, C.L. (2022). The impact of government expenditure in agriculture and other selected variables on the value of agricultural production in South Africa (1983–2019): Vector autoregressive approach. *Economies*, *10*(9), 205.

North, D.C. (1990). Institutions, institutional change and economic performance. Cambridge university press.

Orji, A., Aza, G.C., Anthony-Orji, O.I., and Isaac, N. (2022). Foreign direct investment-firm productivity nexus in West Africa: New empirical insights from firm level data. *Journal of Public Affairs*, *22*(4), e2661.

Ozturk, M., Durdyev, S., Aras, O.N., Ismail, S., and Banaitienė, N. (2020). How effective are labor wages on labor productivity?: An empirical investigation on the construction industry of New Zealand. *Technological and Economic Development of Economy*, *26*(1), 258-270.

Pagano, M., and Pica, G. (2012). Finance and employment. *Economic Policy*, *27*(69), 5-55.

Pfeffer, J. (1995). Producing sustainable competitive advantage through the effective management of people. *Academy of Management Perspectives*, *9*(1), 55-69

Pieri, F., Vecchi, M., and Venturini, F. (2018). Modelling the joint impact of R&D and ICT on productivity: A frontier analysis approach. *Research Policy*, *47*(9), 1842-1852. https://doi.org/10.1016/j.respol.2018.06.013.

Qu, Y., and Cai, F. (2011). Understanding China's workforce competitiveness: A macro analysis. *Journal of Chinese Human Resources Management*, *2*(1), 8-22.

Ricardo, D. (1895). The first six chapters of the principles of political economy and taxation of David Ricardo, 1817. Macmillan and Company.

Riedl, A. (2010). Location factors of FDI and the growing services economy 1: Evidence for transition countries. *Economics of Transition*, *18*(4), 741-761.

Rigobon, R., and Rodrik, D. (2005). Rule of law, democracy, openness, and income: Estimating the interrelationships. *Economics of Transition*, *13*(3), 533-564.

Rodríguez-Pose, A., and Ketterer, T. (2020). Institutional change and the development of lagging regions in Europe. *Regional Studies*, *54*(7), 974-986.

Romer, P.M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, *94*(5), 1002-1037.

Romer, P.M. (1990). Endogenous technological change. *Journal of Political Economy*, *98*(5, Part 2), S71-S102.

Samargandi, N. (2018). Determinants of labor productivity in MENA countries. *Emerging Markets Finance and Trade*, *54*(5), 1063-1081.

Sarwar, A., Khan, M.A., Sarwar, Z., and Khan, W. (2021). Financial development, human capital and its impact on economic growth of emerging countries. *Asian Journal of Economics and Banking*, *5*(1), 86-100.

Savvas, A., Boulton, C., and Jepsen, E. (2011). Influences on Indigenous labour market outcomes. *Available at SSRN 2006294*.

Sayfollahi, N., and Hazeri, H. (2017). The Effect of Financial Development on Labor Productivity: Cointegration Application in Dynamic Panel Data. *Financial Monetary Economics*, *24*(14), 252-271.

Schultz, T.W. (1961). Investment in human capital. *The American Economic Review*, *51*(1), 1-17.

Shahbaz, M., and Islam, F. (2011). Financial development and income inequality in Pakistan: An application of ARDL approach.

Sharpe, A. (2004). Exploring the linkages between productivity and social development in market economies (No. 2004-02). Centre for the Study of Living Standards.

Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations: Volume One. London: printed for W. Strahan; and T. Cadell, 1776.

Solow, R.M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, *70*(1), 65-94.

Stiglitz, J.E. (2000). Capital market liberalization, economic growth, and instability. *World Development*, *28*(6), 1075-1086.

Udo-Aka, U. (1983). Measuring productivity: Issues and problems in productivity in Nigeria. In *Proceedings of a National Conference, Edited by Osoba, AM* (Vol. 75).

Udomkerdmongkol, M., Thiratanapong, N., and Boonnuch, C. (2012). *Choosing the Right Financial System for Growth* (No. 2012-08).

Ukeje, E. U. (2000, June). Productivity in the agricultural sector. In *Conference of the Zonal Research Units of CBN, cenbank. org*.

Ulubasoglu, M.A., and Doucouliagos, C. (2004, February). Institutions and economic growth: A systems approach. *Econometric Society 2004 Australasian Meetings Paper*, Vol. 63, pp. 1-33.

Vukšić, G. (2016). Effects of private ownership, trade, and foreign direct investment on labor productivity growth in transition economies: evidence from the Croatian manufacturing industry. *Emerging Markets Finance and Trade*, *52*(2), 322-335.

Wagner, A. (1876). Three extracts on public finance. *Classics in the Theory of Public Finance*, pp. 1-15). London: Palgrave Macmillan UK.

Wang, S.L., Hoppe, R.A., Hertz, T., and Xu, S. (2022). Farm Labor, Human Capital, and Agricultural Productivity in the United States.

Welch, F. (1970). Education in production. *Journal of Political Economy*, *78*(1), 35-59.

Well, D. N. (2007). Accounting for the effect of health on economic growth. *The Quarterly Journal of Economics*, *122*(3), 1265-1306.

Zanetti, F. (2015). Financial shocks and labor market fluctuations.

Zoaka, J.D., and Güngör, H. (2023). Effects of financial development and capital accumulation on labor productivity in sub-Saharan Africa: new insight from cross sectional autoregressive lag approach. *Financial Innovation*, *9*(1), 1.