THESIS

TYPES OF FOREIGN DIRECT INVESTMENT AND THE INFORMAL ECONOMY: A CROSS-NATIONAL ASSESSMENT

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ABSTRACT

TYPES OF FOREIGN DIRECT INVESTMENT AND THE INFORMAL ECONOMY:

A CROSS-NATIONAL ASSESSMENT

How does foreign direct investment (FDI) affect the size of the informal economy? Some argue FDI reduces the size of the informal economy by promoting formal employment, while others contend that it facilitates a 'race to the bottom' and leads to the informalization of work. However, the empirical evidence on the effects of FDI is inconclusive. I suggest that this is attributed to previous studies overlooking the sector-specific effects of FDI on the informal economy. Using panel data of 76 countries between 2000 and 2018, this study examines how FDI inflow into the primary, secondary, and tertiary sector, affects the size of the informal economy and whether these effects are moderated by the development and institutional quality of the recipient countries. It shows that primary-sector FDI *reduces* informal economy in the Developed Countries while *increasing* informal economy in the Less Developed Countries. This could potentially be explained by the finding that institutional quality suppresses the positive effect of primary-sector FDI. Although I did not find statistically significant results of the impact of secondary- and tertiary-sector FDI, this limitation might be resolved in future study when industry-level FDI data becomes available. Overall, my findings suggest that the impact of FDI on the size of informal economy are heterogenous and can be better explained by the structure rather than the overall magnitude of FDI.

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CHAPTER 1: INTRODUCTION

The persistence of the gap in the size of informal economy between developed countries (DCs) and less-developed countries (LDCs) has been a contentious issue in the extant development literature [1]. In fact, it is estimated that more than 60% of the labor forces in LDCs are still employed in the informal sector: a term first coined in the 1970s to describe shadow economic activities that are out of state regulation [2]. This is surprising because over the past several decades, the International Labor Organization (ILO) has heavily promoted the 'formalization' policy, which aimed to integrate developing countries into the global economy and narrow the gap in labor formalization between DCs and LDCs [3]. Yet, it remains unclear how Foreign Direct Investment (FDI) affects the size of the informal economy in LDCs and DCs.

Despite the efforts of the ILO, recent data from the World Bank reveals that the gap in the size of informal economy between DCs and LDCs has been *increasing*, rather than decreasing in the past two decades [4]. Even though the flow of FDI into LDCs has substantially increased during this time, the progress toward greater economic formalization of has been largely stalled in LDCs. A growing body of literature emerges to challenge the notion that informal economy is an outcome of underdevelopment and contends informal economy as an integrated part of global

[1] Alejandro Portes, Manuel Castells, and Lauren A. Benton, eds., *The Informal Economy: Studies in Advanced and Less Developed Countries* (Baltimore, Md: Johns Hopkins University Press, 1989).
[2] Jennifer Jihye Chun and Rina Agarwala, "Global Labour Politics in Informal and Precarious Jobs," *Handbook of the Sociology of Work and Employment. London: SAGE Publications*, 2016, 634–50; Keith Hart, "Informal Income Opportunities and Urban Employment in Ghana," *The Journal of Modern African Studies* 11, no. 1 (1973): 61–89.
[3] Martha Chen and Françoise Carré, *The Informal Economy Revisited: Examining the Past, Envisioning the Future*, 1st ed. (London: Routledge, 2020), https://doi.org/10.4324/9780429200724.
[4] Franziska Ohnsorge and Shu Yu, *The Long Shadow of Informality: Challenges and Policies* (World Bank Publications, 2022).

capitalist accumulation [5]. Sociologists have long recognized that informal economy is central to our understanding of the dynamics of globalization and precarious work in LDCs, but relatively few studies examine whether FDI contributes to the formalization or informalization of economy [6].

What explains the cross-national variations in the size of informal economy? And more importantly, how does FDI explain cross-national differences in the size of the informal economy? I contend that the effects of FDI on the informal economy are heterogenous and are contingent on the underlying 'motives' of FDI. Specifically, I argue resource- & efficiency-seeking FDI increases the size of informal economy while market-seeking FDI decreases the size of informal economy.

In this study, I use sectoral FDI: FDI inflows into the primary-sector, secondary-sector, and tertiary-sector to approximate types of FDI and account for the heterogenous effects of inward FDI on informal economy between DCs and LDCs. For example, because LDCs historically served as a global hub to extract, process and export natural resources, FDI inflows into the primary sector, such as agriculture and mining, should contribute to the informalization of economy in LDCs because it increases the demand for unskilled labor to conduct labor-intensive, resource extractive activities [7]. Additionally, because LDCs are reliant on foreign

[5] Alejandro Portes and William Haller, "The Informal Economy," *The Handbook of Economic Sociology* 403 (2010); Saskia Sassen, *Informalization in Advanced Market Economies*, vol. 20 (Development Policies Department, International Labour Office Geneva, 1997); Guy Standing, "Economic Insecurity and Global Casualisation: Threat or Promise?," *Social Indicators Research* 88, no. 1 (August 2008): 15–30, https://doi.org/10.1007/s11205-007-9202-7.

[6] Anthony Roberts, "Peripheral Accumulation in the World Economy: A Cross-National Analysis of the Informal Economy," *International Journal of Comparative Sociology* 54, no. 5–6 (October 2013): 420–44, https://doi.org/10.1177/0020715213519458; Kwang-Yeong Shin, Arne L. Kalleberg, and Kevin Hewison, "Precarious Work: A Global Perspective," *Sociology Compass*, August 20, 2023, e13136, https://doi.org/10.1111/soc4.13136.

[7] Robert G Blanton and Dursun Peksen, "Natural Resource Wealth and the Informal Economy," *International Political Science Review* 44, no. 3 (June 2023): 418–33, https://doi.org/10.1177/0192512121991973; Andrew K.

capital for economic development and lack the resources to enforce labor regulation, states are more likely to align with business interests to protect property rights at the expenses of violating labor rights [8].

I draw on a panel data sample of 76 countries between 2000 and 2018 to measure the effect of sectoral FDI on the size of the informal economy. Regression results show that primary-sector FDI has an overall negative effect on the informal economy, but this effect varies substantively between the DCs and LDCs. Primary-sector FDI *reduces* informal economy in the DCs while *increasing* informal economy in the LDCs. In addition, institutional quality is found to suppress the positive effect of primary-sector FDI on the size of informal economy. However, this is no statistically significant evidence to suggest that secondary-sector and tertiary-sector FDI impacts the size of informal economy. Overall, these findings suggest that FDI has heterogenous effects on the size of informal economy, which is contingent on the sector it flows into and is moderated by the development status as well as the institutional quality of recipient countries.

Overall, this study advances the understanding of how globalization impacts the informal economy and addresses several gaps in the literature. Firstly, I distinguish the impact of sector-level FDI from the impact of aggregate FDI. This helps explain why we often find mixed results in the past studies [9]. It also highlights the importance of analyzing the structural composition of FDI rather than the overall magnitude of FDI. Secondly, this study help explain *why* the gap in

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Jorgenson, "The Effects of Primary Sector Foreign Investment on Carbon Dioxide Emissions from Agriculture Production in Less-Developed Countries, 1980-99," *International Journal of Comparative Sociology* 48, no. 1 (February 2007): 29–42, https://doi.org/10.1177/0020715207072158.

[8] Frederick W. Mayer and Nicola Phillips, "Outsourcing Governance: States and the Politics of a 'Global Value Chain World,'" *New Political Economy* 22, no. 2 (March 4, 2017): 134–52, https://doi.org/10.1080/13563467.2016.1273341.

[9] Manuel Rosaldo, "Problematizing the 'Informal Sector': 50 Years of Critique, Clarification, Qualification, and More Critique," *Sociology Compass* 15, no. 9 (September 2021), https://doi.org/10.1111/soc4.12914.

the size of informal economy between DCs and LDCs has been increasing. It is largely attributed to the sectoral differences between DCs and LDCs and the types of FDI they have received. Resource-seeking FDI and efficiency-seeking FDI contributes to the informalization rather than formalization of economy in LDCs. Finally, I demonstrate the importance of diversifying types of FDI and enhancing institutional quality to foster decent work opportunities in LDCs. Specifically, higher institutional quality can moderate the effect of sectoral FDI.

The remaining chapters consist of literature review (Chapter 2), data and methods (Chapter 3), results (Chapter 4), and discussion and conclusion (Chapter 5). In the Chapter 2, I review existing literature on globalization and the informal economy and provide a new framework to account for the heterogeneous effects of inward FDI on informal economy based on the motivations behind inward FDI. In the Chapter 3, I discuss data sources and regression models used in this study. In the Chapter 4, I present regression analysis results for the primary-, secondary-, and tertiary-sector models. In the Chapter 5, I discuss the contribution, limitations of this study, and prospects for future research.

CHAPTER 2: LITERATURE REVIEW

Globalization and the Informal Economy

According to the 'dualist perspective' of the informal economy, cross-national differences in informality is attributable to uneven development [10]. Compared to DCs, LDCs lack the necessary technology and capital to develop the 'formal economy' which involves with skilled labor and large-scale industrial production. In context of globalization, modernization scholars argue that as LDCs absorb more foreign capital and technology, its relatively underdeveloped 'informal economy' would eventually disappear [11].

As such, proponents of globalization claim the FDI plays a key role in formalizing the economies of LDCs. Investment from multinational corporations (MNCs) should facilitate a 'climb to the top' effect through the diffusion of world best practice [12]. In particular, prior studies have shown that FDI can produce positive impacts on the collective labor rights and interfirm labor practices in LDCs [13]. When MNCs purchase ownership of local firms through FDI, employees can benefit from the transfer of technology and managerial knowledge through vocational training. Local firms also improve their labor practices as MNCs bring their

[10] Hart, "Informal Income Opportunities and Urban Employment in Ghana."
[11] Henry Bernstein, "Modernization Theory and the Sociological Study of Development∗," *The Journal of Development Studies* 7, no. 2 (January 1971): 141–60, https://doi.org/10.1080/00220387108421356; Richard Peet and Elaine Hartwick, *Theories of Development: Contentions, Arguments, Alternatives* (Guilford Publications, 2015).
[12] Brian Greenhill, Layna Mosley, and Aseem Prakash, "Trade-Based Diffusion of Labor Rights: A Panel Study, 1986–2002," *American Political Science Review* 103, no. 4 (November 2009): 669–90, https://doi.org/10.1017/S0003055409990116.
[13] Layna Mosley, "Workers' Rights in Open Economies: Global Production and Domestic Institutions in the Developing World," *Comparative Political Studies* 41, no. 4–5 (April 2008): 674–714, https://doi.org/10.1177/0010414007313119; Layna Mosley and Saika Uno, "Racing to the Bottom or Climbing to the Top? Economic Globalization and Collective Labor Rights," *Comparative Political Studies* 40, no. 8 (August 2007): 923–48, https://doi.org/10.1177/0010414006293442.

organizational practices from global headquarters to local subsidiary [14]. Such enhancement in labor skill and labor practices can lead to a positive spillover effect in the broad labor market and create more formal jobs.

In contrast, critics of globalization contend that global investment induces a 'race to the bottom' effect and contributes to the informalization of work in LDCs [15]. They argue that MNCs create downward pressure among LDCs to lower labor costs, often at the expense of violating labor rights to attract foreign investors [16]. Studies show that even MNCs may consider labor regulation and labor protection when choosing their destinations of investment, the extent of labor protection never extends to informal workers [17]. Not surprisingly, local firms in the LDCs often turn to flexible production and increasingly rely on cheap, disposable informal labor to meet the demand of MNCs. The informalization of work also creates a negative spillover effect in the broader labor market. Because informal workers are easily disposable and less likely to engage in collective bargaining or form solidarity with formal employees, state and MNCs turn to informal workers to deny labor rights of formal employees [18].

Recent studies have also highlighted the role of informal labor in global production networks [19]. Prior studies found that the existing power imbalance between leading firms in the

[14] Layna Mosley, *Labor Rights and Multinational Production*, Cambridge Studies in Comparative Politics (Cambridge ; New York: Cambridge University Press, 2010).
[15] Nita Rudra, "Globalization and the Race to the Bottom in Developing Countries," *Cambridge Books*, 2008.
[16] Jenny Chan, Manjusha Nair, and Chris Rhomberg, "Precarization and Labor Resistance: Canada, the USA, India and China," *Critical Sociology* 45, no. 4–5 (2019): 469–83; Antonio David, *Labor Market Dynamics, Informality and Regulations in Latin America* (S.l.: International Monetary Fund, 2020).
[17] Shannon Lindsey Blanton and Robert G. Blanton, "What Attracts Foreign Investors? An Examination of Human Rights and Foreign Direct Investment," *The Journal of Politics* 69, no. 1 (February 2007): 143–55, https://doi.org/10.1111/j.1468-2508.2007.00500.x.
[18] Rina Agarwala, "Reshaping the Social Contract: Emerging Relations between the State and Informal Labor in India," *Theory and Society* 37, no. 4 (August 2008): 375–408, https://doi.org/10.1007/s11186-008-9061-5.
[19] Nicola Phillips, "Informality, Global Production Networks and the Dynamics of 'Adverse Incorporation,'" *Global Networks* 11, no. 3 (2011): 380–97.

DCs and supplier firms in the LDCs results in unequal gains from participating into global production [20]. Firms in the DCs typically focus on capital- and skill-intensive activities that yield high value-added in the upstream. Conversely, firms in the LDCs engage with labor-intensive activities that yield low value-added in the downstream [21]. Despite an influx of foreign investment and increased engagement with MNCs, this 'upstream-downstream' dynamic leads to a faster expansion of informal employment compared to formal employment in the LDCs. In summary, global production fosters a system where formal employment in the DCs is increasingly substituted by informal employment in the LDCs [22].

Recent Trends in FDI and the Informal Economy

Latest data from the World Bank reveals a mixed picture about globalization and informal economy [23]. Figure 1 shows trends in the size of informal economy as from 2000 to 2018. According to the World Bank estimation, the size of the informal economy declined in both DCs and LDCs during this period. However, the decline of the informal economy was greater in DCs compared to LDCs. As a result, the gap in the size of informal economy has been increasing between 2000 to 2018 despite the substantial increase in net inflow of FDI into LDCs during this period.

[20] Jennifer Bair, "Global Capitalism and Commodity Chains: Looking Back, Going Forward," *Competition & Change* 9, no. 2 (June 2005): 153–80, https://doi.org/10.1179/102452905X45382; Matthew C. Mahutga, "Production Networks and the Organization of the Global Manufacturing Economy," *Sociological Perspectives* 57, no. 2 (June 2014): 229–55, https://doi.org/10.1177/0731121414523399.
[21] Gary Gereffi and Karina Fernandez-Stark, "Global Value Chain Analysis: A Primer," 2016; Gary Gereffi, "The Global Economy: Organization, Governance, and Development," *The Handbook of Economic Sociology* 2 (2005): 160–82.
[22] Phillips, "Informality, Global Production Networks and the Dynamics of 'Adverse Incorporation'"; Roberts, "Peripheral Accumulation in the World Economy."
[23] Ohnsorge and Yu, *The Long Shadow of Informality*.

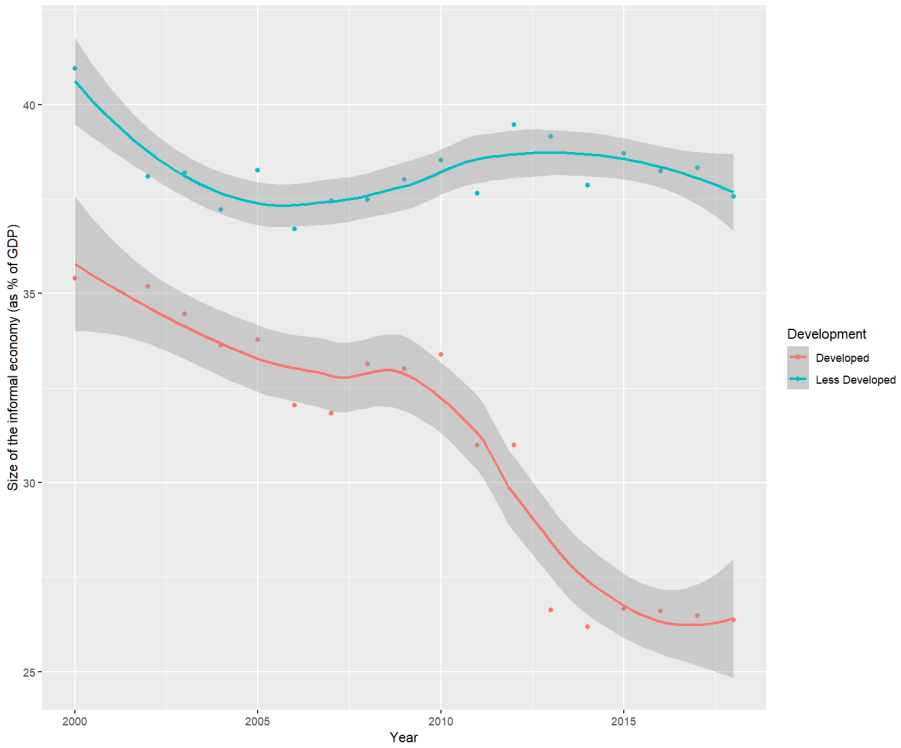

Figure 1. Size of the informal economy as a percentage of GDP, 2000-2018.

Figure 2 shows trends in net foreign direct investment from 2000 to 2018. Net inflows of FDI as a percentage of GDP has been increasing in LDCs while decreasing in DCs. After 2010, the ratio of inward FDI inflow as a percentage of GDP in LDCs has surpassed that in DCs.

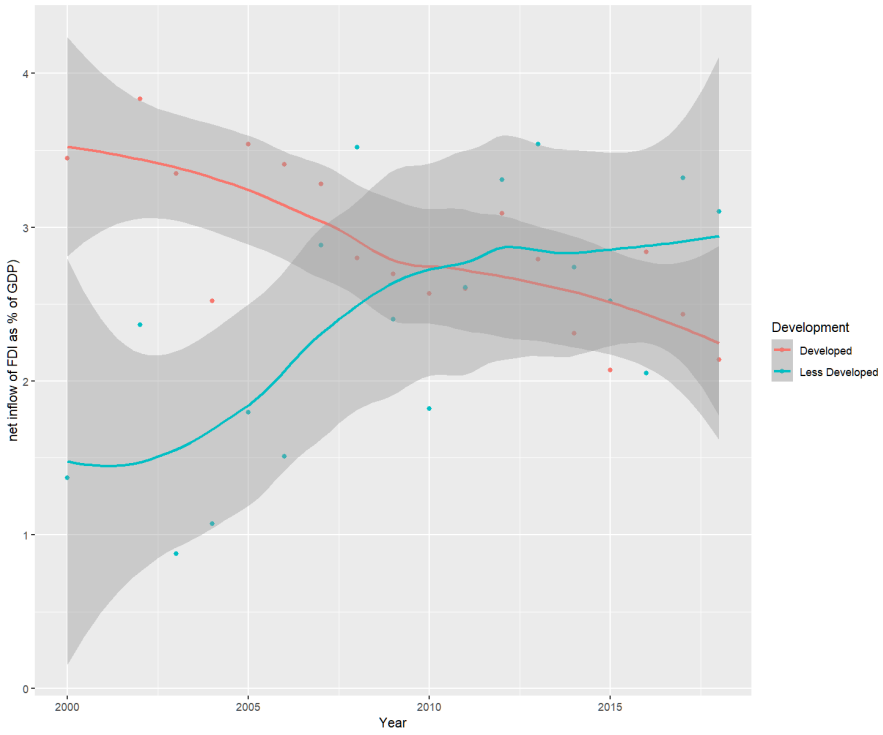

Figure 2. Net inflow of FDI as a percentage of GDP, 2000-2018.

The trends observed in Figure 1 and Figure 2 shows debate over the effect of FDI on the size of the informal is complicated. Specifically, arguments from proponents and critics of globalization do not fully explain changes in the size of informal economy in DCs and LDCs. According to the critics, the size of the informal economy should increase as more FDI flows into LDCs, but these countries experienced a decline in the size of informal economy. On the other hand, proponents of globalization would suggest the effect of FDI on the decline of the informal economy in LDCs should be greater compared to DCs given the growth of FDI into LDCs compared to DCs. However, the decline of informality in DCs was greater compared to LDCs. I argue this inconsistency between the expectations of critics and proponents of globalization and the observed trends of FDI and the informal economy is attributable to the heterogeneity in the strategic motivations of multinational investment into foreign economies.

Types of FDI and the Informal Economy

Inward FDI can be conventionally classified into three types: resource-seeking, market-seeking, and efficiency-seeking [24]. Resource-seeking FDI is directed at gaining competitive advantages through enclosure of resources extraction. Market-seeking FDI is directed at accessing and expanding into the local consumer market. Efficiency-seeking FDI is directed at gaining competitive advantage through lowering labor cost and avoiding labor regulation [25].

The motivation behind foreign investment into recipient countries often determines the extent of technology and knowledge spillover effect of FDI [26]. For example, past studies find that the positive spillover effect from FDI is strongest in market-seeking FDI. For market-seeking FDI, the motivation of MNC is to seek for 'ownership advantage' by building local subsidiaries and utilizing its advantages in technology to gain market share in the host countries [27]. In contrast, the positive spillover effect is not as strong as those of market-seeking FDI for resource-seeking and efficiency-seeking FDI due to lack of backward linkage with and investment into human capital of domestic firms [28].

Both resource-seeking and efficiency-seeking FDI are prevalent in LDCs. For example, the agriculture and mining sectors in Argentina is dominated by MNCs mainly serves to export

[24] John H. Dunning, "Toward an Eclectic Theory of International Production: Some Empirical Tests," *Journal of International Business Studies* 11, no. 1 (March 1980): 9–31, https://doi.org/10.1057/palgrave.jibs.8490593.
[25] Kavita Wadhwa and Sudhakara S. Reddy, "Foreign Direct Investment into Developing Asian Countries: The Role of Market Seeking, Resource Seeking and Efficiency Seeking Factors," *International Journal of Business and Management* 6, no. 11 (2011): 219.
[26] Sjoerd Beugelsdijk, Roger Smeets, and Remco Zwinkels, "The Impact of Horizontal and Vertical FDI on Host's Country Economic Growth," *International Business Review* 17, no. 4 (August 2008): 452–72, https://doi.org/10.1016/j.ibusrev.2008.02.004.
[27] Nigel Driffield and James H Love, "Linking FDI Motivation and Host Economy Productivity Effects: Conceptual and Empirical Analysis," *Journal of International Business Studies* 38, no. 3 (May 2007): 460–73, https://doi.org/10.1057/palgrave.jibs.8400268.
[28] Chandana Chakraborty and Peter Nunnenkamp, "Economic Reforms, FDI, and Economic Growth in India: A Sector Level Analysis," *World Development* 36, no. 7 (July 2008): 1192–1212, https://doi.org/10.1016/j.worlddev.2007.06.014.

raw materials to developed countries. In this case, resource-seeking FDI into the mining sector did not create large employment and barely has any impact on the broad labor market [29]. Moreover, resource-seeking FDI and efficiency-seeking FDI could cause a 'disarticulation' in recipient countries where domestic sectors dominated by foreign investment becomes disarticulated from the rest of the economy. For example, the foreign capital penetration literature has shown that LDCs are highly dependent on foreign investment from MNCs: this form of dependence causes LDCs to organize their economy around export-oriented production, often at the cost of domestic investment and production [30].

Additionally, Blanton and Blanton (2009) find that resource-seeking FDI increases the demand for low-skilled labor to conduct labor-intensive, resource extractive activities in LDCs. Disarticulation occurs because most profits generated from resource extraction goes to the MNCs instead of being reinvested into local economy. Firms have few incentives to invest into their local labor forces and seek for broad integration with local business. Dependence on foreign capital for economic development also creates negative impacts on the willingness of state to enforce labor regulations. LDCs are inclined to align with the interests of MNCs to protect property rights over labor rights, especially when the immediate economic cost of enforcing labor regulation is high [31].

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[29] Ben Ross Schneider, *Hierarchical Capitalism in Latin America* (Cambridge University Press, 2013).
[30] Linda Beer and Terry Boswell, "The Resilience of Dependency Effects in Explaining Income Inequality in the Global Economy: A Cross National Analysis, 1975-1995," *Journal of World-Systems Research*, February 26, 2002, 30–59, https://doi.org/10.5195/jwsr.2002.273; Christopher Chase-Dunn, "The Effects of International Economic Dependence on Development and Inequality: A Cross-National Study," *American Sociological Review*, 1975, 720–38; Jeffrey Kentor, "The Long-Term Effects of Foreign Investment Dependence on Economic Growth, 1940–1990," *American Journal of Sociology* 103, no. 4 (1998): 1024–46.
[31] Luca Messerschmidt and Nicole Janz, "Unravelling the 'Race to the Bottom' Argument: Foreign Direct Investment and Different Types of Labour Rights," *World Development* 161 (January 2023): 106097, https://doi.org/10.1016/j.worlddev.2022.106097.

Overall, I contend that FDI exerts heterogenous effects on the size of informal economy because of differences in the motivations of multinational investment. Specifically, resource-, market-, and efficiency-seeking FDI exercises distinct positive or negative externalities on the recipient countries. However, existing studies only observe the effects of aggregate FDI inflows to examine how foreign investment impacts the size of informal economy without differentiating types of FDI.

Sectoral FDI into Developed and Less-Developed Countries

The operationalization of types of FDI is difficult given the lack of data on the motivations of multinational corporations when investing in foreign economies. However, sectoral FDI data (FDI inflows into the primary, secondary, and tertiary sector) may serve as an approximate of the types of FDI given cross-national differences the primary-, secondary, tertiary sectors of DCs and LDCs. In general, resource-seeking FDI is closely associated with primary sector while market-seeking FDI is associated with the secondary sector and efficiency-seeking is associated with tertiary sector. This is not to say all primary-sector FDI inflows are consisting of resource-seeking FDI or all secondary-sector FDI inflows are consisting of market-seeking FDI. Instead, we should also take the sectoral differences between DCs and LDCs into consideration to examine whether sectoral FDI has heterogenous impacts on the size of informal economy in DCs and LDCs.

To begin with, resource-seeking FDI is closely associated with primary-sector FDI, but there are still substantive differences in primary sector between DCs and LDCs. Figure 3 compares the size of the primary sector (% GDP) in DCs and LDCs from 2000-2018. It indicates

that the size of the primary sector is significantly larger in the LDCs compared to DCs. More importantly, the primary-sector activities are more skill- and capital-intensive in the DCs while the primary-sector activities in LDCs are more labor- and resource-intensive; because DCs are concentrated the upstream activities and LDCs are concentrated into downstream activities in the global production of primary products [32], we should expect that primary-sector FDI inflows into LDCs are mainly consisting of resource-seeking FDI and increases the size of informal economy. On the other hand, we should expect that primary-sector FDI into DCs are mainly consisting of market-seeking FDI and reduces the size of informal economy.

H1a: Primary-sector FDI increases size of informal economy in LDCs.

H1b: Primary-sector FDI decreases size of informal economy in DCs.

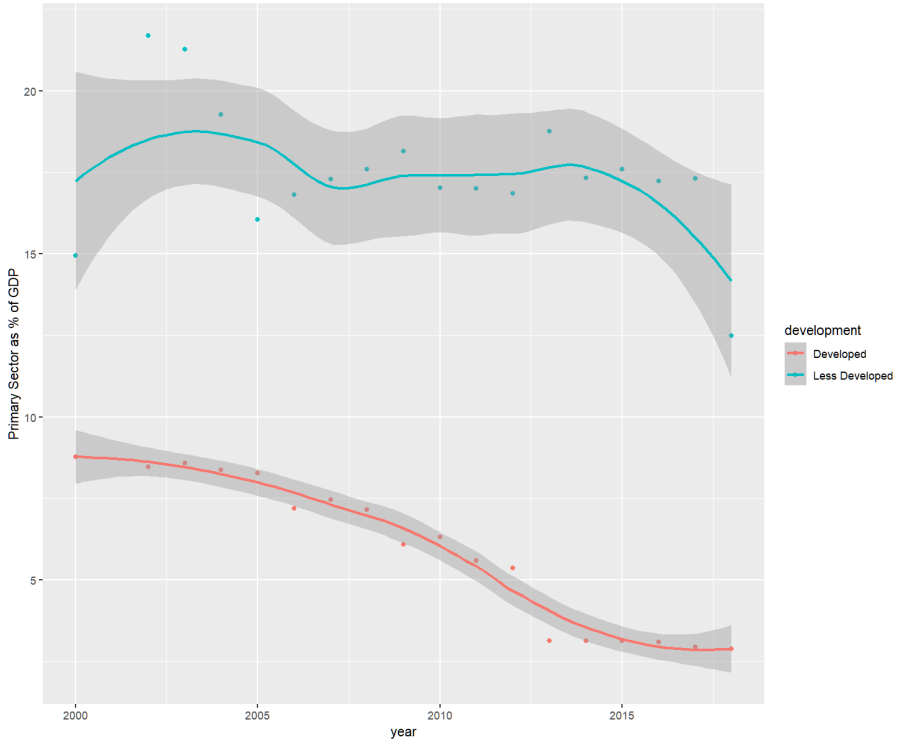

Figure 3. Size of the primary sector as a percentage of GDP, 2000-2018.

[32] Gary Gereffi, "Global Value Chains in a Post-Washington Consensus World," *Review of International Political Economy* 21, no. 1 (January 2, 2014): 9–37, https://doi.org/10.1080/09692290.2012.756414.

The secondary-sector FDI is likely to be more heterogenous than the primary-sector FDI in their composition of market-seeking and efficiency-seeking FDI. One possible solution is to consider the differences in skill- and labor-intensity of the secondary between DCs and LDCs. This is because MNCs rely on skilled labor to transfer their technology and knowledge of know-how from parenting firms to local subsidies, connect with local firms and expand local market for their products. On the other hand, a large supply of unskilled labor will cater to MNCs who would relocate their low-skilled, labor-intensive activities to take advantage of cheap labor in LDCs. Scholars also find that the ratio of skilled labor to unskilled labor affects the marketplace bargaining power of labor, which in turn could determine whether MNCs invest into vocational training for formal employees and retain skilled labor [33]. Accordingly, we should expect that secondary-sector FDI into DCs is oriented towards market-seeking because the secondary sector in developed countries is more skill-intensive. In contrast, secondary-sector FDI inflows into LDCs could consist of both market-seeking and efficiency-seeking FDI and could either increase or decrease the size of informal economy. On the one hand, MNCs may want to invest in LDCs with huge population (e.g. China) to gain access to their consumer market. On the other hand, MNCs may want to invest into LDCs with abundant unskilled labor (e.g. Bangladesh) to offshore production. Therefore, I hypothesize the following:

H2a: Secondary-sector FDI decreases size of informal economy in DCs.
H2b: Secondary-sector FDI increases size of informal economy in LDCs.
H2c: Secondary-sector FDI decreases size of informal economy in LDCs.

[33] Anthony Roberts, "The Globalization of Production, Industrial Upgrading, and Collective Labor Rights in the Global South," *Sociology of Development* 7, no. 3 (September 1, 2021): 337–62, https://doi.org/10.1525/sod.2020.0024.

Similarly, the tertiary-sector FDI is likely to be more heterogenous where investors may be both market- and efficiency-seeking. However, prior research shows that the positive spillover effect from tertiary-sector FDI is inconsistent [34]. Skill-intensity still plays an important role in differentiating tertiary sector between developed countries and LDCs but may not be as evident as high-skilled activities versus low-skilled activities in the secondary sector. Therefore, I hypothesize that tertiary-sector FDI into DCs and LDCs mainly consist of efficiency-seeking FDI.

H3: Tertiary-sector FDI increases size of informal economy in DCs and LDCs.

Sectoral FDI and Institutional Quality of recipient countries

Additionally, it is important to consider how institutional quality of recipient countries moderates the effect of sectoral FDI on the informal economy. The 'regulatory perspective' in the informal economy attributes the cross-national differences and the persistence of the informal economy to excessive costs from regulation [35]. Others point out that the deregulation of labor market would decrease regulatory costs and deter firms from participating in the informal economy [36]. However, Kus finds that the quality of state regulation, not degree of state regulation, can better predict the variations in the size of informal economy [37]. This is attributed to countries with high institutional quality having more resources to enforce labor regulation and

[34] Laura Alfaro, "Foreign Direct Investment and Growth: Does the Sector Matter," *Harvard Business School* 2003 (2003): 1–31; Chakraborty and Nunnenkamp, "Economic Reforms, FDI, and Economic Growth in India."
[35] David, *Labor Market Dynamics, Informality and Regulations in Latin America*; Hernando De Soto, *The Other Path: The Invisible Revolution in the Third World*, 1. publ, Perinial Library (New York: Harper & Row Publishers, 1990).
[36] Robert G. Blanton and Dursun Peksen, "Labor Laws and Shadow Economies: A Cross-National Assessment: Labor Laws and Shadow Economies," *Social Science Quarterly*, June 9, 2019, https://doi.org/10.1111/ssqu.12685.
[37] Basak Kus, "Regulatory Governance and the Informal Economy: Cross-National Comparisons," *Socio-Economic Review* 8, no. 3 (July 2010): 487–510, https://doi.org/10.1093/ser/mwq005.

greater autonomy to resist the pressure from MNCs and local firms [38]. Conversely, countries with low institutional quality lack the necessary bureaucratic capacity to enforce labor regulations, resulting in a discrepancy between *de jure* and *de facto* labor practices.

Figure 4 compares the year-over-year changes in institutional quality in LDCs and DCs from 2000 to 2018. The gap in the institutional quality between LDCs and DCs has not been substantially narrowed in the past decades. While LDCs tend to have rigid labor regulation, the quality of regulation is notably lower in LDCs compared to DCs [39]. When the regulatory burden is high, but enforcement of regulation is weak, informality tends to increase [40]. Overall, recipient countries with higher institutional quality can effectively enforce labor regulation to deter MNCs and local supplier firms from exploiting informal labor in the primary sector. Therefore, we should expect that higher institutional quality can suppress the negative effect of resource-seeking FDI and efficiency-seeking FDI while amplifying the positive effect of market-seeking FDI on the size of informal economy.

H4a: Institutional quality suppresses the positive effect of primary-sector FDI on the size of informal economy.

H4b: Institutional quality amplifies the negative effect of secondary-sector FDI on the size of informal economy.

H4c: Institutional quality suppresses the positive effect of tertiary-sector FDI on the size of informal economy.

[38] Peter B. Evans, "Predatory, Developmental, and Other Apparatuses: A Comparative Political Economy Perspective on the Third World State," *Sociological Forum* 4, no. 4 (December 1989): 561–87, https://doi.org/10.1007/BF01115064.
[39] Schneider, *Hierarchical Capitalism in Latin America*.
[40] Kus, "Regulatory Governance and the Informal Economy."

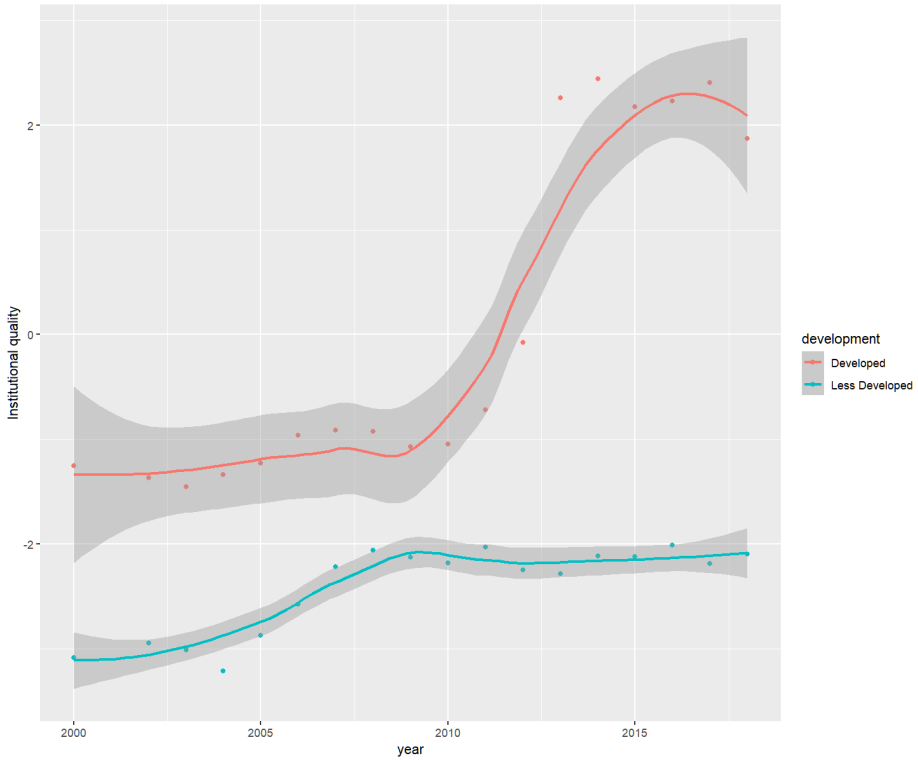

Figure 4. Changes in Institutional Quality, 2000-2018.

CHAPTER 3: DATA AND METHODS

The hypotheses of the study are tested using an unbalanced panel sample of 76 developed and less-developed countries from 2000 to 2018. Due to the limited availability of sector-level FDI data, the sample consists of 626 country-year observations. 401 observations come from DCs, and 225 observations come from LDCs. Although sector-level FDI data is only available from 2000 to 2018, it nevertheless captures the period when international investment and trade is at its peak level [41].

Dependent Variable: Size of the Informal Economy

The informal economy is hidden from state regulation, making it a challenge to create a cross-national and comparative data on the size of the informal economy. Direct measurements of the informal economy, such as those involving with national household survey are scarce and often inconsistent across countries [42]. As a result, researchers have created indirect measurements based on macroeconomics indicators, such as energy use, to estimate the output from informal economic activities [43]. Cross-national studies of the informal economy often adopted multiple indicators and multiple causes (MIMIC) approach to avoid relying on a single macroeconomic

[41] Gereffi and Fernandez-Stark, "Global Value Chain Analysis."
[42] Roberto Dell'Anno, "Theories and Definitions of the Informal Economy: A Survey," *Journal of Economic Surveys* 36, no. 5 (December 2022): 1610–43, https://doi.org/10.1111/joes.12487.
[43] Friedrich Schneider, *Handbook on the Shadow Economy* (Edward Elgar Publishing, 2011).

indicator [44]. The MIMIC approach has been cross-validated and produce reliable estimations of the size of the informal economy which are widely accepted [45].

This paper uses Medina and Schneiders' [46]estimates of the informal economy, which measures the size of informal economy as a percentage of GDP. It is based on MIMIC approach and is integrated into the World Bank Informal Economy Database [47].

Focal Independent Variables: Inflow of Primary, Secondary, & Tertiary Sector FDI

For independent variables, I use sector-level FDI inflow (in millions of U.S. dollars) data from the International Trade Centre (ITC). The ITC aggregates time-series FDI inflow data from UNCTAD and the Bureau of Statistics[48]. The primary sector mainly consists of agriculture, mining, fishing, and forestry industry; the secondary sector mainly consists of manufacturing and construction industry; the tertiary sector mainly consists of transportation, retail, financial and information industry. The primary-sector, secondary-sector, and tertiary-sector FDI are then divided by GDP (in millions of U.S. dollars) and log transformed to correct data skewness [49].

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[44] Norman V. Loayza, "The Economics of the Informal Sector: A Simple Model and Some Empirical Evidence from Latin America," *Carnegie-Rochester Conference Series on Public Policy* 45 (December 1996): 129–62, https://doi.org/10.1016/S0167-2231(96)00021-8; Leandro Medina and Mr Friedrich Schneider, *Shadow Economies around the World: What Did We Learn over the Last 20 Years?* (International Monetary Fund, 2018); Friedrich Schneider, Andreas Buehn, and Claudio E. Montenegro, "Shadow Economies All over the World: New Estimates for 162 Countries from 1999 to 2007," in *Handbook on the Shadow Economy* (Edward Elgar Publishing, 2011); Friedrich Schneider and Dominik H Enste, "Shadow Economies: Size, Causes, and Consequences," *Journal of Economic Literature* 38, no. 1 (March 1, 2000): 77–114, https://doi.org/10.1257/jel.38.1.77.

[45] James Alm and Abel Embaye, "Using Dynamic Panel Methods to Estimate Shadow Economies Around the World, 1984–2006," *Public Finance Review* 41, no. 5 (September 2013): 510–43, https://doi.org/10.1177/1091142113482353.

[46] Medina and Schneider, *Shadow Economies around the World*.

[47] Ohnsorge and Yu, *The Long Shadow of Informality*.

[48] Details on the data source, methodology are available at https://www.investmentmap.org/methodology-fdi-data.

[49] Kenneth Benoit, "Linear Regression Models with Logarithmic Transformations," *London School of Economics, London* 22, no. 1 (2011): 23–36.

Development scholars have debated whether FDI inflow or FDI stock is a better measurement of FDI's impact on LDCs [50]. Put it simply, FDI inflow indicates short-term effect of FDI and is more volatile year-over-year while FDI stock indicates the long-term, cumulative effect of FDI [51]. This study employs sector-level FDI inflow data due to the limited availability of sector-level FDI stock data. Utilizing sector-level FDI stock data would reduce the number of observations to below 300, which significantly reduces the statistical power of the analysis.

Moderating Variables: Development Status & Institutional Quality

For classifying countries based on their developmental status, I created a binary, categorical variable 'Development Status' using the World Bank's income classification of countries. Countries with high income and upper middle-income are classified as 'Developed Countries', while those with low income and lower middle-income are classified as 'Less Developed Countries'.

For measuring the institutional quality of countries, I created a numeric variable 'Institutional Quality' which is scaled based on the 'rule of law', 'control of corruption', and 'regulatory quality' variables from the World Governance Indicators database [52]. The 'rule of law' variable measures the extent state is going to abide by law and the strength of contract enforcement; the 'control of corruption' variable measures the extent of corruption; the 'regulatory quality' variable measures the bureaucratic capability of state to implement sound

[50] William J. Dixon and Terry Boswell, "Dependency, Disarticulation, and Denominator Effects: Another Look at Foreign Capital Penetration," *American Journal of Sociology* 102, no. 2 (September 1996): 543–62, https://doi.org/10.1086/230956; Glenn Firebaugh, "Does Foreign Capital Harm Poor Nations? New Estimates Based on Dixon and Boswell's Measures of Capital Penetration," *American Journal of Sociology* 102, no. 2 (September 1996): 563–75, https://doi.org/10.1086/230957; Jeffrey Kentor and Terry Boswell, "Foreign Capital Dependence and Development: A New Direction," *American Sociological Review*, 2003, 301–13.
[51] Kentor, "The Long-Term Effects of Foreign Investment Dependence on Economic Growth, 1940–1990."
[52] Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi, "The Worldwide Governance Indicators: Methodology and Analytical Issues1," *Hague Journal on the Rule of Law* 3, no. 2 (2011): 220–46.

regulation. The Cronbach's alpha for 'rules of law', 'control of corruption', and 'regulatory quality' is 0.97. The 'Institutional Quality' variable is preferred because it accounts for both the rule of law and the quality of regulation.

Control Variables

Following previous studies [53], I incorporate a range of control variables: trade openness, sector size (primary, secondary, and tertiary), GDP per capita, net inflow of total FDI, population change, and the stock of human capital. These variables are included to ensure that variations in the size of the informal economy are not attributed to other factors.

Trade openness is the natural logarithm of trade (the sum of imports and exports) as a percentage of GDP. A higher trade openness value indicates lower tariffs and increased engagement with international business, which is often associated with reduced informal economic activities [54].

Sector size is the total value of primary-, secondary-, and tertiary-sector as a percentage of GDP. These variables are included to account for cross-national differences in the size of sectors which may influence both sector specific FDI and the size of the informal economy. For

[53] Shannon Lindsey Blanton and Robert G. Blanton, "A Sectoral Analysis of Human Rights and FDI: Does Industry Type Matter?," *International Studies Quarterly* 53, no. 2 (June 2009): 469–93, https://doi.org/10.1111/j.1468-2478.2009.00542.x; Blanton and Peksen, "Labor Laws and Shadow Economies"; Blanton and Peksen, "Natural Resource Wealth and the Informal Economy"; Michael Chletsos and Andreas Sintos, "Hide and Seek: IMF Intervention and the Shadow Economy," *Structural Change and Economic Dynamics* 59 (December 2021): 292–319, https://doi.org/10.1016/j.strueco.2021.09.008; Kus, "Regulatory Governance and the Informal Economy"; Mosley, *Labor Rights and Multinational Production*.

[54] Robert G. Blanton, Bryan Early, and Dursun Peksen, "Out of the Shadows or into the Dark? Economic Openness, IMF Programs, and the Growth of Shadow Economies," *The Review of International Organizations* 13, no. 2 (June 2018): 309–33, https://doi.org/10.1007/s11558-018-9298-3.

example, past studies have attributed an excess labor force concentrated in the informal sector to a larger share of primary-sector GDP[55].

Similarly, I include *GDP per capita* (log transformed) to account for differences in economic development between developed countries and LDCs.

The *Net inflow of FDI* is the natural logarithm of total inward FDI inflow as a percentage of GDP. Adding net inflow of FDI in the analysis allows me to disaggregate the effect of sector-level FDI from net inflow of FDI.

Population change is the rate of annual population change.

Human capital is measured by years of formal education and returns to education. Both variables are included to account for unobserved effects on the broad labor market.

Data for these control variables data is gathered from World Development Indicator [56], apart from human capital, which is gathered from Penn World Table 10.01 [57].

Regression Analyses

I estimated a series of regression models using the ordinary least square (OLS) with fixed-effects to examine the effects of sectoral FDI on the size of informal economy. To account for any omitted variable bias and unobserved time invariant heterogeneity [58], I specify the models with country-fixed effects. Both random-effects and fixed-effects model could be used to

[55] William Arthur Lewis, "Economic Development with Unlimited Supplies of Labour," 1954, http://la.utexas.edu/users/hcleaver/368/368lewistable.pdf.
[56] World Bank, *World Development Indicators 2016* (Washington, DC, 2016), https://doi.org/10.1596/978-1-4648-0683-4.
[57] Robert C. Feenstra, Robert Inklaar, and Marcel P. Timmer, "The next Generation of the Penn World Table," *American Economic Review* 105, no. 10 (2015): 3150–82.
[58] Charles N. Halaby, "Panel Models in Sociological Research: Theory into Practice," *Annual Review of Sociology* 30, no. 1 (August 1, 2004): 507–44, https://doi.org/10.1146/annurev.soc.30.012703.110629.

account for unobserved heterogeneity, but random-effects model assumes that unobserved heterogeneity is unrelated to covariances. A statistically significant results from the Hausman test indicates that the fixed-effects model is preferred to the random-effects model ($p < 0.05$) because the fixed-effects model is more consistent [59]. I also include year as a continuous variable to control for the linear trend of year-related effects[60].

I also test for serial correlation and panel heteroscedasticity using Breusch-Godfrey test and Breusch-Pagan test [61] . The test show that there are serial correlation ($p < 0.001$) and heteroskedasticity ($p < 0.001$) in the panel data. To account for serial correlation and heteroskedasticity, I apply Newey-West standard errors in these models [62].

To test the hypotheses on the effect of sectoral FDI on the size of informal economy, I estimate four different models in the analysis. All models use the same panel data and estimator. The only difference is which parameters are included in each model. Model 1 only includes sectoral FDI and sectoral GDP.

Model 2 includes all relevant control variables, and the full regression equation is,

$$(1)\ Size\ of\ the\ informal\ economy_{it} = \beta_0 + \boldsymbol{\beta_1}\ \boldsymbol{Sectoral\ FDI_{it}} + \sum \beta_k\ Controls_{kit} + \mu_i$$

(i = country, t = year, k = variables)

The **bolded $\boldsymbol{\beta_1}$** is the coefficient of the effect of sectoral FDI on the size of the informal economy. It is either primary-sector, secondary-, or tertiary-sector FDI in the respective models. If $\boldsymbol{\beta_1}$ is

[59] Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data* (MIT press, 2010), https://books.google.com/books?hl=en&lr=&id=hSs3AgAAQBAJ&oi=fnd&pg=PP1&dq=Econometric+Analysis+of+Cross+Section+and+Panel+Data&ots=VYUXrv-ZRv&sig=zJhKacncoJRcdCP88OE74QYdqbg.
[60] A two-way fixed-effects model including both country- and year-fixed effects is not feasible given the current panel sample size of 626 observations. This is due to the number of countries (N = 76) significantly exceeding the number of years (T = 19) in the dataset.
[61] Wooldridge, *Econometric Analysis of Cross Section and Panel Data*.
[62] Whitney K. Newey and Kenneth D. West, "A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix," *Econometrica: Journal of the Econometric Society*, 1987, 703–8.

positive, it indicates that sectoral FDI has a net positive impact on the size of informal economy. If $\boldsymbol{\beta_1}$ is negative, it indicates that sectoral FDI has a net negative impact on the size of informal economy. $\sum\beta_k$ are the coefficients of control variables included in the model. Lastly, μ_i is the country-fixed effects.

Model 3 adds the interaction terms between sectoral FDI and development status while controlling for all other variables.

$$(2)\ Size\ of\ the\ informal\ economy_{it} = \beta_0 + \beta_1\ Sectoral\ FDI_{it} + \beta_2\ Development_{it} + \boldsymbol{\beta_3\ Sectoral\ FDI_{it}\ x\ Development_{it}} + \sum\beta_k Controls_{kit} + \mu_i$$

(i = country, t = year, k = variables)

The **bolded $\boldsymbol{\beta_3}$** is the coefficient of the interaction terms between sectoral FDI and development. It is either primary-sector, secondary-, or tertiary-sector FDI in the respective models. β_1 is the coefficient of the effect of sectoral FDI on the size of informal economy in developed countries. If β_1 is positive, it indicates that sectoral FDI has a positive impact on the size of informal economy in DCs. If β_1 is negative, it indicates that sectoral FDI has a negative impact on the size of informal economy in DCs. Similarly, if the sum of β_1 and β_3 is positive, it indicates that sectoral FDI has a positive impact on the size of informal economy in LDCs. If the sum of β_1 and β_3 is negative, it indicates that sectoral FDI has a negative impact on the size of informal economy in LDCs.

Model 4 adds the interaction terms between primary-sector FDI and institutional quality while controlling for all other variables.

$$(3)\ Size\ of\ the\ informal\ economy_{it} = \beta_0 + \beta_1\ Sectoral\ FDI_{it} + \beta_2\ Institutional\ Quality_{it} + \boldsymbol{\beta_3\ Sectoral\ FDI_{it}\ x\ Institutional\ Quality_{it}} + \sum\beta_k\ Controls_{kit} + \mu_i$$

(i = country, t = year, k = variables)

The **bolded $\boldsymbol{\beta_3}$** is the coefficient of the interaction terms between sectoral FDI and institutional quality. It is either primary-sector, secondary-, or tertiary-sector FDI in the respective models. β_1 is the coefficient of the effect of sectoral FDI on the size of informal economy when institutional quality is 0 which represents the average institutional quality. If the sum of β_1 and β_3 is negative, it indicates that institutional quality suppresses the impact of sectoral FDI. If the sum of β_1 and β_3 is positive, it indicates that institutional quality amplifies the impact of sectoral FDI.

CHAPTER 4: RESULTS

Primary-Sector Results

Table 1 presents the regression results of the effect of primary-sector FDI on the size of informal economy. The results in Model 1 largely align with existing literature that a higher share of primary-sector GDP is associated with increased informal economic activities [63]. However, the coefficient of primary-sector FDI is negative and significant ($p < 0.001$), which suggests that the primary-sector FDI has an overall negative effect on the size of informal economy. Specifically, a 1 percentage-point increase in primary-sector FDI as a percentage of GDP will decrease the size of the informal economy by 0.499 percentage-points.

Table 1. Effect of Primary-Sector FDI on the size of Informal Economy

	(1)	(2)	(3)	(4)
Primary Sector FDI	-0.499 **	-0.256 *	-0.477 ***	-0.238 *
	(0.156)	(0.105)	(0.114)	(0.100)
Primary Sector GDP	0.068 *	-0.035	-0.060 *	-0.045
	(0.029)	(0.025)	(0.025)	(0.033)
Net inflow of FDI		-0.004	-0.026	-0.018
		(0.020)	(0.020)	(0.021)
Trade Openness		0.059	-0.110	-0.021
		(0.262)	(0.248)	(0.346)
GDP Per Capita		-4.604 ***	-4.530 ***	-4.603 ***
		(0.867)	(0.826)	(1.046)
Institutional Quality		-0.082	-0.035	-0.009
		(0.103)	(0.098)	(0.116)

[63] Blanton and Peksen, "Natural Resource Wealth and the Informal Economy."

Population		-0.005	-0.104	-0.079
		(0.157)	(0.153)	(0.218)
Human Capital		-2.863 **	-2.219 *	-2.498 *
		(0.857)	(0.788)	(0.970)
Primary FDI * LDC			0.714 ***	
			(0.166)	
Primary FDI * Institutional Quality				-0.082 *
				(0.038)
N	626	626	626	626
Within R2	0.414	0.555	0.586	0.567
AIC	1263.048	1102.013	1059.840	1086.846
BIC	1613.757	1479.358	1441.625	1468.630

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Moving from Model 1 to Model 2, the coefficient of primary-sector FDI changes from -0.499 to – 0.256 but is still significant ($p < 0.05$). The change in the coefficient of primary-sector FDI is anticipated due to the inclusion of a range of control variables in Model 2. Both GDP per capita (β = -4.604, $p < 0.001$) and human capital (β = -2.863, $p < 0.01$) have a negative and significant effects on the size of informal economy. The results in Model 2 align with existing literature that economic development and formal education are the strongest predictors of the informal economy [64].

Interestingly, the impact of primary-sector FDI on the size of informal economy is still negative and significant. A 1 percentage-point increase in the primary-sector FDI as a percentage

[64] NU CEPAL, "The Employment Situation in Latin America and the Caribbean: Employment Formalization and Labour Income Distribution," 2014.

of GDP will decrease the size of informal economy by 0.256 percentage-points. The result challenges the prevailing belief that primary-sector FDI is inherently exploitative and leads to the informalization of work. Overall, while primary-sector FDI does contribute to a reduction in informality, it is crucial to investigate whether the effect of primary-sector FDI is consistent across DCs and LDCs.

Model 3 examines the interaction terms between primary-sector FDI and development. The coefficient of primary-sector FDI is -0.477 and the coefficient of interaction terms between primary-sector FDI and development is 0.714, both of which are significant ($p < 0.001$). The results in Model 3 support hypotheses H1a and H1b that there are substantive differences between DCs and LDCs regarding the effect of primary-sector FDI on size of the informal economy.

Figure 5 visualizes the substantial differences between DCs and LDCs regarding the effect of primary-sector FDI on size of the informal economy. On the y-axis we have the effect of primary-sector FDI on the size of informal economy. On the x-axis we have DCs and LDCs. Primary-sector FDI *reduces* informality in the DCs while *increasing* informality in the LDCs: a 1 percentage-point increase in the primary-sector FDI as a percentage of GDP will decrease the size of informal economy by 0.477 percentage-points in DCs. While a 1 percentage-point increase in the primary-sector FDI as a percentage of GDP will increase the size of informal economy by 0.237 percentage-points in the LDCs.

The results in Model 3 help explain why the gap in the size of informal economy between DCs and LDCs has been increasing. It is attributable to DCs benefiting from increasing foreign investment to reduce informality while LDCs are being integrated into global production

networks at the cost of increasing informality [65]. As more foreign direct investment flows into the primary sector, it further contributes to the informalization of economy in LDCs. The results in Model 3 could also help explain why past studies often find mixed results on the effects of FDI on informalization of work. It is attributable to past studies often relying on aggregate FDI data without considering the sector-specific effect of FDI. The model clearly shows that while the effect of net FDI inflows on the size of informal economy could be negative in both DCs and LDCs, the effects of primary-sector FDI on the size of informal are heterogenous and contingent by the country development.

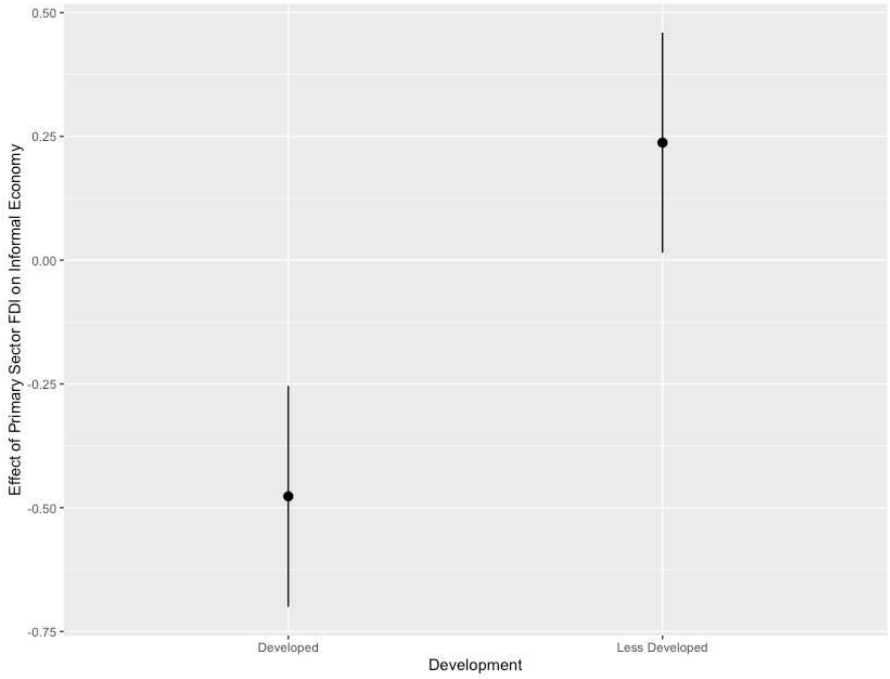

Figure 5. Effect of Primary-Sector FDI on Informal Economy by Country Development

Model 4 examines the interaction terms between primary-sector FDI and institutional quality. The coefficient of primary-sector FDI is -0.238 and the coefficient of interaction terms

[65] Phillips, "Informality, Global Production Networks and the Dynamics of 'Adverse Incorporation'"; Roberts, "Peripheral Accumulation in the World Economy."

between primary-sector FDI and institutional quality is -0.082, both of which are significant ($p < 0.05$). The coefficient of primary-sector FDI is -0.238 ($p < 0.05$) which indicates that primary-sector FDI reduces the size of informal economy in countries with an average institutional quality (when Institutional Quality is equal to zero). The coefficient of the interaction terms between primary-sector FDI and institutional quality being -0.082 ($p < 0.05$) indicates that better institutional quality will amplify the negative effect of primary-sector FDI on the size of informal economy. These results support H4a and indicate that better institutional quality can suppress the positive effect of primary-sector FDI on the informal economy.

Figure 6 visualizes the interaction terms between primary-sector FDI and institutional quality. On the y-axis we have the effect of primary-sector FDI on the size of informal economy. On the x-axis we have institutional quality ranging from -7.5 (lowest institutional quality) to 7.5 (highest institutional quality). Figure 4 shows that the effects of primary-sector FDI on the size of informal economy are null in countries with low institutional quality (Institutional Quality < 0). But primary-sector FDI would reduce size of the informal economy in countries with average to high institutional quality (Institutional Quality > 0).

The results in Model 4 could potentially explain why primary-sector FDI produces opposite effects on the size of informal economy between DCs and LDCs. DCs have more resources and bureaucratic capacity to enforce labor regulation and deter MNCs from engaging with informal economic activities. In contrast, the institutional quality in LDCs never reach the critical threshold of average institutional quality in the past two decades (Figure 2). Because LDCs don't have the necessary resources and bureaucratic capacity to enforce labor regulation, MNCs and local supplier firms can exploit informal labor to conduct labor-intensive resource extraction activities in the primary sector.

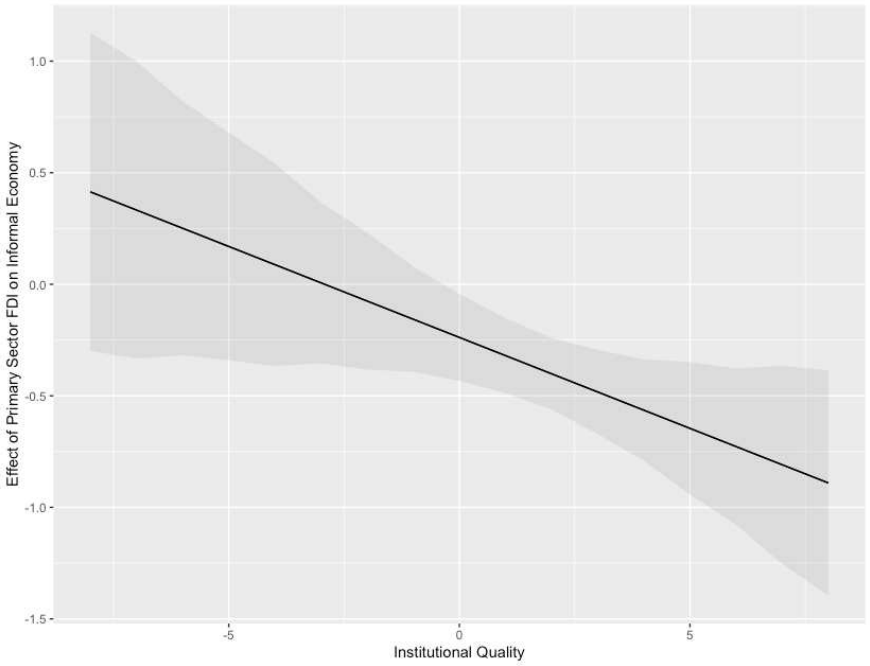

Figure 6. Effect of Primary-Sector FDI on Informal Economy by Institutional Quality

Robustness Check

I conduct robustness check to ensure that results are not biased against specific model specifications. A primary concern in the model is to account for omitted confounding factors, serial correlation and homoskedasticity in the panel sample. To address this, I use a different estimator, feasible generalized least square (FGLS) with country-fixed effects (FE) to check whether findings are robust and consistent across different model specifications. I re-estimate Model 1 to 4 using FGLS estimator and reports results in the Table 2.

Table 2. Effect of Primary-Sector FDI on the size of Informal Economy (FGLS Estimator)

	(1)	(2)	(3)	(4)
Primary Sector FDI	-0.347 **	-0.247 ***	-0.477 ***	-0.171 ***
	(0.031)	(0.012)	(0.006)	(0.016)
Primary Sector GDP	0.015	-0.062 ***	-0.132 ***	-0.046 ***

	(0.011)	(0.005)	(0.002)	(0.006)
Net inflow of FDI		-0.031 ***	-0.099 ***	-0.026 ***
		(0.005)	(0.004)	(0.008)
Trade Openness		0.150 *	0.364 ***	0.797 ***
		(0.068)	(0.027)	(0.089)
GDP Per Capita		-3.809 ***	-3.328 ***	-5.492 ***
		(0.152)	(0.048)	(0.210)
Institutional Quality		0.015	0.166 ***	-0.058 *
		(0.020)	(0.009)	(0.025)
Population		0.114 **	0.255 ***	0.169 ***
		(0.039)	(0.018)	(0.050)
Human Capital		-1.442 **	-5.709 ***	-2.869 ***
		(0.240)	(0.063)	(0.329)
Primary FDI * LDC			0.842 ***	
			(0.014)	
Primary FDI * Institutional Quality				-0.012 *
				(0.006)
N	626	626	626	626
R2	0.997	0.998	0.998	0.998

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Due to the limitation with pggls() class in the plm() package in R, I report R2 instead of within R2.

The results from Table 2 are largely consistent with the main results. In Model 2, the coefficient of primary-sector FDI is -0.247 ($p < 0.001$), which is very similar to the results from Model 2 of Table 1. While the coefficient is similar between the two estimators, the standard error is about 10 times smaller when using the feasible generalized least squares. This is likely because we applied Newey standard errors in the main model which is larger than normal

standard errors [66]. We still get significant results even when using a very conservative estimator in the main model. The results are even stronger in this robustness check. In Model 3, the coefficient of the interaction terms between primary-sector FDI and development is 0.842 ($p < 0.001$) and is slightly larger than Model 3 of Table 1. It confirms the main findings in the results section that primary-sector FDI increases size of the informal economy in the LDCs while decreasing size of the informal economy in Developed countries. In Model 4, the coefficient of the interaction terms between primary-sector FDI and institutional quality is -0.012 ($p < 0.05$) which is slightly smaller than Model 4 of Table 1.

Secondary-Sector Results

Table 3 presents the regression results of the effect of secondary-sector FDI on the size of informal economy. The results in Model 1 reveal that a larger share of secondary-sector GDP is associated with smaller size of informal economy. However, the coefficient of secondary-sector FDI is insignificant ($p > 0.05$). It suggests that secondary-sector FDI has no impact on the size of informal economy when secondary-sector GDP is controlled.

Table 3. Effect of Secondary-Sector FDI on the size of Informal Economy

	(1)	(2)	(3)	(4)
Secondary Sector FDI	0.045	0.055	0.043	0.063
	(0.057)	(0.039)	(0.041)	(0.059)
Secondary Sector GDP	-0.086 *	-0.054 *	-0.055 *	-0.054
	(0.030)	(0.020)	(0.020)	(0.029)

[66] Newey and West, "A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix."

Net inflow of FDI		-0.038	-0.038	-0.039
		(0.023)	(0.022)	(0.029)
Trade Openness		0.149	0.144	0.146
		(0.285)	(0.286)	(0.412)
GDP Per Capita		-4.694 ***	-4.689 ***	-4.691 ***
		(0.910)	(0.915)	(1.314)
Institutional Quality		-0.121	-0.122	-0.119
		(0.100)	(0.100)	(0.132)
Population		-0.106	-0.106	-0.105
		(0.169)	(0.170)	(0.237)
Human Capital		-2.133 *	-2.150 *	-2.131
		(0.854)	(0.851)	(1.140)
Secondary FDI * LDC			0.061	
			(0.099)	
Secondary FDI * Institutional Quality				-0.003
				(0.011)
N	626	626	626	626
Within_R2	0.378	0.554	0.554	0.554
AIC	1300.071	1104.322	1105.889	1106.245
BIC	1650.780	1481.667	1487.674	1488.029

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Moving from Model 1 to Model 2. The coefficient of secondary-sector FDI increases from 0.045 to 0.055 but is still insignificant ($p > 0.05$). The result in Model 2 suggests that secondary-sector

FDI has no impact on the size of informal economy. Both GDP per capita (β = -4.694, p < 0.001) and human capital (β = -2.133, p < 0.01) have a negative and significant effects on the size of informal economy, which is consistent with the results in the primary-sector FDI model.

In the Model 3, the coefficient of secondary-sector FDI is 0.043 and the coefficient of interaction terms between secondary-sector FDI and development is 0.061. Both coefficients are insignificant (p > 0.05). The result in Model 3 doesn't support H2a, H2b or H2c and it suggests that secondary-sector FDI has no impact on the size of informal economy regardless of the development status of recipient countries.

Finally, in the Model 4, the coefficient of secondary-sector FDI is 0.063 and the coefficient of interaction terms between secondary-sector FDI and development is -0.003. Both coefficients are insignificant (p > 0.05). The result in Model 4 doesn't support H4b and it suggests that secondary-sector FDI has no impact on the size of informal economy regardless of the institutional quality of recipient countries.

Tertiary-Sector Results

Table 4 presents the regression results of the effect of secondary-sector FDI on the size of informal economy. The results in Model 1 reveal that the share of tertiary-sector GDP has no impact on the size of informal economy, which is different from the primary-sector GDP and secondary-sector GDP. The coefficient of tertiary-sector FDI is insignificant (p > 0.05). It suggests that overall, tertiary-sector FDI has no impact on the size of informal economy when tertiary-sector GDP is controlled.

Table 4. Effect of Tertiary-Sector FDI on the size of Informal Economy

	(1)	(2)	(3)	(4)
Tertiary Sector FDI	0.003	0.045	0.033	0.078
	(0.020)	(0.022)	(0.019)	(0.061)
Tertiary Sector GDP	0.050	0.057 *	0.054 *	
	(0.036)	(0.025)	(0.025)	
Net inflow of FDI		-0.054 *	-0.058 *	-0.063 *
		(0.025)	(0.025)	(0.027)
Trade Openness		0.119	0.004	0.104
		(0.265)	(0.279)	(0.379)
GDP Per Capita		-5.068 ***	-5.152 ***	-4.718 ***
		(0.934)	(0.935)	(1.285)
Institutional Quality		-0.138	-0.131	-0.115
		(0.097)	(0.095)	(0.121)
Population		-0.070	-0.088	-0.112
		(0.173)	(0.170)	(0.233)
Human Capital		-2.349 *	-2.221 *	-2.128
		(0.840)	(0.813)	(1.106)
Tertiary FDI * LDC			0.151	
			(0.108)	
Tertiary FDI * Institutional Quality				-0.008
				(0.012)
N	626	626	626	626
Within_R2	0.344	0.558	0.561	0.556

AIC	1333.997	1098.541	1096.754	1103.575
BIC	1684.705	1475.886	1478.538	1485.359

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Moving from Model 1 to Model 2, the coefficient of secondary-sector FDI increases from 0.003 to 0.045 but is still insignificant ($p > 0.05$). The result in Model 2 suggests that tertiary-sector FDI has no impact on the size of informal economy. Both GDP per capita (β = -5.068, $p < 0.001$) and human capital (β = -2.349, $p < 0.01$) have a negative and significant effects on the size of informal economy, which is consistent with the results in the primary-sector FDI and secondary-sector FDI model.

In the Model 3, the coefficient of tertiary-sector FDI is 0.033 and the coefficient of interaction terms between tertiary-sector FDI and development is 0.151. Both coefficients are insignificant ($p > 0.05$). The result in Model 3 doesn't support H3 and it suggests that tertiary-sector FDI has no impact on the size of informal economy regardless of the development status of recipient countries.

Finally, in the Model 4, the coefficient of tertiary-sector FDI is 0.078 and the coefficient of interaction terms between secondary-sector FDI and development is -0.008. Both coefficients are insignificant ($p > 0.05$). The result in Model 4 doesn't support H4c and it suggests that tertiary-sector FDI has no impact on the size of informal economy regardless of the institutional quality of recipient countries.

CHAPTER 5: DISCUSSION AND CONCLUSION

In this study, I demonstrate how sectoral FDI contributes to formalization and informalization of economic activity in a globally interconnected world. Having believed that informal economy is a symptom of underdevelopment, policymakers were optimist that the integration of LDCs into the global economy would gradually narrow the gap in the size of informal economy between DCs and LDCs. However, the persistence of the informal economy in LDCs, despite a substantial growth in FDI over the past two decades, raises the question of whether global investment is driving the formalization of economic activity. I demonstrate that sectoral FDI can better explain the cross-national differences in the size of informal economy even when controlling for net inflows of FDI, which has been widely used in the empirical literature. I contend that sectoral FDI is an important factor for explaining the size of the informal economy because of differences in the motivations of multinational investors. Specifically, FDI exerts heterogenous effects based on whether investors are resource-, market-, and efficiency-seeking.

Existing literature often rely on aggregate FDI data to study the impacts of FDI on informal economy without paying attention to the nuance between types of FDI [67]. In this study, I demonstrate that the gap in the size of informal economy between DCs and LDCs has been increasing because there are substantive differences regarding the effects of sectoral FDI. Specifically, primary-sector FDI decreases size of informal economy in DCs but increases size of the informal economy in LDCs because primary-sector FDI into LDCs mainly consist of

[67] Dell'Anno, "Theories and Definitions of the Informal Economy."

resource-seeking FDI while primary-sector FDI into DCs mainly consist of market-seeking FDI. Sectoral FDI data could well complement aggregate FDI inflow data to analyze the structural composition and the heterogeneous impacts of FDI on informal economy.

This study has important policy implications for promoting decent work in the LDCs. My findings not only challenge that notion that the perseverance of informality in the LDCs is an outcome of underdevelopment but also help explain *why* the gap in the size of informal economy between the developed countries and LDCs has been increasing over the past two decades. It is attributable to the substantive differences between LDCs and DCs regarding the effect of sectoral FDI. The results clearly show that primary-sector FDI *reduces* informality in the developed countries while *increasing* informality in the LDCs, and therefore *exacerbating* the existing gap in the size of informal economy between developed countries and LDCs. Scholars have been using 'adverse incorporation' to analyze how a top-down integration into global investment and trade may perpetuating poverty and endanger informal workers that are already marginalized and vulnerable to labor dispossession [68]. My study further validates that informal labor is a key mechanism of 'adverse incorporation'.

Additionally, my findings reveal that sectoral FDI is not inherently "good" or "bad" for creating formal jobs and narrowing the gap in size informal economy between DCs and LDCs. Institutional quality plays a key role in moderating the effect of sectoral FDI on informal economy, which might help explain the heterogenous effects of sectoral FDI on informal economy between DCs and LDCs. LDCs typically lack the capacity to enforce labor regulations, states are inclined to align with business interests to protect property rights at the expense of

[68] Phillips, "Informality, Global Production Networks and the Dynamics of 'Adverse Incorporation.'"

violating labor rights. Lacking enforcement of labor regulation making it harder for informal workers to seek for state protection in the LDCs [69]. The gap in institutional quality between DCs and LDCs hasn't substantively decreased in the past two decades, which might help explain sectoral FDI still has positive effect on the size of informal economy in LDCs. To foster decent work, LDCs need to make efforts in diversifying the types of FDI and enhancing enforcement of labor regulation to protect vulnerable informal workers.

Limitations

A key limitation of this study was data availability. Even though the World Bank provides a robust panel dataset on the size of informal economy, comprehensive FDI data in the LDCs are still severely limited. As a result, LDCs are relatively under-represented in the panel samples compared to DCs. Additionally, I use 'low-income' and 'lower-middle income' country classification from the World Bank to identify LDCs while using 'upper-middle income' and 'upper income' country to identify DCs. In the past studies, researchers utilized the 'peripheral, semi-peripheral and core countries' classification from world-systems theory to study the cross-national variations in the size of informal economy and the heterogenous effects of aggregate FDI and trade openness.[70] Therefore, re-analyzing the results of this study using the core-periphery classification might provide additional insights on the effect of sectoral FDI on the size of informal economy based on a country's location in the international division of labor.

Surprisingly, I do not find statistically significant results of the effect of secondary- and tertiary-sector FDI on the size of informal economy nor significant results of the moderation of

[69] Anthony Roberts and Thai Binh Tran, "The Globalization of Production, National Labour Regulations and Income Inequality in the Global North and South, 1980–2013," *Global Networks*, July 27, 2022, glob.12392, https://doi.org/10.1111/glob.12392.
[70] Roberts, "Peripheral Accumulation in the World Economy."

these effects by development and institutional quality. One possible explanation for the null result is that secondary-sector FDI and tertiary-sector FDI are more heterogenous than the primary-sector FDI. It is very likely that market-seeking and efficiency-seeking FDI both exist in the secondary-sector FDI, and they are cancelling each other on impacting the size of informal economy. Similarly, market-seeking and efficiency-seeking FDI may co-exist and cancel each other in the tertiary-sector. I believe that industry-level FDI industry is better suited to study the impacts of FDI on the informal economy in the secondary and tertiary sector. Some studies have utilized industrial-level FDI data to differentiate high-skilled industry (e.g. chemical production) to low-skilled secondary industry (e.g. garment production) in the secondary-sector. However, cross-national data on industry-level FDI are very limited and mostly unavailable. Additionally, I applied Newey-West standard errors in the regression analysis, which is much larger than normal standard error, making it more difficult to get significant results [71].

Prospect for future research

In this study, I propose a new theoretical framework of 'types of FDI' and utilize sector-level FDI data to examine the heterogenous effects of FDI on informal economy. I got very strong results from the primary-sector FDI model that all hypotheses are supported even when using a conservative estimator in the regression analysis. Although I did not get statistically significant results from the secondary-sector and tertiary-sector model, this major limitation might be resolved in future studies when industry-level FDI data becomes available.

To my knowledge, this study is the first to utilize sectoral-level FDI data to study the impacts of inward FDI on the informal economy. I demonstrate that sectoral FDI data can be

[71] Newey and West, "A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix."

utilized to approximate 'types of FDI' in order to analyze the heterogeneous impacts of global investment. The framework of 'types of FDI' can certainly be extended to study other development outcomes, such as collective labor rights, environmental degradation, and income inequality [72]. As LDCs are increasingly integrated into the global economy, the trend in the informalization of work in LDCs is likely to continue [73]. More empirical research involving the relationship between the structural composition of inward FDI and precarious work in LDCs is needed to advance to our understanding of economic globalization and development.

[72] Blanton and Blanton, "A Sectoral Analysis of Human Rights and FDI."
[73] Chun and Agarwala, "Global Labour Politics in Informal and Precarious Jobs"; Phillips, "Informality, Global Production Networks and the Dynamics of 'Adverse Incorporation.'"

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