Migrant Labor Regime and Labor Market Intermediaries in the Taiwanese Semiconductor Industry

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1. Introduction

Castree (2004) points out that contemporary labor research has seldom discussed labor migration, where migration functions as a spatial strategy employed by millions of workers to counteract the unevenness of capitalism. Like capital, labor is also mobile, and labor mobility is a phenomenon that has been garnering significant attention (Samers, 1999). Furthermore, it possesses an important cultural dimension: as workers migrate, they construct new identities and cultures that bridge their old and new homes (Lier, 2007). Recent debates on labor migration within global production networks (GPNs) emphasize the importance of the transformation in the employment relationship of migrants (Buckley, McPhee, & Rogaly, 2017), particularly the subcontracting employment relationship (Barrientos, 2013). Agencies of workers are constrained by different stakeholders within a GPN, including the state, firms, labor market intermediaries (LMIs), and their communities (Coe & Jordhus-Lier, 2011). Moreover, empirical studies illustrate how labor regimes shape migration patterns and contribute to unequal employment relationship outcomes (Seo & Skelton, 2017; Strauss & McGrath, 2017; Yea, 2017). Therefore, Gutelius (2015) reflects on the dialectics of inclusion and exclusion, concluding that the incorporation of migrant workers into the GPN is an experimental and uneven process.

Mapping regulatory influences and labor flows through the local labor market network space enhances our understanding of dynamic labor systems. In particular, it is crucial to consider how labor market institutions mobilize these linkages to undertake local regulation, particularly within a global economy that is increasingly characterized by extra-local flows of highly and lowly skilled migrants; furthermore, the local labor market can be conceptualized as a "network space" of connections across different spatial scales (Coe & Kelly, 2000). The fundamental processes of labor production and

reproduction may be actively shaped by the migration of certain types of workers from and to particular localities (Kelly, 1999; Mullings, 1999).

Although labor migration occurs on a global scale, labor is far less mobile than financial capital. Therefore, there is a significant need to explicitly bridge research on GPNs with "labor geographies" (Herod, 1997, 2017). Furthermore, an increasing body of literature emphasizes contextualizing labor and seeing how it plays an active role in global production (Newsome, Taylor, Bair, & Rainnie, 2015). Additionally, certain contexts offer potential for an analytically and politically rich line of investigation to reveal the active and constituent role of workers in value creation within GPNs (Coe, Dicken, & Hess, 2008). The literature highlights the necessity of analyzing the roles that the agencies of workers and worker groups play in shaping the geographies of capitalism (Coe & Hess, 2013; Coe et al., 2008).

Labor geography literature tends to focus on those employees within GPNs whose position offers them the potential to exert adequate pressure on their employers. However, critics argue that "jumping scales," for example, when local labor strikes become a matter of global concern, is challenging without pre-existing local/national organizational structures, while labor internationalism is not necessarily progressive if it results in a deterioration of conditions for workers elsewhere (Lier, 2007). Moreover, migration is considered as a spatial strategy of labor through which workers support their families (Castree, 2004). Therefore, since the relationship between labor and capital is inevitably entangled and labor regimes are shaped through globalization and migration within the contemporary economy, there is a need to theorize the migrant worker in global production within a specific labor regime. In doing so, this thesis theorizes the migrant labor regime in GPNs to better understand contemporary capitalism.

The labor market for migrant workers in low-value segments is often described as a "secondary labor market" with insecure, low-paid jobs and limited career opportunities (Dekker, De Grip, & Heijke, 2002). However, migration can also function as a long-term strategy. For example, from a skill-based perspective, the complexity of work and a variety of hidden skills need to be considered. The acquisition of knowledge and skills by workers is analyzed through the lens of employability and generic skills, focusing on career pathways and opportunities to strengthen employability in the global

labor market from a long-term perspective (Beerepoot & Hendriks, 2013). This approach goes beyond merely distinguishing between good and bad jobs. It also provides a foundation to understand how workers perceive their employment and the long-term employment prospects they foresee when performing these jobs.

Migration processes reflect complex combinations of individual and household decisions within increasingly institutionalized social networks (Coe & Jordhus-Lier, 2011). In the global labor market, the embeddedness of labor agencies can be perceived in various ways. Four social relations or institutional formations are fundamental to labor and its political organizations: GPNs, state institutions, social relations and the associational life of the community, and labor market agencies (Coe & Jordhus-Lier, 2011).

To shed light on these issues empirically, this thesis will focus on Filipino migrant workers in the Taiwanese semiconductor industry. The semiconductor industry is a great example of GPN dynamics as Taiwan is a global center of the industry that employs a high number of migrant workers. Today, although five countries (Philippines, Malaysia, Indonesia, Vietnam, and Thailand) have bilateral agreements on the work permit of migrant workers in Taiwan, the semiconductor migrant workers are mainly Filipino (see Table 1). Therefore, Filipino migrant workers have become especially important in Taiwan's semiconductor industry. Furthermore, it is important to understand why they are working in this industry; how multi-actors shaped this special labor regime in response to GPN dynamics; and how incorporating these workers in this GPN influences workers' agency.

Table 1. Number of migrant workers in the Nanzih export processing zone by nationality (2003–2017)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Thailand	336	491	414	340	363	242	43	65	93	81	62	60	66	53	53
Philippine	3684	4417	4640	4204	3863	2263	2874	874	3067	3052	3467	4488	5067	5749	5749
Malaysia	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	1	1	1	0	16	5	1	7	16	25	12	11	11
Vietnam	0	0	0	0	38	33	8	36	75	88	159	244	210	237	0

Source: Export Processing zone administration

2. Methodology

2.1 Research Gap: Problem Description and Justification of the Research Project

Within labor geography, numerous studies have focused on low-skilled migrant workers in global production (Kelly, 2013; McGrath, 2013; Raj-Reichert, 2013; Seo & Skelton, 2017; Strauss & McGrath, 2017). This study aims to debate about the legal status of migrant workers, arguing that power is exercised upon them through the migrant labor regime. Furthermore, this study demonstrates how the dynamics within GPNs are interconnected with the mobility of labor and capital.

In the past, economists focused on the price mechanism when studying labor issues and analyzed how minimum wages for migrant and domestic workers were set to maintain competitiveness. Conversely, sociologists focused on improving labor conditions and workplace quality. However, both perspectives overlooked the complex background and multiple spatial scales of international labor mobility. That is, the main issue in a globalized industry like the semiconductor industry is the integration of migrant workers into GPNs.

This integration is key to a firm's competitiveness and labor agency. The research focus from the perspective of economic geography is, therefore, on the impact of labor migration on the flexibility and competitiveness of firms and the workplace quality and career opportunities for migrant workers. This research analyzes the labor process between the strategic coupling of contract manufacturers' in GPNs and the incorporation of migrant workers' into the migrant labor regime.

2.2 Research Questions

This thesis aims to contribute to the theoretical understanding of how various actors shape migrant labor regimes and local labor markets while also explaining the constrained agency of migrant workers. Therefore, it focuses on two dimensions: First, the research demonstrates the interdependencies between global production and local labor markets by examining how the labor regime for international migrant workers in Taiwan is constituted as a result of institutional intervention. Second, the study examines how LMIs shape the matching process within the local labor market.

This thesis aims to provide a theoretical, empirical, and policy-relevant contribution

to the role of migrant labor in a highly globalized industry and country with a relatively recent history of labor migration. Therefore, Taiwan's semiconductor industry serves as the chosen empirical example. Furthermore, This thesis addresses three main research questions.

1) Understanding the migrant labor regime in the Taiwanese semiconductor industry

2) Socioeconomic aspects of migrant workers' working conditions

3) Impact of LMIs on the employment relationship

3. Migrant Workers in Taiwan: Historical Context, Method, and Key Concepts

3.1 Empirical Study on the History of Migrant Workers in Taiwan

According to estimations by the United Nations[1], the share of international migrants in the world population increased from 2.8% in 2000 to 3.5% by 2019. As a result of this rising significance, the employment relationship of migrant workers has garnered considerable scientific and public attention in recent years (Buckley et al., 2017). Since 2014, the International Labor Organization has launched the Fair Recruitment Initiative to develop international labor standards. However, the initiative has not significantly assisted recruiters in counteracting the downward shift in working conditions globally as of now (Jones, 2022). Furthermore, scholars emphasize the importance of understanding the channeling process of migration (Jones & Sha, 2020; Xiang & Lindquist, 2014).

In the context of Taiwan, the employment relationship and labor segmentation in the semiconductor industry have become more pronounced since the advent of the electronics industry in the country in the 1960s. Companies have become committed to economic upgrading and increasing production value. Other studies have indicated that the development of the information and communication technology (Jones, 2012) industry, particularly the semiconductor manufacturing industry in Nanzih export processing zone, Kaohsiung, remains the core area for electronic assembly in Taiwan (Hsu, Gimm, & Glassman, 2018). Since the 2010s, outsourced semiconductor and assembly firms have specialized in the packaging and testing of microchips by focusing

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[1] United Nations, Department of Economic and Social Affairs. Population Division (2019). International Migrant Stock 2019

(United Nations database, POP/ DB/MIG/Stock/Rev.2019), available at:

https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp.

on core competencies in new application-specific chip markets for logic chips in smartphones, notebook PCs, and servers (Yeung, 2022). These competencies have been achieved through increased flexibility in production arrangements, zero-inventory strategies by customers in the supply chain, and the interconnected relationships among firms in different countries. Most of the newly established local firms in the chip industry are small- and medium-sized enterprises (SMEs) (Hsu et al., 2018), which exclusively focus on producing intermediate components.

However, despite the transformation of Taiwan's semiconductor industry toward higher value-added products, labor shortages have become a major problem due to demographic changes and the limited appeal associated with these low-paying jobs. Certain jobs are considered unappealing by Taiwanese workers due to their low skill requirements, long working hours, and night shifts, all of which contribute to high labor turnover and low salaries. Therefore, the government established a temporary migration system in 1992 and allowed migrant workers from Southeast Asian countries to enter Taiwan based on a decree on the introduction and management of migrant workers (Lan, 2003; Tseng & Wang, 2013).

Since then, LMIs have played an essential role in shaping the regional labor market. In Taiwan, most firms rely on private LMIs rather than government-to-government hiring programs when hiring migrant workers. According to the Central government's final accounts audit report of 2017, only 7,082 (1%) migrant workers obtained work permits through the government's direct hiring program.

In several other countries, LMIs have become widespread, significantly influencing a wide variety of labor market dynamics and shaping regional development (Benner, 2003). Furthermore, Benner's (2003) research in the US indicates that as unsteady employment and high-level job-hopping have increased, employers and employees have increasingly relied on third-party intermediaries to navigate the labor market.

From the perspective of migrant workers, improving workplace quality and career prospects i.e., through acquiring additional skills, are of prime importance. Migrant workers also face several restrictions upon entering the Taiwanese labor market, e.g.,

through quotas for specific industries[2], restrictions on changing employers[3], and the focus on low-skilled jobs. Nevertheless, the semiconductor industry still serves as an attractive workplace for many migrant workers compared to the opportunities available in their home countries.

Although working abroad is much easier today, migration does not necessarily guarantee a better individual life. Therefore, labor market research should not narrowly focus on economic upgrading in GPNs, e.g., income growth, but should adopt a broader perspective on social upgrading, working conditions, and labor agencies. Existing migration studies primarily focus on the migration regime and emphasize state regulations and workplace regimes at the factory level. However, it is crucial to place the circumstances of migrant workers within a broader context that includes different actors in global production to better understand the constrained agency (Coe & Jordhus-Lier, 2011) of migrant workers in multi-scalar global production systems. As the regulatory framework of the migrant labor regime in Taiwan, which is known as the quota system (Tseng & Wang, 2013), allocates and restricts migrant workers within a specific migrant labor market, these migrants are effectively repositioned as low- or medium-skilled and night-shift workers from the moment they enter the labor market.

Today, the Taiwanese semiconductor industry relies heavily on migrant workers, particularly in low-tech production. There are 5,609 migrant workers (5.7% of the total workforce) in the semiconductor design and manufacturing industry cluster of Hsinchu Science Park and 8,779 (13.2%) in the semiconductor packaging and testing industry cluster of the Nanzih export processing zone (NEPZ)[4] (see Fig. 1).

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[2] The Taiwanese industry issues quotas according to the quota ratio that is divided into five levels, ranging from 10% to 35%, and electronic related industries fall within C-level at 15% or D-level 10%.

[3] Many of them are hired through intermediaries. On the one hand, workers have the right to request changes in their place of work. On the other hand, indirect employment is more prevalent than direct employment.

[4] Source: Science Park administration & Export Processing zone administration [2018.06].
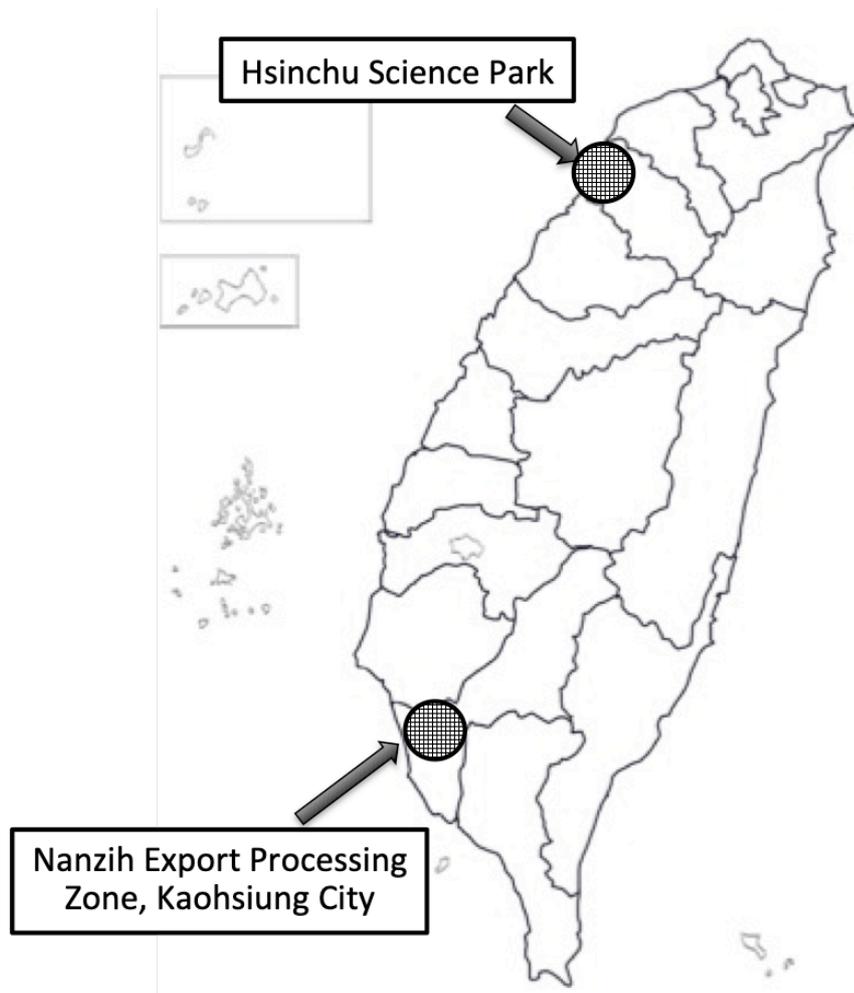
Fig. 1 Research area: Kaohsiung Nanzih EPZ and Hsinchu Science Park

LMIs, who mediate the employment relationship between employers and employees, are integral in shaping the labor market dynamics, affecting the client firms' position in global production. In the past few decades, the emergence of LMIs for hiring migrant workers has represented an integral component of the Taiwanese semiconductor industry. Private LMIs existed in the 1990s, while migrant labor suppliers have long cooperated with client firms in the semiconductor industry. Thus, understanding the role of LMIs in the semiconductor industry context provides important insights into the fundamental processes that affect labor market dynamics in Taiwan.

3.2 Method to be applied

The empirical material for this study was collected via qualitative interviews and a quantitative survey. The data will be analyzed separately and in a mixed-method combination.

Regarding the qualitative data, the semi-structured interviews were used to exhibit different actors, including firms and brokers in a GPN. This approach helps capture a detailed and nuanced understanding of the role and the interaction between lead firms, local firms, LMIs, and the state. For the quantitative data, it was collected in the two clusters of the semiconductor industry in Kaohsiung and Hsinchu in order to reach the target group, such as operators and technicians from different segments in the industry. The survey collects information about the migration experience in Taiwan's cross-border labor market, including demographic characteristics, motivation, career path, skill development, future aspirations, and employment status. Furthermore, the survey gives the study a comprehensive understanding of the pattern of migrants' career paths, thus catering to firms in within the industry.

Finally, mixing qualitative and quantitative data was used as an analysis strategy to complement the qualitative findings. This provides a better understanding of multi-scalar actors and the trajectory of economic and social upgrading in the GPNs of semiconductor industries and better articulates the relationship between firms, LMIs, and workers. Furthermore, logistic regression was used to analyze the impact of LMIs on migrant workers' career paths.

3.3 key concepts of the study

This section provides a theoretical overview of the migrant worker within a GPN by addressing the labor regime, intermediary, and trajectory of social upgrading in GPNs/GVCs.

First, "Regime" illustrates the theorization of the migrant labor regime by identifying the roles of different actors within a multi-scalar context.

Second, "Social Upgrading" investigates the migrant workers' motivation and skill development through a descriptive analysis of the survey data. Moreover, the study identifies the indicators of structural factors (e.g., demographic characteristics, job-related factors, and institutional factors) on migrant workers' satisfaction with the working conditions (e.g., job quality and job security). By using empirical data, the study further elaborates on migrant workers' social upgrading in global production.

Third, "Labor Market Intermediary" focuses on illustrating the role of LMIs in

mediating the migration process in response to the GPN mechanisms and shaping the local labor market. The study provides insights into the interlinked relationship between LMIs, firms, and national regulatory institutions, especially the difference between lead firms and small firms. Empirically, the study uses a logistic regression model to examine the impact of LMIs on workers' career paths.
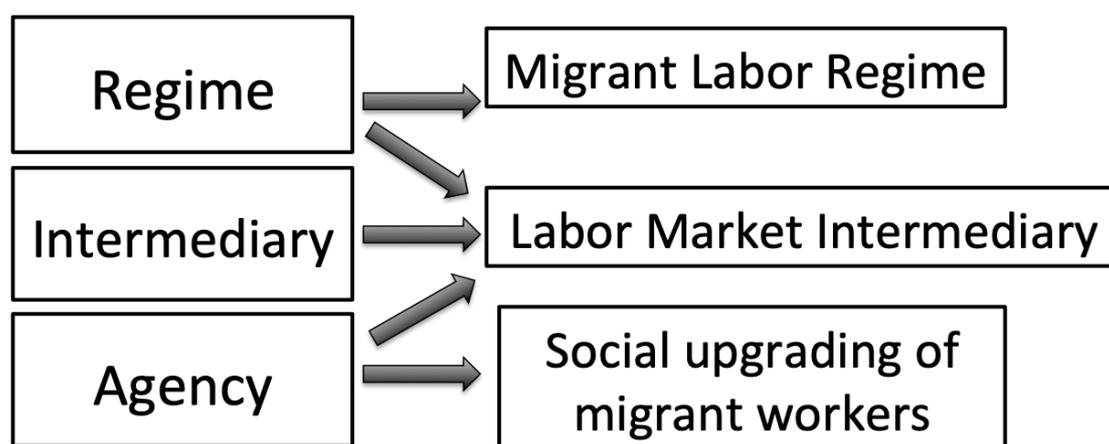

Fig. 2 Conceptual building blocks

4. Result and discussion

The global economy is constantly confronted with unforeseeable disruptions, such as the 2008 financial crisis and the 2020 COVID-19 pandemic. As Stiglitz[5] (2022) emphasized, these crises have reinforced our understanding of economic fragility, reprising one of the key lessons from the global financial crisis, where the bankruptcy of just one firm, Lehman Brothers, triggered the near-collapse of the entire global financial system. Furthermore, he called for greater attention to the impact of economic globalization as it may create a systematic risk owing to the lack of resilience in the supply chain. Additionally, sociologists studying global perspectives question the agency of the individual, demonstrating that the impact of globalization on workers resembles the production environment of Fordism, where factories are centrally organized, rigidly structured, and hysterically concerned with impenetrable boundaries (Bauman, 2013). For example, research on individual agency in a global city revealed that when street vendors as individuals were incorporated into the work-life of a global

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[5]www.project-syndicate.org/commentary/russia-war-covid-global-shocks-reveal-bankruptcy-of-neoliberalism-by-joseph-e-stiglitz-2022-04?barrier=accesspaylog

city, they lost control over their time, and establishing a personal rhythm became a crucial survival strategy in city life (Tran & Yip, 2020). This case study offers insight into workers' agency within GPNs to understand the risks associated with these networks and the potential resilience of workers within the supply chain in the long term.

4.1 Migrant Labor Regime

The conceptualization of the migrant labor regime illustrates how the three actors constrain the agency of migrants. For example, the state restricts their legal status which impacts their mobility bargaining power; firms shape the employment relationship via the GPN mechanism and the LMI mediate the cross-border labor market. The results provide insights into understanding of how migrant workers are constrained within a specific labor regime.

4.2 Results: Factors Influencing Workers' Job Satisfaction (Social Upgrading)

This study explores the migration process using survey data on individual migrants. For example, it examines motivations to work abroad and workforce development by comparing two periods, namely pre-migration employment and post-migration changes. Furthermore, the study makes a scientific contribution by expanding the understanding of social upgrading through examining migrant workers' social upgrading in the semiconductor industry across different domains of working conditions, including job quality, job security, and skill development. It offers valuable insights into the contemporary understanding of the social upgrading of migrants within the context of transnational migration.

4.2.1 Workers' characteristics

In Taiwan's semiconductor industry, migrant workers are primarily employed to assemble and test IC chips. Employers recruit migrants under bilateral agreements with the five countries and specific quotas. According to the survey, most respondents were female (98.7%) with an average age of 29.9. Additionally, 66.3% of respondents reported possessing ISCED-level 5 or 6 education, equivalent to tertiary education. Most respondents were single (76.7%) and only a small proportion had children (36.3%). Almost all respondents sent remittances home (98.7%) while only a small percentage had relatives in Taiwan (5.7%). Regarding job-related factors, the

respondents earned an average salary of 26,052 NTD per month, which is lower than the median monthly salary of 41,500 NTD in Taiwan in 2019 (Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Taiwan, 2019). Over two-thirds of the respondents were working in Taiwan for the first time (66.7%). With regard to institutional factors, the majority of them had secured employment through private employment agents (78.5%). On average, they had not been in Taiwan for long (3.86 years).

4.2.2 Workers' job satisfaction

We used logistic regression analysis to examine changes in satisfaction at different stages when comparing Taiwan and the Philippines, as well as during the workers' stay in Taiwan. The dependent variable is satisfaction with work conditions, and respondents were asked to rate their satisfaction with different aspects of their work.

Regarding descriptive statistics, the analysis includes dependent variables at the two migration stages. For instance, by comparing working conditions in Taiwan and the Philippines, satisfaction with various aspects is presented in descending order as follows: Health Insurance (87.5%), indicating that 87.5% of respondents are more satisfied with their health insurance in Taiwan compared to their situation in the Philippines. This is followed by Wages (84.0%), Length of Contract (78.8%), Work Schedule (70.1%), Training (68.4%), Accommodation (67.7%), Unemployment benefit (49.0%), and Pension (45.2%). Conversely, regarding the satisfaction after a job change during the workers' stay in Taiwan, the order of satisfaction with job quality and security remains the same. However, when comparing the two stages, satisfaction with wages and health insurance decreased slightly: that with health insurance dropped to 76.9% (−1.06%) and that with wages dropped to 75% (−0.09%). A comparison of the overall satisfaction at the two stages, among those newly arrived in Taiwan and those who switched jobs, reveals little change. The overall satisfaction after moving to Taiwan from the Philippines is 72% while the satisfaction after a job change during the workers' stay in Taiwan is 72.6%.

4.3 Labor market intermediary

Labor market intermediaries match employers and employees through functional and numerical integration, as such this section examines the impact of LMIs on workers using quantitative data and shows that private employment agents have a negative

impact on Filipino workers' second or subsequent jobs in Taiwan. It provides important insights that advance the understanding of migration in GPNs, especially by showing that although laborers can choose where to work abroad, the options are limited and the working conditions do not always improve because the employment relationships are mediated by third-party agents.

As Chen and Schiller (2024) emphasized, the interaction factor is significant (B = 1.33; Sig = 0.048). Those whose second job in Taiwan was found through a direct hiring program were more likely to be in a higher income bracket than those using a private employment agency. Furthermore, the study compares the results of the three binary logistic regression models. The Nagelkerke R-square for the model fit improved from 0.003 in Model 1 to 0.120 in Model 3, indicating that LMIs play a role in explaining migrants' incomes. In Model 3, the relationship remained significant for direct hiring programs and private employment agencies after controlling for socio-demographic and job-related characteristics and the interaction effect between migrants' second jobs and income. Along the same lines, there was no significant difference between the income of migrant workers who got their first job in Taiwan through private employment agencies and those who used direct hiring programs.

5 Conclusion

This thesis has advanced three main arguments through the inspiration of scholars from economic geography alongside social and labor geography.

Regarding the **labor regime**, in line with Jonas's (1996) framing of labor regimes within different spaces and scales, this study emphasized the importance of labor control in the workplace underpinning GPNs. Moreover, labor control is the consequence of the uneven development of the labor process (Baglioni, 2018). For example, the "creation of difference" in social relations, including class, race, and gender, entails forms of exploitation that affect stability within the labor regime (Baglioni, Campling, Coe, & Smith, 2022). Furthermore, scholars address the importance of labor control for migrant workers in LLCR (Baglioni, 2018; Kelly, 2002; Strauss & McGrath, 2017), emphasizing the role of the state in shaping the migrants' legal status. In conclusion, this study uses a labor regime analysis to identify key actors who might contribute to the broader understanding of the migrant labor regime.

This study uses an institutional perspective to show how different actors (state, firms, and LMIs) shape the migrant labor regime, For example, the state sets national

regulations on migrants' legal status to restrict labor power; firms shape the regime through just-in-time production and zero-inventory management, and the LMIs mediate the employment relationship in the cross-border labor market and construct the social bias and devaluation of migrant labor while contributing contribute to the stability of MLR, showing the importance of migrant ideology and social construction discourse as a foundation for the labor regime.

In addition, the study contributes to the literature on the labor regime by examining the role and impact of LMIs, using empirical data to demonstrate the mediation process used to expand the networks in the global labor market within the migrant labor regime. Although many studies have suggested that LMIs mediate employment relationships between employers and employees in the migration process to facilitate a flexible labor market, this study examines the mediation process to understand how LMIs facilitate migration.

Regarding **labor governance in GPNs**, Coe and Yeung (2019) distinguish between two aspects of labor in GPNs. On the one hand, labor acts as an active role in shaping GPNs, For example, certain studies focus on the new modes of labor organization and their effectiveness in representing workers' agency across transnational production labor systems (N. M. Coe & Yeung, 2019). These studies examine unorganized community-based labor in the fruit sector in South Africa (Alford & Phillips, 2018) or the exercise of potential power by the fragmented factory workforce in the palm oil production network in Malaysia, reacting to different forms of precarity in pursuit of their own spatial strategies of social reproduction (Pye, 2017).while conversely, labor plays a passive role when engaging in the GPNs. For example, the notion of social upgrading has been a central research topic in the studies of the impacts of GPN (N. M. Coe & Yeung, 2019). And various empirical studies explore the extent to which social upgrading is related to specific forms of economic upgrading (S. Barrientos, Gereffi, & Rossi, 2011) in terms of measurable standards including wages and working conditions and enabling rights including that of collective bargaining power (S. Barrientos et al., 2011).

Empirically, the study showed how just-in-time production for global semiconductor markets places delivery pressure on workers in Taiwan. In addition, it explores how the organizational structures and competitive conditions within this production network serve to shape workers' working conditions and their positionality

in the GPN.

Since April 30, 2022, Taiwan has been implementing the retention of foreign intermediated skilled workforce programs, which means migrants who have worked in Taiwan for at least six years can apply through their employers if they meet the appropriate salary or skill requirement to convert workers to intermediated skilled workers and waiving limits on the length of stay in Taiwan.[6] As the new policy opens up new possibilities for careers, the migration regime transforms to be more inclusive to the migrants. Thus, the study can only reach a temporal conclusion.

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[6] National Development Council, https://www.ndc.gov.tw/en/Content_List.aspx?n=DAD1D37FA6D9606D [Access data on 29/07/2024]

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