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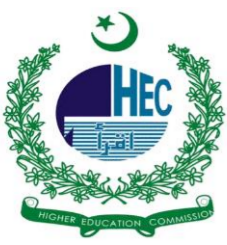
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Heterogeneous Labor Market Effects of Foreign Capital Inflows: Gendered Responses and Institutional Moderation in Developing Economies

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	Abstract
<p>Muhammad Amin Hasan* PhD Scholar, Applied Economics Research Centre (AERC), University of Karachi, Sindh, Pakistan Corresponding author E-mail: muhammadaminhasan@gmail.com ORCID: https://orcid.org/0000-0003-4956-0984</p> <p>Ambreen Fatima Associate Professor, Applied Economics Research Centre (AERC), University of Karachi, Sindh, Pakistan E-mail: amber@aerc.edu.pk ORCID: https://orcid.org/0000-0002-6164-2184</p>	<p>Labor force participation (LFP) determines productivity and long-run economic growth, however, particularly in developing economies, foreign capital inflows (FCIs) such as foreign direct investment (FDI), international remittances (REM), and official development assistance (ODA), despite supplementing domestic investment and facilitating technology transfer, may have heterogeneous effects on overall LFP, female labor force participation (FLFP), and male labor force participation (MLFP), conditional on institutional quality (IQ). This study examines how these FCIs affect LFP, with a specific focus on the moderating role of IQ. Using a sample of 65 developing economies for the period of 2003 to 2021, the study employs PCSE regression technique to estimate the relationships. The findings confirm a significant heterogeneity across FCI-types and genders. Specifically, REM has a significant negative effect on LFP, with considerably a stronger income disincentive effect on FLFP. Conversely, FDI increases LFP, suggesting that it improves domestic labor-absorptive capacity by increasing productivity and job opportunities, with substantially stronger effects for FLFP. Similarly, ODA has weak and inconsistent effects on LFP, with significant impact on FLFP while reducing MLFP. Additionally, IQ directly improves FLFP but is associated with lower MLFP, revealing distinct institutional limitations and prospects across genders. Likewise, improvements in IQ weaken the employment effects of FDI and ODA, particularly for women, without significantly altering the disincentive effect of REM. Collectively, the findings reveal that labor-market responses to FCIs are gendered and conditional on IQ, emphasizing the need for gender-specific and institutionally aligned policies to ensure the efficient allocation of FCIs and sustainable development.</p>
<p>Keywords:</p>	<p>Foreign Direct Investment, International Remittances, Official Development Assistance, Institutional Quality, Labor Force Participation, Foreign Capital Inflows, Developing Economies.</p> <p>JEL Classification: F21, J16, J21, O15, O17</p>



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1. Introduction

Labor force participation (LFP) is an important factor for sustainable economic development, inclusive growth and structural transformation particularly in developing economies with labor market imperfections, gender-based heterogeneity and structural imbalances. Economies with high LFP generally have high productivity and financial stability, low poverty incidence and are sustainable (ILO, 2024; World Bank, 2024). In this context, we consider foreign capital inflows (FCIs) like FDI (foreign direct investment), REM (international remittances) and ODA are very essential to bridge the saving-investments gap (Das et al., 2015; Kaczmarczyk, 2023; Solow, 1956), and also improve the labor absorbing capacity in developing economies (Bai et al., 2024; Banga, 2022; Sajid et al., 2021). For the last two decades, these FCIs have increased significantly, alongside global financial integration in these economies (Hasan et al., 2021; Hoekman et al., 2025; Wacker et al., 2017).

At the aggregate level, FCIs affect labor-market outcomes by several mechanisms. According to Neoclassical Growth Theory (NGT), FCIs, particularly FDI and ODA fill saving-investment gaps, transfer latest technology and knowledge, and increase efficiency, consequently enhancing demand for labor and LFP (Das et al., 2015; Mhella, 2025; Ogbuabor et al., 2023a Solow, 1956). However, labor market responses to these FCIs are heterogeneous, particularly in developing economies. In this context, Segmented Labor Market Theory (SLMT) postulates that labor markets are divided into different segments (parts) based on labor-skill, gender, and industry-based stratification, suggesting that FCIs have different labor-market effects across segments. In particular, female labor force participation (FLFP) is largely affected by prevailing social norms, sectoral segregation, and institutional constraints, leading to gender-differentiated labor-market outcomes across developing economies (Hazarika et al., 2024; Heintz & Folbre, 2022; Gok & Unluoglu, 2024; Umar et al., 2025).

Moreover, the labor-market effects of FCIs are highly dependent on the institutional quality (IQ) of recipient countries (Afolabi & Raifu, 2024). This theory (endogenous growth theory, EGT) especially highlights the importance of IQ as a key determinant for FCIs to be transformed into sustainable development through efficient allocation. Moreover, recent empirical work maintains that high IQ enhances both resource efficiency and productivity in the long run, though it diverts these inflows into capital-intensive sectors as well as towards better governance which also reduce short-term employment prospects (Challe et al., 2019; Hoekman et al., 2018a; Juhari et al., 2018b). Moreover, those economies with low IQ may not obtain the maximum long-term developmental benefits from FCIs, shifting resources out of productive investments into points which do not generate higher yields (Al-Assaf, 2022; Habib, 2023; Yoda & Diendere, 2025) Furthermore, in recipient countries with low IQ levels, FCIs such as FDI and ODA are prone to exacerbate rent-seeking behavior and increase dependence as well as reducing productivity. (Grob & Nowak-Lehmann Danzger, 2022).

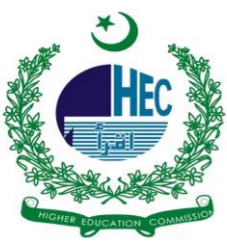
Additionally, low IQ causes labor market distortion by restricting the development of human capital, boosting employment in the informal sector, and displacing domestic businesses (Ben Mim et al., 2022; Garcia et al., 2024; Okombi & Tsingui-Kenfack, 2023). Therefore, rather than fostering sustainable economic growth, FCIs may lead to structural flaws and economic inefficiencies, especially in developing nations with low IQ.

In this framework, LFP is influenced by the FCIs, IQ and labor-market segmentation in developing countries. Hence, learning the complex linkages among them and with other social drivers is important also at international policy level (UN Sustainable Development Goals, SDG 5; 8 where LFP inclusiveness is cited as a crucial determinant of sustainability of development). In this larger context, the present study investigates how different forms of FCIs influence LFP across gender in emerging economies, explicitly introducing IQ as a moderator.

1.2 Problem Statement and Rationale of the Study

Over the past two decades, developing economies have received a substantial volume of FCIs; however, their effects on LFP remain equivocal in the empirical literature. Contemporary evidence suggests that FCIs enhance LFP and productivity in some countries (Bai et al., 2024; Banga, 2022; Das & Ray, 2024; Mohammed & Karagol, 2023), while other studies report insignificant or even negative effects (Alhassan et al., 2024; Al-Assaf, 2022; Ben Mim et al., 2022; Wacker et al., 2017). This divergence highlights a fundamental policy concern regarding the heterogeneous effects of these FCIs on LFP across genders and institutional contexts.

A critical shortcoming of the existing literature is its tendency to treat FCIs as a homogenous construct or to focus mainly on FDI. This approach confounds the heterogeneous transmission channels through which REM, FDI, and ODA affect LFP and labor-market dynamics. In particular, REM primarily operates through household labor supply decision (Ademe Ayalew & Mohanty, 2022; Williams, 2025), FDI affects labor-market outcomes through firm-level investment and labor demand (Ahmed & Kialashaki, 2023; Das & Ray, 2024), while ODA influences LFP through government spending, industrial distribution, and institutional reforms (Jean Tony, 2024; Su & Yang, 2023). Disregarding these potential differences conceals the accurate labor-market responses to FCIs.



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Furthermore, little is known about the gendered labor market responses to FCIs in low- and middle-income economies from the recent literature (Afolabi & Raifu 2024; Gok & Unluoglu, 2024; Irandoust, 2024). In the developing world, many aspects including gender-based segregation, access to formal employment, fertility choice, childcare infrastructure and social norms determine LFP. These differential effects become unclear when aggregate labor market variables are utilized, and policymaking is misguided. A number of studies highlight the heterogeneous effects of FCIs on FLFP in settings with segmented labor markets, and weak institutions (Hazarika et al., 2024; Heintz & Folbre, 2022; Ghazalian, 2024; Umar et al., 2025).

Moreover, several studies find that IQ is a significant determinant of economic development (Challe et al., 2019; Githaiga & Kilong'i, 2023; Hayat, 2019; Khan et al., 2024), however its moderating effects on the relationship between FCIs and LFP are underreported. Strong IQ may increase long-run productivity through developmental effects of FCIs, while it may reduce short-run employment effects by diverting these financial inflows towards capital-intensive sectors or fiscal improvements (Challe et al., 2019; Hoekman et al., 2025; Juhari et al., 2025; Tsauroi, 2025). This duality of institutions creates an ambiguity in theoretical and policy debates. Based on these research gaps, an integrated empirical framework is needed to examine the effects of different types of FCIs, gender-based LFP, and the moderating role of IQ (Afolabi & Raifu, 2024; Hasan et al., 2024; Ogbuabor et al., 2023b). Resolving this issue is important for formulating an effective and evidence-based policies aimed at aligning FCIs with sustainable LFP in developing economies.

1.3 Research Gaps

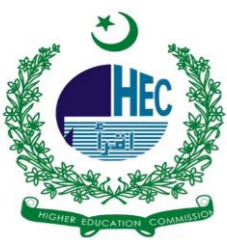
Based on the existing literature, our study fills the following research gaps. First, methodologically, majority of empirical studies employed inappropriate regression techniques, ignoring potential cross-sectional dependence, serial-autocorrelation, and heteroscedasticity common in panel data, which provide biased and inconsistent estimates. Furthermore, few studies have applied the interaction models to examine the moderating effects of IQ on the FCIs and LFP, particularly across genders. Second, contextually, the majority of empirical literature either focuses on single-country analysis or specific regions, reducing the generalizability of results across developing countries. Also, these studies emphasize on overall employment rate of unemployment rate instead of LFP, which reflects both household labor supply decisions and labor demand. Lastly, to the best of our knowledge, there is a limited body of empirical literature that jointly examine the effects of FDI, REM, and ODA within a unified analytical framework, with a specific focus on gender heterogeneity. Similarly, gender-specific labor-market responses to FCIs, conditional on IQ are unexplored. The study fills these research gaps by examining the gender-specific labor market responses to FCIs, conditional on IQ using a robust estimation approach.

1.4 Objectives of the Study

The main objective of the study is to examine the effects of FCIs on LFP in developing economies. Particularly, the study has the following four specific objectives. First, to examine the direct effects of different forms of FCIs such as REM, FDI, and ODA on LFP across both genders. Second, to investigate the moderating effects of IQ on the relationship between each type of FCI and overall LFP, FLFP, and MLFP. Lastly, to measure how macroeconomic, structural, and demographic factors shape overall LFP, FLFP, and MFLP, including FCIs.

1.5 Contribution of the Study

This study has several substantial contributions to the literature. First, the study estimates the effects of REM, FDI, and ODA (different type of FCIs) in a single analytical framework, exploring their unique and heterogeneous effects on LFP in developing economies. Second, the study measures the impact of FCIs on gender-specific LFP i.e., FLFP and MLFP, which is often overlooked in aggregate empirical examinations. Third, the study examines the moderating effects of IQ on the relationship between each form of FCI and LFP. Fourth, this study theoretically contributes to the literature by combining NGT, SLMT, and EGT to study the heterogeneous effects of FCIs on LFP. Lastly, the study employs robust and appropriate regression technique (i.e., PCSE) to obtain valid and reliable estimates, ensuring effective policy formulation.



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1.6 Organization of the Paper

The rest of this paper is structured as follows. Section 2 reviews both the theoretical and empirical work. Finally, it generates testable hypotheses on the basis of empirical evidence. Sample selection, data sources and variables are stated in Section 3 of the study. The section also briefly discusses the statistical analysis and regression technique. Empirical results are presented in Section 4, followed by conclusive discussions. Finally, in Section 5, the study provides a concluding overview of the paper with key results, policy issues and future work directions.

2. Literature Review

2.1 Theoretical Background

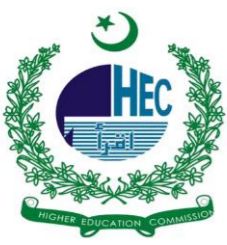
The study adopts three relevant theories to provide theoretical foundation to our empirical analysis. First, Neoclassical Growth Theory (NGT) which provides theoretical basis for studying the effects of FCI on labor-market dynamics. NGT postulates that FCIs such as FDI, REM, and ODA, and FPI reduce saving-investment gap and financial constraints, increasing labor-productivity and employment through capital formation and transfer of technology (Das et al., 2015; Kaczmarczyk, 2023; Solow, 1956). NGT is operationalized by contemporary researchers through analytical frameworks that examine the effects of FCI (different types of inflows) on labor market dynamics, including wage-gap, employment creation, and labor-force participation (Kaczmarczyk, 2023; Mhella, 2025; Ogbuabor et al., 2023a). Consistent with this theoretical framework, the study examines whether different types of FCI have similar effects on LFP for both genders.

Second, the study uses Segmented Labor Market Theory (SLMT), also known as labor market theory, which offers a granular description of labor-market dynamics by focusing on potential structural heterogeneity within them. SLMT suggests that labor markets are categorized into primary and secondary segments, depending upon wage levels, skill intensity, and job security, resulting in asymmetric effects of FCI on labor-market dynamics (Hjalmarsson et al., 2024; Standing, 1989; Wickramasingha & Coe, 2022). Recent empirical studies operationalize SLMT through examining the effects of FCI and globalization on labor-market dynamics across gender and skill group (Light, 2025; Liu & Fong, 2025; Mukherjee et al., 2025).

Furthermore, endogenous growth theory (EGT) extends the above framework by conceptualizing IQ as an essential structural determinant that examines the conditional effects of FCI on economic development and labor market dynamics (Romer, 1990). Contemporary scholars complement EGT by using IQ as a moderating factor which examines how the sectoral distribution of FCI affects employment in short run and enhances productivity in the long run (Challe et al., 2019; Hayat, 2019; Zekarias et al., 2025). Similarly, high IQ may channel FCI such as FDI and ODA towards capital and technology intensive sectors, and governance improvements, limiting short-run employment creation while enhancing long-run productivity and labor-market dynamics (Juhari et al., 2025). However, REM affect labor-market dynamics mainly through households' choices of leisure rather than by IQ (Ademe Ayalew & Mohanty, 2022; Williams, 2025; Yoda, 2025). Furthermore, when EGT is combined with labor-market segmentation perspectives, these frameworks may generate asymmetric effects of FCI on labor-market dynamics across genders due to sectoral composition, institutional limitations, and access to opportunities (Hazarika et al., 2024; Heintz & Folbre, 2022). Thus, this integration highlights the significance of incorporating IQ and labor-market heterogeneity within EGT and labor-market segmentation perspectives when examining the asymmetric effects of FCIs.

2.2 Empirical Literature

Recent studies stress FCI's relationship with labor-market dynamics (notably LFP), and thus highlight the importance of how global integration features are relevant to labor-market outcomes depending on gender and institutional contexts. Little empirical work on the effect of FCIs on LFP could be found in the literature (conceptualizing NGT, SLMT and EGT frames) given mixed results suggesting it is context specific (Heintz & Folbre, 2022; Juhari et al., 2025; Williams, 2025; Zekarias et al., 2025). Some works show that FCIs lead to the expansion of LFP through investment, efficiency and productivity (Bai et al., 2024; Banga, 2022; Das & Ray, 2024; Mohammed & Karagol, 2023; Sajid et al., 2021). Others indicate that FCIs depress FLFP due to income and substitution effects, particularly REM, which may be further worsened by labor market segmentation, and gender-based norms (Adigun et al., 2025; Alhassan et al., 2024; Al-Assaf, 2022). Furthermore, recent empirical studies highlight the conditional effects of IQ on the relationship between FCI and LFP (Afolabi & Raifu, 2024; Appiah et al., 2023; Ogbuabor et al., 2023b), suggesting that governance structures, institutional policy framework, and absorptive capacity may strengthen or weaken the effects of FCI on LFP. Within this framework, this section synthesizes contemporary empirical studies on complex relationships, with a specific focus on gender-differences and institutional context.



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2.2.1 Foreign Direct Investment and Labor Force Participation

The existing empirical literature shows mixed and inconclusive effects of FDI on LFP (Wacker et al., 2017). Several studies report that FDI enhances LFP through job creation and productivity-gains by filling saving-investment gaps, facilitating transfer of technology and knowledge to recipient countries (Ahmed & Kialashaki, 2023; Bai et al., 2024; Banga, 2022; Das & Ray, 2024; Sinha et al., 2023). Furthermore, empirical evidence shows that FDI has significant positive spillover effects which operated through labor productivity and productive capacity (Ahmed & Kialashaki, 2023; Hasan et al., 2023; Saha, 2024). These studies do not explicitly examine LFP, the results imply that FDI increases LFP by expanding demand for labor in economies with high human capital. Similarly, few empirical studies document that FDI has a significant positive impact on female labor force participation (FLFP), particularly in economies where institutional framework and labor-market structures support females' access to formal employment, indicating gender-specific transmission channels connecting FDI to LFP (Bai et al., 2024; Irandoust, 2024; Umar et al., 2025; Verme et al., 2016). This empirical result supports the implication of EGT, emphasizing the complementary role of FDI in the development of human capital which plays deterministic role in shaping LFP in developing economies. However, few studies report no or weak impact of FDI on overall LFP, stressing its concentration in capital-intensive sectors (Ben Mim et al., 2022; Saha, 2024), and even finds an adverse effect on FLFP (Gok & Unluoglu, 2024; Wacker et al., 2017). Collectively, the empirical evidence suggests that the FDI does not improve labor market dynamics (LFP) unless complemented with human-capital accumulation and absorptive capacity in the host country (Lai & Sarkar, 2022; Saha, 2024). Likewise, a study on OECD economies document that FDI's impact on employment creation and labor market dynamics vary across industries, implying that IQ and structural dynamics can significantly moderated FDI's effects on LFP (Afolabi & Raifu, 2024; Mohammed & Karagol, 2023; Appiah et al., 2023).

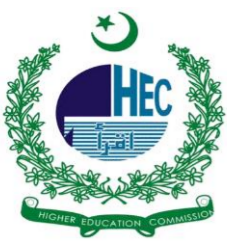
Based on the empirical literature, FDI and LFP have a significant and positive association, particularly in economies with high human-capital, strong IQ and absorptive capacity, implying that structural and institutional factors complement FDI and LFP (Hoekman et al., 2025; Saha, 2024). However, the strength and statistical significance of the effects of FDI on labor market dynamics differ: particularly labor productivity and employment have a positive association, while FDI's direct impact on LFP is conditional on structural and IQ factors. Moreover, few studies indicate weak or insignificant effects of FDI on economic development and labor market outcomes, particularly in economies with low human capital, inadequate absorptive capacity, and poor IQ, implying mere FDI does not foster LFP and labor productivity (Ben Mim et al., 2022; Garcia et al., 2024; Okombi & Tsingua-Kenfack, 2023). Thus, the study proposes the following hypothesis:

H1: FDI has a significant and positive direct effect on LFP.

2.2.2 International Remittances and Labor Force Participation

The empirical literature on the relationship between international remittances (REM) and LFP provides mixed and inconsistent results. Majority of empirical studies report that REM reduces LFP through income effects by relaxing financial constraints and providing non-labor income, especially in developing economies with limited formal sector employment (Al-Assaf, 2022; Williams, 2025; Yoda, 2025). Recent empirical studies support this finding and show that higher REM reduces LFP, particularly for low-income households (Alhassan et al., 2024; Williams, 2025; Yoda, 2025). Similarly, Wonyra and Ametoglo (2020) found that REM tends to reduce labor-productivity in agriculture sector, while a recent empirical study by Akçay (2025) shows that the effects of REM on LFP differ by gender and age groups. The study finds that REM reduces LFP among young and elderly workers but does not affect prime-age and FLFP, questioning the assumption of homogenous disincentive effect. Furthermore, in a broader macroeconomic perspective, REM can offset the adverse effects of emigration on LFP in source countries, but these inflows reduce the incentive to participate in the labor force, particularly for young and agricultural labor force (Carare et al., 2024; Kaur & Kaur, 2025; Yoda, 2025; Zhushi & Qehaja, 2024).

Although REM disincentive (income) effects are predominant, the strength and direction of the REM-LFP tend to be conditional on structural and institutional factors of a recipient country (Alhassan et al., 2024; Al-Assaf, 2022; Habib, 2023; Hasan et al., 2022). Some empirical evidence claims that economies with weak IQ and inadequate financial development, REM inflows are used for personal consumption expenditure and leisure rather than investment, reducing LFP and long-run labor productivity in recipient countries (Al-Assaf, 2022; Habib, 2023; Yoda & Diendere, 2025). However, economies with effective financial system, strong institutional and governance structures, and absorptive capacity tend to channel REM inflows towards productive investments, entrepreneurship, self-employment, and human capital development, offsetting the disincentive effect of REM on LFP (Adigun et al., 2025). Moreover, structural dynamics such as gendered division of labor market and labor market segmentation, moderate these relationships, as REM inflows reduce LFP among young and female workers in the absence of formal sector employment (Al-Assaf, 2022; Shair et al., 2024; Yoda, 2025).



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Collectively, the empirical evidence suggests that REM have conditional effects on LFP, depending on IQ, structural and absorptive capacity, and demographic composition of recipient countries to channel this non-labor income into productive economic activities (Mohammed & Karagol, 2023). Thus, the following hypothesis is proposed:

H2: REM have a significant and negative direct effect on LFP.

2.2.3 Official Development Assistance and Labor Force Participation

Empirical studies offer limited and even mixed findings on the effects of ODA on LFP, implying that ODA is conditional and highly dependent on structure, IQ, and sectoral allocation (Jean Tony, 2024; Onyeneke, 2025). Recent empirical evidence shows that an increase in ODA may improve LFP and employment opportunities through funding public-infrastructure development, education, health, and poverty alleviation initiatives (Jean Tony, 2024; Tian, 2023). Conversely, other empirical studies report limited or even adverse effects of ODA on LFP, especially when these aid flows are redirected towards non-developmental, debt-financing, or consumption (Grob & Nowak-Lehmann Danzinger, 2022; Nguyen Phuc et al., 2025; Sidana & Gogoi, 2025). These studies suggest that ODA may often create dependency and a disincentive effect, and further crowd out domestic investment. Collectively, employment effects of ODA which improve labor absorptive capacity in developing economies are debatable.

Furthermore, recent empirical evidence argues that the effects of ODA on labor market dynamics are conditional on structural factors, governance structure, and IQ (Su & Yang, 2023; Lau & Yip, 2023). Several studies found that ODA enhances LFP in economies where IQ is high and aid is directed towards capital intensive sectors, fiscal adjustment, and technology-intensive projects, enhancing long-run labor productivity while having no immediate effects on labor absorbing capacity, thus weakening its effects on LFP. However, in economies with low IQ and inadequate absorptive capacity, ODA has insignificant role in improving labor market outcomes (Ezako, 2024). Furthermore, gender-disaggregated empirical evidence shows that ODA has weak or no effects on FLFP, indicating improvement in IQ alone does not offset labor-market segmentation and gender segregation in employment (Su & Yang, 2023; Tadesse et al., 2025). Thus, the following hypothesis is proposed:

H3: ODA has a significant and positive direct impact on LFP.

2.2.4 Moderating Mechanism: Institutional Quality and Labor Force Participation

In addition to the direct effects of FCI on LFP, the empirical literature highlights the moderating role of IQ in strengthening or weakening the effects of these inflows on economic outcomes, particularly labor market dynamics (Afolabi & Raifu, 2024; Hasan et al., 2024; Xaisongkham & Liu, 2024). Similarly, consistent with the EGT, IQ determines the extent to which REM, FDI, and ODA enhance job creation and LFP in developing economies (Githaiga & Kilong'i, 2023; Khan et al., 2024). Furthermore, economies characterized by high IQ tend to channel FDI and ODA toward capital-intensive sectors, governance improvement, fiscal consolidation, and social development, which may undermine short-run LFP while enhancing long-run labor productivity (Hoekman et al., 2025; Chizema, 2025; Tsaurai, 2025). Therefore, high IQ may diminish the short-run employment effects of FDI and ODA, particularly for women due to persistent labor-market segmentation in developing economies (Ghazalian, 2024). On the other hand, REM operates through leisure and household-level income choices rather than formal institutional mechanism (Habib, 2023; Yoda, 2025). Therefore, enhancement in IQ may not significantly mitigate the disincentive effect of REM on LFP in developing economies (Lacheheb et al., 2022). In the presence of labor-market segmentation, IQ may have heterogeneous and gender-specific effects on LFP, implying that IQ modifies the transmission of FCI rather than homogenously shaping their labor-market effects (Thi Cam Ha et al., 2024; Kpognon et al., 2022). Thus, the following hypotheses are proposed:

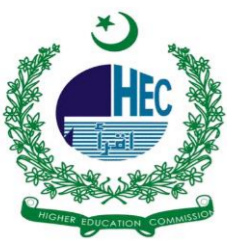
H4: IQ moderates the relationship between FDI and LFP, such that the effects of FDI are conditional on the level of IQ.

H5: IQ moderates the relationship between ODA and LFP.

H6: IQ does not moderate the relationship between REM and LFP.

2.2.5 Control Variables: Macroeconomic, Demographic, and Structural Factors

Moreover, empirical literature highlights the significance of structural characteristics, macroeconomic dynamics, and demographic factors in the determination of LFP in developing economies (Saha, 2024). Therefore, the study incorporates few important and relevant control variables, based on empirical literature, to account for infrastructural conditions, economic factors, and population dynamics that systematically affect LFP across developing economies. Methodologically, the relevant control variables are incorporate in the empirical framework to overcome the potential omitted variable bias issue (Abbas et al., 2022; Ashraf & Chaudhry, 2022).



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In particular, recent empirical evidence highlights the importance of key macroeconomic factors in the determination of LFP. For instance, economic developed (ECD) which is often measured through real GDP per capita, improves LFP by expanding economic activities, creating employment, and increasing demand for labor, substantially for MLFP (Abid, 2025; Adam & Alzuman, 2024). However, few studies report a significant negative impact of ECD on FLFP, suggesting that higher ECD generates income effects which reduce incentives to participation in the labor market (Akhtar et al., 2023; Gonzalez & Virdis, 2022). Another reason for this negative association is the persistent social norms and imperfect childcare services, particularly in developing economies, which further reduce FLFP. Conversely, the studies also argue that ECD is positively associated with FLFP only when ECD is inclusive and promotes education, human capital development, and infrastructure.

Furthermore, empirical evidence documents a substantial relationship between exchange rate (EXR) and LFP, particularly in the developing countries (Banerjee & Mazumder, 2025; Basak et al., 2023). For example, the rapid movements in EXR can greatly affect FCIs, trade balances as well as macroeconomic stability generally affecting LFP in developing economics (Nuru and Gereziher, 2023). However, depreciation of EXR could also incentivize demand for labor and LFP, particularly in exportable sectors, but may raise economic uncertainty resulting in declining productivity and LFP in the context of emerging economies (Banerjee & Mazumder, 2025; Basak et al., 2025).

Furthermore, empirical studies report significant effects of urban and demographic dynamics on LFP in developing countries. Majority of empirical studies find that fertility rates (FER) reduce FLFP, as higher FER reduces time allocation for labor supply and diverts it towards childcare and household responsibilities (Chani et al., 2024; Simba & Guneş, 2021; Sunday et al., 2024). The negative effects of FER on FLFP are even more pronounced in developing countries which lack childcare structure and traditional gender social norms (Gautham, 2022; Khalil & Warner, 2025; Narazani et al., 2025; Sunday et al., 2024). Furthermore, urbanization growth (URG) indicates structural transformation and rural to urban migration, which can increase employment opportunities by enabling access to formal sector employment (Chen et al., 2023; Wan et al., 2024). However, existing empirical literature indicates that rapid URG without absorptive capacity, governance structure and planning, job creation may increase unemployment, consequently reducing its positive effects on LFP (Chen et al., 2023; Ding et al., 2024; Ren et al., 2025).

Lastly, several empirical studies emphasize the importance of basic infrastructure, specifically access to electricity (ECA), in the growth of LFP through increasing efficiency, productivity and capital-intensive production across industries, supporting employment generation at macro level (Dasso & Fernandez, 2015; Li et al., 2024; Tabash et al., 2025). Recent empirical literature report that higher ECA has a significant strong positive impact on FLFP by decreasing incentives to domestic labor and encouraging non-agricultural and home-based economic activities (Li et al., 2024; Poignant, 2025). However, the strength and size of these effects are conditional on structural complements such as economic infrastructure, labor market responsiveness, and IQ, suggesting that ECA alone is not sufficient to enhance LFP in developing economies (Gashaye et al., 2025; Saha, 2024; Tabash et al., 2025).

3. Methodology

3.1 Sample, Data, and Variables

This study utilizes a balanced panel dataset of sixty-five developing economies for the period from 2003 to 2021, creating 1235 panel observations collectively. The choice of the sample countries is guided by World Bank classification according to income, focusing on low- & middle (lower & upper) -income countries that FCIs such as FDI, REM, and ODA are a large share in external finance and affect labor market outcomes significantly especially LFP. The countries selected are in line with existing empirical literature for the recent period that underscores the importance of FCIs in influencing labor market outcomes of developing economies because of gender disparities, imperfections of the labor market and structural diversity (Afolabi & Raifu, 2024; Mohammed & Karagol, 2023; Wacker et al., 2017). Additionally, the sample selection is consistent with international development targets under the United Nations Sustainable Development Goals (SDGs), particularly SDG-5 (Gender Equality) and SDG-8 (Decent Work and Economic Growth). These SDGs are supported and operationalized by the United Nations Development Programme and the World Bank, emphasizing the critical role of FCIs, IQ, and inclusive LFP for sustainable development (Afolabi & Raifu, 2024; Carare et al., 2024; Hoekman et al., 2025). Lastly, the sample size is largely determined by data availability and consistency of data across key variables, allowing for a robust panel-regression analysis.

Moreover, the study time period (2003-2021) is worth selecting for at least three empirically and policy reasons. First, it deals with the post phase of developing economies after globalization and economic liberalization, where these countries undergo substantial rise in FCIs (Hasan et al., 2021; Hoekman et al., 2025; Wacker et al., 2017). Secondly, the period of study incorporates major global economic shocks such as the global financial crisis (2008-09), a restructuring of aid flows globally post-2010 and

the pandemic (COVID-19) that affect and alter the structure, variability and labor-market effects of FCIs (Carare et al., 2024; Mohammed & Karagol, 2023; Wacker et al., 2017). Lastly, the study period allows for the examination of structural transformation in LFP, specifically gender-based employment effects, in response to changes in IQ, demographic transition, and rising global integration.

Moreover, the description and measurement of variables used in the study are provided in Table 1. The study selected variables using both theoretical frameworks, including NGT, SLMT, and EGT, and the current empirical literature on FCIs and labor market dynamics. Also, Table 1 reports the data sources and provides references for each variable used in the study. Furthermore, variables (where appropriate) were transformed to enable elasticity-based interpretation and address the possible heteroscedasticity before estimation. FDI and ODA are transformed using the inverse hyperbolic sine transformation, addressing non-positive values while retaining the original scale of the variables. Similarly, REM and ECD are transformed using natural logarithm, by adding 1 unit to handle zero values for REM. Furthermore, IQ is a composite index constructed by using six governance indicators (political stability, government effectiveness, rule of law, regulatory quality, voice and accountability, and control of corruption) through principal component analysis (PCA) and does not require transformation. Moreover, all the remaining variables (MLFP, FLFP, FER, ECA, URG, and EXR) are used in their original units as reported in Table 1.

Table 1: Description, Measurement, Data Sources, and Expected Signs of Variables

Category	Variable	Measurement	Expected Sign	Studies	Data Source
Labor Market Outcome (Dependent Variable)	MLFP	Male LFP rate, (% of male population ages 15-64, 15+, 15-24)	n/a	Abid, 2025; Adam & Alzuman, 2024; Adigun et al., 2025; Mohammed & Karagol, 2023; Saha, 2024; Wacker et al., 2017	ILO (2024)
	FLFP	Female LFP, (% of female population ages 15-64, 15+, 15-24)	n/a	Abid, 2025; Afolabi & Raifu, 2024; Adigun et al., 2025; Ghazalian, 2024; Gok & Unluoglu, 2024; Umar et al., 2025	ILO (2024)
Foreign Capital Inflows	FDI	Foreign direct investment, net inflows (% of GDP)	+ for MLFP +/- for FLFP	Abid, 2025; Adam & Alzuman, 2024; Adigun et al., 2025	WDI (2024)
	REM	Personal remittances, received (% of GDP)	+/-	Adigun et al., 2025; Jean Tony, 2024; Lacheheb et al., 2022; Mohammed & Karagol, 2023	WDI (2024)
	ODA	Net ODA received per capita (current US\$)	+/-	Grob & Nowak-Lehmann Danzinger, 2022; Onyeneke et al., 2025	WDI (2024)
Macroeconomic & Financial Dynamics	EXR	Official exchange rate (LCU per US\$, period average)	+/-	Adigun et al., 2025; Afolabi & Raifu, 2024; Banerjee & Mazumder, 2025	WDI (2024)
	ECD	Economic development proxied by GDP per capita (constant 2015 US\$)	+ for MLFP +/- for FLFP	Adam & Alzuman, 2024; Afolabi & Raifu, 2024; Mohammed & Karagol, 2023	WDI (2024)
Demographic & Structural Factors	FER	Fertility rate, total (births per woman)	n/a	Afolabi & Raifu, 2024; Gok & Unluoglu, 2024; Irandoust, 2024; Umar et al., 2025	WDI (2024)
	URG	Urban population growth (annual % change)	+	Abid, 2025; Afolabi & Raifu, 2024; Gok & Unluoglu, 2024; Mohammed & Karagol, 2023	WDI (2024)
Infrastructure Factor	ECA	Access to electricity, urban (% of urban population)	+	Gashaye et al., 2025; Gok & Unluoglu, 2024; Irandoust, 2024; Wacker et al., 2017	WDI (2024)
Institutional Quality	IQ	Composite index using PCA to combine 6 governance indicators and address multicollinearity.	+	Abid, 2025; Afolabi & Raifu, 2024; Gok & Unluoglu, 2024; Hasan et al., 2024; Mohammed & Karagol, 2023; Umar et al., 2025; Wacker et al., 2017	WDI (2024)

3.2 Econometric Models

3.2.1 Baseline Models: Direct Effects

In line with the NGT and SLMT, the baseline econometric model examines the direct effects of FCIs on LFP in developing economies. Consistent with the contemporary literature emphasizing gender-specific heterogeneity in labor markets in developing economies, regression models are estimated separately for male and female LFP.

The specification of baseline models are as follows:

$$LFP_{it}^g = \alpha_0 + \alpha_1 REM_{it} + \alpha_2 FDI_{it} + \alpha_3 ODA_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$LFP_{it}^g = \alpha_0 + \alpha_1 REM_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

$$LFP_{it}^g = \alpha_0 + \alpha_1 FDI_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

$$LFP_{it}^g = \alpha_0 + \alpha_1 ODA_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (4)$$

where LFP_{it}^g shows LFP for gender $g \in \{\text{male, female}\}$ in economy i at year t , REM, FDI, and ODA represent FCIs, X_{it} represent a vector of control variables (FER, URG, ECA, EXR, ECD and POP). Lastly, μ_i captures unobserved country-specific heterogeneity, λ_t captures common time effects, and ε_{it} shows the idiosyncratic error term. The baseline models (1-4) directly test first three hypotheses (H₁-H₃) developed in literature review section, examining whether FDI and ODA increase LFP across gender. Also, whether REM results in a disincentive effect.

3.2.2 Interaction Models: The Role of Institutional Quality

Based on the EGT, the study extends the baseline models by including IQ as a moderating variable to examine whether IQ conditions the effects of FCIs on labor market outcomes. The interaction models are as follows:

$$LFP_{it}^g = \alpha_0 + \alpha_1 REM_{it} + \alpha_2 IQ_{it} + \alpha_3 (IQ_{it} \times REM_{it}) + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (5)$$

$$LFP_{it}^g = \alpha_0 + \alpha_1 FDI_{it} + \alpha_2 IQ_{it} + \alpha_3 (IQ_{it} \times FDI_{it}) + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (6)$$

$$LFP_{it}^g = \alpha_0 + \alpha_1 ODA_{it} + \alpha_2 IQ_{it} + \alpha_3 (IQ_{it} \times ODA_{it}) + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (7)$$

where IQ is the composite index of IQ constructed using PCA, and the α_3 shows the conditional effects of FCIs on LFP across gender. Particularly, the models (5-7) empirically test the hypotheses H₄-H₆ and are in line with the contemporary literature that emphasizes that IQ significantly affects the sectoral distribution and labor-absorptive capacity of these FCIs.

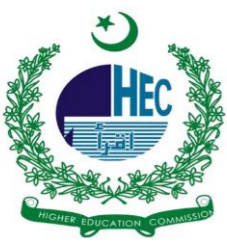
3.3 Statistical Analysis and Estimation Technique

The study provides descriptive statistics, normality test results, and Pearson's coefficient of correlation to understand the structure, properties and the pairwise relationship among the variables. Furthermore, the study estimates several key pre-estimation diagnostic tests, including Pesaran's (2021) cross-sectional dependence (CSD) test, the Wooldridge test for serial correlation, and the modified Wald test of heteroscedasticity. Based on the results of the CSD and diagnostic tests, the study applies the panel-corrected standard errors (PCSE) regression technique for robust estimates of the regression models, addressing error structure issues (Hasan et al., 2024; Beck & Katz, 1995).

4. Results and Discussion

4.1 Descriptive Statistics and Normality Analysis

The descriptive statistics of all variables are reported in Table 2. According to the results, LFP exhibits significant variation across sample countries, common in country-level data. Furthermore, the findings illustrate considerable differences between FLFP and MLFP, indicating gender-inequality in labor market participation. Additionally, the findings demonstrate uneven patterns of FDI, indicating potential differences in productive capacity, infrastructure, and human capital which are considered important factors in attracting these capital inflows. Similarly, the findings show that REM and ODA exhibit variation and skewed distributions across sample countries, highlighting persistent heterogeneity in labor market conditions and dependence on aid. Moreover, the results highlight large cross-country differences in their governance structure indicated by IQ. Moreover, the



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Shapiro-Wilk test suggests that variables do not follow a normal distribution (common in country-level data), justifying the application of PCSE regression approach to obtain robust estimates.

Furthermore, Pearson's coefficient of correlation among LFP, FCIs, IQ, and control variables along with variance inflation factor (VIF) are reported in Table 3. The results show that FDI has a significant and positive relationship with both overall and gender-based LFP. However, REM and LFP have a significant and negative correlation, with substantially stronger for women, supporting a persistent disincentive effect of REM. Similarly, the results show a weak positive link between ODA and FLFP, while its correlation with MLFP is negative, implying its gender-differentiated association with labor-market outcomes in developing economies. Moreover, the results reveal a weak and inconsistent association between IQ and LFP across genders, in particular, IQ has a significant positive association with MLFP, while insignificant correlation with FLFP. Similarly, IQ shows significant positive association with FDI, while negative with REM, further supporting the developmental effects of FDI and a disincentive effect of REM in developing economies. Lastly, the values of VIF for the explanatory variables indicate the absence of multicollinearity among explanatory variables, allowing for incorporating the variables in a unified analytical framework.

Table 2: Descriptive Statistics of Variables used in the Study

Variable	Mean	SD	Min	Max	Skewness	Kurtosis	Shapiro-Wilk
FLFP	53.271	16.405	11.551	88.522	-0.423	2.829	0.972 ^a
MLFP	77.126	8.525	50.990	90.873	-0.848	3.330	0.943 ^a
REM	1.429	0.881	0.004	3.894	0.235	2.114	0.968 ^a
FDI	1.634	0.913	-4.309	5.331	-0.333	5.234	0.981 ^a
ODA	3.963	1.665	-4.599	7.208	-1.330	5.944	0.915 ^a
EXR	3.998	2.671	-0.344	10.052	0.269	2.151	0.967 ^a
ECD	7.825	0.895	5.967	9.627	-0.085	2.017	0.974 ^a
FER	3.343	1.402	1.164	7.654	0.819	2.784	0.917 ^a
ECA	87.334	17.539	3.500	100.000	-1.695	5.611	0.757 ^a
URG	2.898	1.349	-0.151	12.771	0.805	5.530	0.966 ^a
IQ	0.000	1.956	-5.031	5.455	0.419	2.830	0.983 ^a

^a shows significance at 1% level of significance.

4.2 Pearson's Coefficient of Correlation and Multicollinearity

Table 3: Pearson's Coefficient of Correlation and Variance Inflation Factor (VIF)

Variable	FLFP	MLFP	REM	FDI	ODA	EXR	ECD	FER	ECA	URG	IQ	VIF
FLFP	1											3.827
MLFP	0.359 ^a	1										
REM	-0.295 ^a	-0.237 ^a	1									
FDI	0.177 ^a	0.100 ^a	0.073 ^b	1								
ODA	0.096 ^a	-0.302 ^a	0.305	0.149 ^a	1							
EXR	0.301 ^a	0.082 ^a	-0.036	-0.024	0.053 ^c	1						
ECD	-0.225 ^a	0.114 ^a	-0.297 ^a	0.055 ^c	-0.387 ^a	-0.433 ^a	1					
FER	0.248 ^a	-0.091 ^a	0.023	-0.029	0.367 ^a	0.269 ^a	-0.745 ^a	1				
ECA	-0.424 ^a	0.024	0.003	-0.076 ^a	-0.330 ^a	-0.204 ^a	0.664 ^a	-0.725 ^a	1			
URG	0.307 ^a	-0.073 ^a	-0.091 ^a	0.027	0.259 ^a	0.286 ^a	-0.620 ^a	0.698 ^a	-0.593 ^a	1		
IQ	-0.036	-0.106 ^a	-0.220 ^a	0.172 ^a	-0.026	-0.325 ^a	0.558 ^a	-0.450 ^a	0.173 ^a	-0.278 ^a	1	

^{a,b,c} shows significance at 1%, 5%, & 10%, respectively. VIF shows absence of multicollinearity.

4.3 Diagnostic Analysis Results

The results of the key diagnostic tests, including Pesaran's CSD test, the Wooldridge test for serial correlation, and the modified Wald test for heteroscedasticity, are reported in Table 4. Findings indicate significant CSD among the sampled countries, suggesting that economic shocks or policy changes in one country spill over to others. Similarly, the Wooldridge test indicates the presence of first-order serial correlation, and the modified Wald test confirms heteroscedasticity. These results are consistent across all model specifications, thus justifying the use of the PCSE estimator to obtain efficient and reliable inferences (Beck & Katz, 1995; Hasan et al., 2024).

Table 4: Diagnostic Tests Results

Test	Test Statistic
Pesaran's CSD test	4.299 ^a
Wooldridge test (Autocorrelation)	48.554 ^a
Modified Wald test (Heteroscedasticity)	11835.650 ^a

^a shows significance at 1% level of significance.

4.4 Regression Results

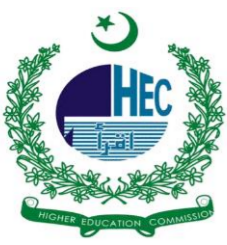
The regression results of estimated models (1-7) are reported in Tables 5-7. The findings show that FCIs have significant but different effects on LFP in the sampled economies depending the type of FCIs and gender (see Tables 5-6). The findings are consistent with a contemporary empirical literature which reports heterogeneous responses of labor market to distinct types of FCIs in developing countries.

Specifically, the findings highlight that REM has a significant and negative effect on LFP for both genders (Table 5-6, row 1). The effects are more pronounced and stronger for women i.e., an increase in REM by 1% leads to reduction in FLFP by on average by 1.7% to 2.2%, while the corresponding decline in MLFP is around 0.5% to 0.8%. These results suggest that REM provides additional income and eases financial constraints which enable recipients to substitute leisure or unpaid domestic work for labor, specifically among females. Furthermore, the stronger negative impact on FLFP is consistent with gender norms and culture prevalent in developing economies.

The findings are consistent with the existing empirical studies (Al-Assaf, 2022; Habib, 2023; Yoda & Diendere, 2025), suggesting that effects of REM operate through household labor supply and leisure choice decisions, particularly in developing economies. Furthermore, these findings suggest that higher REM inflows provide non-labor income to households, reducing financial constraints and motivation to LFP, specifically for females. Another reason for this negative association between REM and FLFP may be the persistent social norms and domestic childcare responsibilities, especially in developing economics characterized by inadequate childcare infrastructure (Gautham, 2022; Narazani et al., 2025; Umar et al., 2025; Williams, 2025).

Furthermore, FDI tends to enhance employment and LFP in developing economies through supplementing domestic investments, increasing productivity, and enabling transfer of technology in recipient countries (Bai et al., 2024; Das & Ray, 2024; Kaczmarczyk, 2023; Sinha et al., 2023). The findings support the existing evidence that the labor-market transmission mechanism of FDI operates through household-labor supply and leisure-choice decisions (Ademe Ayalew & Mohanty, 2022; Williams, 2025; Yoda, 2025). Furthermore, the results show that FDI has a significant and positive impact on both FLFP and MLFP. The size of the impact is moderate but robust, indicating that FDI creates employment opportunities and labor demand. For women, the coefficient is 0.23 to 0.33%, while for men it ranges from 0.19 to 0.23%. The findings are consistent with earlier findings that FDI increases employment in formal sector, promotes structural transformation and labor absorption across both genders.

Moreover, the findings indicate that ODA has mixed and inconsistent impact on labor force participation across genders. For females, ODA has no significant effects, indicating the ODA does not create employment for women due to institutional constraints. On the other hand, ODA has weak but significant adverse impact on MLFP, suggesting that aid may be the reason for crowding-out of private investments which reduces employment opportunities for male known as "Aid-related dependency effects". Similarly, the results validate previous findings regarding limited direct effects of ODA on labor-market outcomes and domestic labor-absorbing (Grob & Nowak-Lehmann Danzinger, 2022; Nguyen Phuc et al., 2025; Sidana & Gogoi, 2025).



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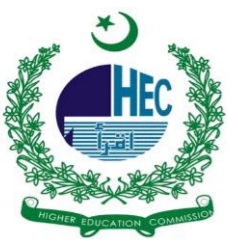
The heterogeneous effects of ODA on LFP, particularly its insignificant impact on FLFP and negative relationship with MLFP, may be attributable to the sectoral composition and utilization of aid in developing economies (Jean Tony, 2024; Onyeneke, 2025). Furthermore, the findings may reflect that aid is directed towards governance improvement, institutional capacity building, capital-intensive investments (substitution of labor), or social development programs, having limited direct effects on LFP in developing economies (Hoekman et al., 2025; Chizema, 2025; Tsauroi, 2025). Lastly, rising ODA often leads to higher government spending on aid-funded projects, creating demand for highly skilled labor and reducing availability of such labor particularly for low and medium enterprises. Consequently, this reallocation causes crowd out private investment and weaken labor-absorbing capacity in competitive and employment-intensive sectors.

Moreover, the findings reveal mixed and complex effects of IQ on FCI and labor force participation (see Table 6). In particular, IQ has a significant and positive impact on FLFP, while it has weak but negative effects on MLFP. These findings imply that better institutions and good governance improve labor market outcomes for females in terms of employment. However, the results suggest that MLFP is less sensitive to IQ and governance. Furthermore, the findings show that the IQ does not significantly moderate the adverse effects of REM on labor force participation across both genders. The results imply that improvement in IQ and governance is not sufficient to mitigate the adverse effects of REM and the response of labor market to REM operates through micro-level income effects than institutional channels, and these effects are same across both genders.

Table 5: Effects of Foreign Capital Inflows on LFP (15-64)

Variable	FLFP (15-64)				MLFP (15-64)			
	1	2	3	4	1	2	3	4
REM	-2.247 ^a (0.365)	-1.659 ^a (0.310)			-0.762 ^a (0.210)	-0.549 ^a (0.209)		
FDI	0.326 ^a (0.098)		0.232 ^a (0.088)		0.232 ^a (0.067)		0.196 ^a (0.062)	
ODA	-0.059 (0.074)			-0.088 (0.072)	-0.076 (0.046)			-0.079 ^c (0.044)
FER	0.540 (0.412)	1.069 ^b (0.469)	1.457 ^a (0.391)	1.419 ^a (0.385)				
URG					-0.087 (0.114)	-0.043 (0.102)	-0.053 (0.108)	-0.041 (0.102)
ECA	-0.124 ^a (0.026)	-0.093 ^a (0.021)	-0.106 ^a (0.023)	-0.118 ^a (0.025)	-0.042 ^a (0.012)	-0.033 ^a (0.012)	-0.041 ^a (0.011)	-0.035 ^a (0.011)
EXR	1.768 ^a (0.145)	1.818 ^a (0.177)	1.901 ^a (0.156)	1.910 ^a (0.145)	0.294 ^b (0.126)	0.293 (0.188)	0.339 ^b (0.144)	0.339 ^c (0.175)
ECD	0.641 (0.906)	1.509 (1.077)	2.170 ^b (0.909)	2.245 ^b (0.883)	1.684 ^a (0.562)	1.975 ^b (0.796)	1.939 ^a (0.620)	1.991 ^a (0.727)
POP	-1.213 ^a (0.213)	-1.133 ^a (0.227)	-1.097 ^a (0.180)	-1.151 ^a (0.174)	1.402 ^a (0.150)	1.394 ^a (0.196)	1.382 ^a (0.172)	1.284 ^a (0.197)
Intercept	72.738 ^a (10.551)	59.326 ^a (11.444)	50.567 ^a (8.867)	52.703 ^a (8.684)	44.498 ^a (5.145)	41.171 ^a (7.043)	41.296 ^a (5.509)	42.572 ^a (6.578)
Observations	1,224	1,224	1,231	1,231	1,224	1,224	1,231	1,231
R ²	0.741	0.744	0.742	0.738	0.937	0.933	0.937	0.934
Wald-Chi ²	461.63 ^a	313.09 ^a	416.86 ^a	447.68 ^a	251.26 ^a	104.32 ^a	103.91 ^a	77.06 ^a

^{a,b} shows significance at 1% & 5%, respectively. Standard errors are reported in parenthesis.



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Furthermore, the findings reveal that IQ has mixed effects on how FDI relates to LFP across genders. For women, higher IQ reduces the positive impact of FDI, likely because FDI often flows into capital-intensive sectors that do not create jobs for women. Similarly, higher IQ does not help translate ODA into more jobs unless that aid is specifically targeted at employment. ODA often funds reforms or debt, not labor absorption. In general, IQ shapes both the strength and the transmission mechanism of these inflows.

Table 6: Moderating Effects of IQ on FCIs and FLFP (15-64)

Variable	FLFP (15-64)			MLFP (15-64)		
	5	6	7	5	6	7
REM	-1.863 ^a (0.324)			-0.555 ^b (0.217)		
FDI		0.322 ^a (0.111)			0.195 ^a (0.062)	
ODA			0.008 (0.086)			-0.036 (0.047)
IQ	0.108 (0.206)	0.389 ^b (0.165)	0.516 ^b (0.207)	-0.300 ^c (0.175)	-0.291 ^b (0.127)	-0.212 (0.145)
REM×IQ	0.020 (0.085)			-0.018 (0.078)		
FDI×IQ		-0.120 ^a (0.044)			-0.036 (0.032)	
ODA×IQ			-0.084 ^a (0.030)			-0.033 ^c (0.020)
FER	0.908 ^b (0.448)	1.151 ^a (0.332)	1.237 ^a (0.355)			
URG				-0.038 (0.102)	-0.042 (0.108)	-0.034 (0.103)
ECA	-0.107 ^a (0.023)	-0.157 ^a (0.030)	-0.147 ^a (0.028)	-0.034 ^a (0.012)	-0.044 ^a (0.012)	-0.038 ^a (0.012)
EXR	1.817 ^a (0.164)	1.922 ^a (0.122)	1.929 ^a (0.126)	0.265 (0.193)	0.317 ^b (0.151)	0.316 ^c (0.175)
ECD	1.150 (1.040)	2.000 ^a (0.768)	2.092 ^a (0.794)	2.340 ^a (0.866)	2.379 ^a (0.699)	2.405 ^a (0.772)
POP	-1.113 ^a (0.222)	-0.972 ^a (0.155)	-1.032 ^a (0.166)	1.305 ^a (0.200)	1.285 ^a (0.166)	1.205 ^a (0.191)
Intercept	63.851 ^a (10.780)	55.138 ^a (7.117)	54.581 ^a (7.592)	39.978 ^a (7.288)	39.818 ^a (5.715)	40.810 ^a (6.547)
Observations	1,222	1,229	1,229	1,222	1,229	1,229
R ²	0.742	0.727	0.729	0.933	0.937	0.935
Wald-Chi ²	352.21 ^a	636.69 ^a	594.23 ^a	101.48 ^a	107.10 ^a	81.39 ^a

^{a,b,c} shows significance at 1% & 5%, respectively. Standard errors are reported in parenthesis.

Collectively, the results reveal that the effects of FCIs on LFP are heterogenous, gender-specific, and sensitive to IQ in developing economies (see summary in Table 7). The study extends contemporary empirical literature by jointly examining the effects of REM, FDI, and ODA on LFP across gender, with a specific focus on IQ as a moderating factor in a single empirical framework. In particular, REM creates an income disincentive effect, while FDI enhances LFP but depending on IQ, and ODA shows negative or weak impact on LFP in developing economies. Moreover, these heterogenous responses of labor-market to FCIs are consistent with the theoretical predictions of NGT, SLMT, and EGT, emphasizing productivity gains from FCIs, labor-market segmentation, and the moderating role of IQ. Thus, these findings emphasize the significance of gender heterogeneity and IQ when examining the labor-market effects of FCIs in developing economies.

Table 7: *The effects of FCIs and IQ on FLFP and MLFP: Comparative Analysis*

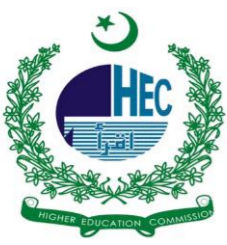
Variable	FLFP	MLFP	Insights
REM	Negative (Strong)	Negative (Moderate)	Stronger disincentive effects for women (FLFP).
FDI	Positive (moderate)	Positive (small)	Enhances demand for labor, with a moderate positive effect.
ODA	Insignificant	Negative (weak)	Exhibits weak or inadequate labor market transmission.
IQ	Positive	Negative (weak)	Directly improves labor market conditions for women.
REM×IQ	Insignificant	Negative (weak)	IQ does not moderate the effects of REM.
FDI×IQ	Negative	Insignificant	High IQ weakens the positive employment effect of FDI for women.
ODA×IQ	Negative	Negative	Highly IQ reduces the (already weak) employment effect of ODA.
FER	Positive	n/a	Reflects necessity-driven female labor supply.
URG	n/a	Insignificant	Urbanization alone is insufficient to boost MLFP.
ECA	Negative	Negative	Associated with structural unemployment effects.
EXR	Positive	Positive (weak)	Positively linked to employment via the export channel.
ECD	Positive (conditional)	Positive (strong)	Stroner positive association with male employment.
POP	Negative	Positive	Reflects gendered patterns of labor absorption.

5. Conclusion

The study examined the direct and conditional effects of FCIS such as REM, FDI, and ODA, on LFP across genders in developing economies, while explicitly incorporating the IQ as a moderating factor. The study uses a balanced panel dataset of sixty-five developing economies from 2003 to 2021, and applies PCSE regression techniques to address potential cross-sectional dependence, heteroscedasticity, and serial correlation. The empirical findings confirm significant heterogeneous outcomes across FCIs-types and genders. Specifically, REM shows a significant and negative effects on LFP for both genders, with a stronger disincentive effect for women. However, FDI has a significant and positive direct effects on LFP across genders, substantially stronger effects for females, implying its labor-absorptive capacity. In contrast, the findings reveal a weak and inconsistent impact of ODA, indicating insignificant effects on FLFP while slightly reducing MLFP. Furthermore, IQ directly increases FLFP but undermines MLFP, while it significantly moderates the employment effects of FDI and ODA. However, IQ does not change the disincentive (income) effects of REM.

The study has some limitations. First, the study uses aggregate country-level data, limiting its generalizability for household, firm, and sector-level channels. Second, the analytical framework uses broad IQ measures, which may not estimate the role of specific institutional aspects, such as labor-market regulations or social welfare programs.

Furthermore, the study provides several useful policy insights. First, policymakers should apply a gender-specific strategies for FDI, focusing on productive and labor-absorbing investments. Second, REM-receiving household in developing economies should be supported by financial-literacy programs and user-friendly digital platforms to redirect inflows toward employment-creating and productive uses. Third, global development partners should align ODA with labor-market and institutional reforms to enhance LFP and overall economic development. Lastly, improving IQ is crucial, however, policymakers should complement IQ with gender-sensitive and labor-specific policies to transmit institutional reforms into wider economic gains, particularly in terms of LFP and employment.



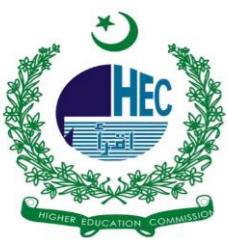
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Future researchers could also extend this study by using micro or firm-level data, as well as incorporating specific institutional indicators that would allow for a more detailed and holistic analysis of the labor-market effects caused by FCIs. Such an approach would be especially useful for elucidating the complex dynamics of gender differences, and also different institutional contexts that may possibly moderate these effects, thus providing a comprehensive, multidimensional understanding of the underlying mechanisms.

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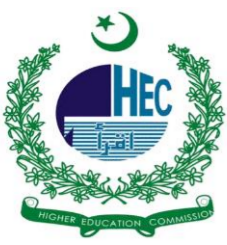
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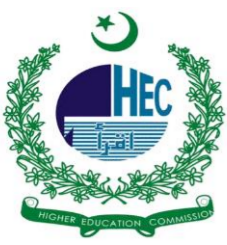
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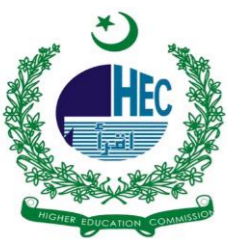
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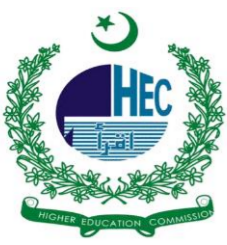
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