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**Direct Monetary Costs and Its Determinants in Migration Decisions: Case of  
Cross-Border Labour Migration from Cambodia to Thailand**

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## **Abstract**

Migration cost is a critical factor of human labour mobility, and little is known about how much migrant workers would pay for their foreign jobs. Previous studies do not capture the effects of direct worker-paid migration costs on migration decisions; the endeavour to ensure a positive return on migration thus remains a puzzling and new frontier in labour migration research. The paper investigates the effect of the direct monetary costs on formal or informal migration decisions of Cambodian labour migrants to Thailand, using unique data from a 422-household survey in Cambodia. The survey also includes data from 17 registered recruiting agencies that enable us to construct the alternative specific conditional logit model with alternative migration cost-specifics. After controlling for the endogenous costs of moving using the Control Function method, we find that reducing the total cost of labour migration lowers the probability of choosing irregular migration by 15.8 percentage points. The choice of regular or irregular migration is also determined by other factors such as destination countries' immigration policies, such as deportation, length of stay, and income. The labour migration policies should be revisited by considering these factors to curb the high migration cost.

## **Keywords**

costs of migration  
regular migration  
irregular migration  
Cambodia

## **JEL Classification**

F22  
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## 1. Introduction

According to the International Labour Organization (ILO) Private Employment Agencies Convention No.181, migrant workers shall not be directly or indirectly charged for foreign jobs (ILO, 1997). Reducing worker-paid migration cost should be endorsed to ensure a safe and positive return on migrant's livelihood and their community (UN, 2015). However, the effort to lower the recruitment fee and cost involved in migration seems to be inefficacious (ILO, 2020; IOM, 2019; UN, 2013).

Recent studies suggest that high cost of migration across migration corridors contributes to an adverse effect on development outcomes (ILO, 2020; IOM, 2019; Martin, 2017). The excessive amount of worker-paid migration costs consequently offsets migrant worker's savings, consumption, and remittances that reduce migrants' welfare and hinder their community development (Anich, Crush, Melde, & Oucho, 2014; IOM, 2019). It also induces borrowing in order to finance migration cost; therefore, to ensure the costs of migration covered migrant workers tend to overstay their visa at the host country eventually encouraging them to become irregular migrants (Bylander, 2019; ILO, 2020; Martin, 2012, 2017). The irregular immigration status hamper migrant's wellbeing making them vulnerable to the risk of detention, exploitation, and deportation.

Cost of migration has been a key factor applying in both the theoretical and empirical modelling of international movement of people; yet, there has been relatively little known in documenting the actual monetary costs. It also remains unclear on how migration costs affect migration decision-making. Instead of using actual data variables, previous studies used proxies such as distance between place of origin and destination, transportation cost, and migration prevalence to account for the direct monetary cost of migration (Clark, Hatton, & Williamson, 2007; Massey & Espinosa, 1997). Early research suggests that the role of migration cost depends on selective skills and qualification (Borjas, 1987; Chiquiar & Hanson, 2005; Chiswick, 1999; Clark et al., 2007), option value of waiting and length of stay at the destination (Angelucci, 2012; Burda, 1995; Thom, 2009), migration networks (Carrington, Detragiache, & Vishwanath, 1996; Epstein, 2008; McKenzie & Rapoport, 2007; Taylor, 1986), immigration policy (Chiquiar & Hanson, 2005; Djajić & Vinogradova, 2019; Mayda, 2010), and institutional quality at the source country (Chan, 2009; Martin, 2017; McKenzie & Rapoport, 2007). However, if migration costs can be isolated and do not depend on self-selection criteria, it can yield a vital role in predicting which types of migrants are likely to migrate (Chiswick, 1999).

Given a better understanding of worker-paid migration costs is a key to uncover potential drawbacks in managing labour migration as well as to tackle adverse effects derived from the high mobility costs, this paper contributes to the literature in several ways. First, it is one of the first few studies to adopt direct monetary cost rather using proxies to estimate the effects on migration decisions. Secondly, we gather a unique database of direct or actual cost of migration from Cambodia to Thailand via both formal and informal channels. This allows us to make valuable contribution to the ILO and IOM objective to promote better data on the worker-paid migration cost. Finally, this paper sheds unique and significant evidence for policymakers and

stakeholders to rethink the determinants of the worker-paid cost to design an optimal policy to curb with high cost of migration. This we believe will ensure that migrants get a positive return on their investment on migration.

This paper uses data from two unique sources: first, 422 households in the northern province of Cambodia and second, 17 labour recruiting agencies managing Cambodian labour migrants to Thailand. Our data shows that the total cost of migration through the official channel ranges from USD 247 to USD 458, which is equivalent to 2.65 months in household consumption ratio on average, while migration through informal channels costs from USD 176 and USD 231, equal to 1.27 months on average.

To estimate the migration cost's effect on migration choice, we employed the Alternative Specific Conditional Logit model (ASCL). As suggested by Carrington et al. (1996), Ilahi and Jafarey (1999), and McKenzie and Rapoport (2007), migration cost appears endogenous so we utilized the Control Function (CF) method to isolate the endogenous migration cost using Cambodian migration stock at a provincial level in Thailand. We satisfactorily checked for the instrument's admissibility and ensured that the exclusion restriction conditions are satisfied.

Our findings suggest that high migration cost is associated with a high probability of irregular migration. An increase in cost of migration induces migrants' likelihood of choosing irregular channels by 15.8 percentage points vice versa to migrate via regular channel. Our case-specific variables of interest such as the deportation rate, migrant's length of stay at the country of destination, and migrant worker wages, showed statistically significant effects with expected signs. Strengthening immigration policy measured by deportation rate decreases irregular migration probability by 20.9 percentage points while increases in the length of stay at the destination increases 2.96 percentage points of the probability of migrant would choose irregular migration. We find that migrant wages at the destination has a relatively small marginal effect on the choice of migration equivalent to an only 0.9 percentage point. Our findings suggest that both the source and destination government alongside private recruitment agencies (PRAs) should commit to enhancing its efforts in reducing worker-paid migration costs by minimizing processing time, reducing bureaucratic complications and discouraging informal payments. Finally, by strengthening immigration policy at country of destination, it potentially increases the cost of irregular migration in which potential migrants would alternatively seek for a safe and cost-effective migration.

The remainder of this paper is organized as follows. Section 2 reviews the Cambodian migration context, followed by a discussion of the conceptual framework in Section 3. Section 4 presents the empirical specifications and approaches to overcome bias in estimation. Section 5 presents the data and variables used, and Section 6 summarizes the evidence on migration choice determinants, the marginal effect of migration costs. The last section forms the conclusion.

## 2. The Cambodian Migration Context

Cambodian labour migration is not a new phenomenon. However, this marvel becomes more active and multifaceted. During the last ten years, number of Cambodia migrants who migrated through formal channel has increased more than doubled (MoLVT, 2020). However, only a few studies have focused on documenting and estimating the worker-paid cost spent by Cambodian migrants who migrated through official channel. At the same time worker-paid migration costs via informal channel also remain largely unexplored (Chan, 2012; Harkins, Lindgren, & Suravoranon, 2017; Hing, Lun, & Phann, 2011; ILO, 2020; MoP, 2013; Tunon & Rim, 2013). There is suggestive evidence that high worker-paid cost is accountable for the irregular migration. It derives from a long waiting times and complicated recruitment process as a consequence of bureaucratic system complications. The Cambodian Ministry of Labour and Vocational Training (MoLVT) also recognizes a policy gap in governing labour migration including inconsistencies in terms of clarity and areas of work, and seemingly non-comprehensive legal frameworks policies resulting in a high migration cost (MoLVT, 2014).

**Table 1 : Average Cost Incurred by Cambodian Migrant Workers to Thailand (in US\$)**

	Migration Status		
	Regular	Irregular with documents	Irregular without documents
Brokerage fee	625	33	136
Passport	110	4	-
Border pass	-	26	-
Physical check-up	10	-	-
Transportation	2	77	81
Other	-	10	-
<b>Total</b>	<b>747</b>	<b>150</b>	<b>217</b>

*Source: Jalilian (2012) p. 67.*

Because available data on direct migration costs is limited and therefore many of previous studies have mainly excluded cost variations and addressed primarily on fixed migration costs. It is important to emphasise that, in practice, there are numbers of considerable prerequisite costs including passport, medical check, exit fee, training, travel, recruitment agency, work permit, application form, visa, and other expenses (ILO, 2020). Although the government of Cambodia has enormously reduced passport fee as a part of emigration cost deduction from USD 125 to USD4, Cambodian migrants still choose informal channels (Bylander, 2019; Harkins, Lindgren, & Suravoranon, 2017; Hing et al., 2011; ILO, 2020). According to the ILO (2020), irregular migrants have to pay for only two to three items to migrate, including the cost of service paid to friends or relatives assisting migrants to cross the border, the cost of exit clearance to the home government, and the transportation cost. A recent survey by Harkins, Lindgren, and Suravoranon (2017) suggests that approximately 73% of Cambodian migrants in Thailand are undocumented. Other migration surveys and recent studies have also found that irregular migrants remain high in number even though the paid-cost of irregular migration is high (Hing et al., 2011; IOM, 2019).

To analyze how the cost of migration affect the decision to migrate through both the formal and informal channel we outline the conceptual followed by the empirical analysis.

### 3. Conceptual Framework

To examine decision to migrate, let's denote  $U^M$  as the utility function of migration;  $U^R$  presents as the utility function of regular migrant;  $U^I$  denotes a utility function of irregular migrant, and  $U^N$  is the value function of non-migration. Then  $U^M = \max(U^R, U^I)$ ; therefore, the migrant's decision to move or not  $U = \max(U^M, U^N + \varepsilon)$ .

Hence the probability of migration can be expressed by:

$$P = Prob(U^M > U^N + \varepsilon) = Prob(U^M - U^N > \varepsilon) = F(U^M - U^N) \quad (1)$$

Where  $F(\cdot)$  is the cumulative distribution function of the error component  $\varepsilon$ . And  $U^M = \max(U^R, U^I)$ . Secondly, the paper extends the concept of the decision rule and choice as established by Roseman (1983) and Pellegrini and Fotheringham (2002) to determine whether a household sends their family member through a regular or irregular route or chooses not to migrate. Following Pellegrini and Fotheringham (2002):

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (2)$$

Where  $U_{ij}$  denotes the utility of household, sends a family member through alternative route  $j$ .  $U_{ij}$  is the summation of the observable utility  $V_{ij}$  and the unobservable random error component  $\varepsilon_{ij}$ . The probability of migrating through alternative route  $j$  is when  $U_{ij}$  is higher than  $U_{ik}$ . Thus, the likelihood of household  $i$  sending their family member through route  $j$  is when  $U_{ij}$  provides the highest utilities of all other alternatives in the choice set  $C_i$  can be expressed:

$$P_i(j|C_i) = \Pr(U_{ij} > U_{ik} \forall k \in C_i j \neq k) \quad (3)$$

Substitute the above equation (2) into (3)

$$P_i(j|C_i) = \Pr(V_{ij} + \varepsilon_{ij} > V_{ik} + \varepsilon_{ik} \forall k \in C_i j \neq k) \quad (4)$$

The joint distribution of the error term in different assumptions leads to the different choice of model (Pellegrini & Fotheringham, 2002); therefore, the error term is strictly Independent and Identically Distributed (iid).

#### 3.1. Choice of Migration

For analytical purposes, we investigate the choice of migration by distinguishing between regular or irregular migration at the initial stage the migration journey process. It helps us to identify illegal migrants at the outset and avoid depending on the migration status given by the Memorandum of Understanding (MoU)<sup>1</sup> or the Nationality Verification program<sup>2</sup> (NV) offered

at the destination country that identifies those with or without the possession of travel documents and work permits. So, we provide two sets of choice modelling for both regular and irregular migration.

### 3.1.1. Regular Migration

A decision to migrate through a regular channel maximizes the expected discounted lifetime utility function that provides a higher utility than irregular migration and non-migration. There are three time periods in setting up a utility function for regular migrants: before migration, overseas and return. However, it is vital to note that our survey data is not designed to capture returned migrants. Hence, we focus on variables in two periods, including household and migrants' characteristics before and during migration. First, potential migrants need to finance migration the costs ( $K^R$ ) such as transportation, visa, passport, and the agency. When emigrating through regular channels, a migrant is subjected to a fixed time contract ( $\tau$ ) and earn ( $W^R$ ) after working at the destination country. One possible way to observe a migrant's wage at the host country is to use a proxy of the migrant's level of education (Vanwey, 2004). A higher level of education is likely to contribute to higher wages and consumption overseas. Therefore, the utility of regular migration can be expressed:

$$U^R = f(K^R, W^R, \tau)$$

In this case, we specify  $K^R$  is the total cost of regular migration, which can be divided into three components, namely (1) general cost, (2) financial cost, and (3) opportunity cost using the ILO classification (ILO, 2016, 2018).

### 3.1.2. Irregular Migration

A decision to emigrate through an informal channel occurs when maximizing the utility function of irregular migration, which is higher than regular migration and non-migration. The differences between regular and irregular emigration is when irregular migrants could face deportation if the authority finds out at the destination country; therefore, the periods can vary (Djajić & Vinogradova, 2019). The costs of migration ( $K^I$ ) is dependent on household's assets holding to finance the move. The cost of irregular migration  $K^I$  is assumed to be higher than  $K^R$  because the emigration is to a developed country (Global North); therefore, a highly restricted immigration policy contributes to the high cost of irregular migration (Djajić & Vinogradova, 2019). However, in the case of Cambodian migration to Thailand which is located in the Global South, the cost of irregular migration is typically lower than regular channels (Chan, 2012; Harkins, Lindgren, & Suravoranon, 2017; Hing et al., 2011; ILO, 2020; IOM, 2019; Nurick & Hak, 2018). After migration, irregular migrants earn wages ( $W^I$ ) at the destination and potentially encounter deportation rate denoted by ( $\rho$ ). The utility function of the irregular migrant can be expressed:

$$U^I = f(K^I, W^I, \rho)$$

The wage rate ( $W^I$ ) can be observed through the level of education of migrants, while the deportation rate ( $\rho$ ) can be directly observed as the numbers of deportees in the year prior to migrants migrating to the destination.<sup>3</sup> If the number of deportees increases or the immigration policy at the destination is restricted and strengthened; the probability of irregular migration declines.

Based on Djajić and Vinogradova (2019), we show that the factors determining whether to migrate through an official or unofficial channel depends on (1) cost of regular migration, (2) cost of irregular migration, (3) duration of the contract (the length of stay at the destination), (4) wage via regular migration, (5) wage via irregular migration, (6) deportation rate if migrants emigrate through an illegal channel.

#### 4. Empirical Specification

Our initial empirical approach is to encounter with several econometric puzzles including selection-bias in migration decisions<sup>3</sup>, the Independent Irrelevant Assumption, and the endogenous cost of moving (Table A.1, A.2, and A.3). Later, we perform the Alternative Specific Conditional Logit estimates with the alternative and case-specific attributes in the structural equation (8) shows in Table 3 and 4 and the average marginal effects shown in Table 5.

This paper primarily adopts the alternative specific conditional logit model (Cameron & Trivedi, 2005; Greene, 2018; Wooldridge, 2015). This approach provides the advantage over the traditional method allowing each alternatives to have specific attributes and adding variation across choice alternatives and the individual case-specific characteristics. Standard choice approaches such as logit, probit model, and the multinomial logit/probit can only control for case-specific or individual-specific characteristics that could not capture the alternative specific effects.

Following Davies, Greenwood, and Li (2001), household  $i$  sends one or more family members through choices  $j=0, 1, 2$ , i.e., No Migration, Regular Migration, and Irregular Migration, respectively. It is vital to include non-movers choosing not to migrate in understanding migration decisions; otherwise, the study would be trapped into the selection-biased problem (Davies et al., 2001). Therefore, a decision to migrate through  $j$  channel can be expressed as follows:

$$M_{ij} = \beta X'_{ij} + \beta_1 X_i + \beta_2 m_i + \varepsilon_{ij} \quad (6)$$

Where  $X'_{ij}$  denotes a vector of choice-specific attributes representing all types of migration costs.  $m_i$  is a vector of migrant's characteristics and  $X_i$  denotes a household's case specific characteristics.  $\beta, \beta_1, \beta_2$  denote the parameters to be estimated for each alternative, household, and migrant, respectively.  $\varepsilon_{ij}$  is strictly to be independent and identically distributed across alternatives (iid). Therefore, the probability of household  $i$  choosing to send a family member through  $j$  channel is:



$$P(y_i = j) = P(U_{ij} > U_{ik}) \forall k \neq j \quad (6.1)$$

Then:

$$P_{ij} = P(y_i = j) = \frac{e^{(\beta X'_{ij} + \beta_1 m_i + \beta_2 X_i)}}{\sum_{k=1}^J e^{(\beta X'_{ik} + \beta_1 m_i + \beta_2 X_i)}} \quad (6.2)$$

Where  $J$  is a total of  $j$  alternatives, which are three alternatives.  $X'_{ij}$  is the set of the alternative specific repressors, mainly the components of migration cost varying across alternatives and characteristics at the location where migrants work as regular or irregular status, including labour market and socioeconomic information.  $X_i$  and  $m_i$  denote household and migrant case-specific attributes, respectively.

Even though the conditional logit model performs better with such a proposed data for alternative specific attributes, this econometric approach requires a strong assumption of the alternative invariance with the Independent of Irrelevant Alternative (IIA) assumption. Therefore, if it is violated, model is not an appropriate choice of modelling (Cheng & Long, 2007; Greence, 2018). The Hausman and McFadden test (Hausman & McFadden, 1984) is used to check a standardized comparison of the model coefficient for the IIA assumption (Cheng & Long, 2007).

#### 4.1. Marginal Effect

Examining the marginal cost is vital to see how the cost changes would affect migration mode choice to go abroad for work. It can be expressed (Davies et al., 2001):

$$\frac{\partial P_{ijk}}{\partial X'_{ik}} = P_{ijk}(1(j = k) - P_{ijk})\beta \quad (6.3)$$

For the conditional logit model, the marginal effect for continuous variables such as cost components is the ratio of differences in the probability migrating through  $j$  to  $k$  for the change of  $X'_{ik}$ .

#### 4.2. Endogenous Cost of Migration

Carrington et al. (1996) and Massey and Espinosa (1997) suggest that the cost of migration is endogenous in a sense that it correlates with the unobservable characteristics specifically to the destination's attributes. The presence of migrant community at the destination has an effect on worker-paid migration cost. This cost endogenously decreases with an increase of migration stock who already settled at the country of destination. Therefore, as a network effect, it can minimize time and facilitate for job search, and reduce risks for potential migrants at the place of origin. This argument is also supported by other studies, including Ilahi and Jafarey (1999), McKenzie and Rapoport (2007), Taylor (1986), Orrenius and Zavodny (2005), and Epstein

(2008), who mainly emphasize the relationship between migration cost and migration network effect.

To account for the problem of endogeneity the control function (CF) approach is effective and straightforward to use (Wooldridge, 2015). The CF method is a robust two-step approach that can be utilized to eliminate endogeneity in the choice model. First, the endogenous variable is regressed on observed characteristics and the instrument, following the exclusion restriction procedure. The predicted residual from the first step estimation is retained and substituted in the choice model with other explanatory variables (Greene, 2018; Petrin & Train, 2010; Wooldridge, 2015). One of the advantages of employing CF is that it is efficient, straightforward, and more precise than the instrumental variable method as it generates residuals from both migration channel decisions, indicating if the variable is endogenous and is able to control for unobservable confounders in the auxiliary equation (Wooldridge, 2015). Following Petrin and Train (2010), we have:

$$U_{ij} = V(X'_{ij}, X_i, m_i, \gamma) + \varepsilon_{ij} \quad (8)$$

Where  $\gamma$  is the parameter while  $\varepsilon_{ij}$  is the error component across alternative  $j$ . So, recognizing  $X'_{ij}$  as an endogenous variable  $E[\varepsilon_{ij}, X'_{ij}] \neq 0$ ; the  $X'_{ij}$  is not independent of  $\varepsilon_{ij}$  which is likely to produce biased estimates.

Generating the CF, we employed the reduced form that  $X'_{ij}$  is a function of the exogenous variables and the instrument variable.

$$X'_{ij} = W(S_i, X_i, m_i, \alpha) + \mu_{ij} \quad (8.1)$$

We introduce an instrumental variable  $S_i$  as Cambodian migrant stock at the provincial level in Thailand and specific location of the province of destination as reported by households. We employed a simple falsification test to validate instrument admissibility and its validity: the instrument is valid only if it affects the monetary cost of migration but not the choice of migration (Di Falco, Veronesi, & Yesuf, 2011; Pizer, 2016).<sup>4</sup>  $\alpha$  is the parameter while  $\mu_{ij}$  is the error component across alternative  $j$  for each migration cost. With the independent assumption,  $\mu_{ij}$  it is straightforward to retain standard estimation using Ordinary Least Squares (OLS), and the general form of CF can be expressed as CF ( $\mu_{ij}; \delta$ ) and  $\delta$  is the parameter. Therefore, the error component now consists of  $\varepsilon_{ij} = \text{CF}(\mu_{ij}; \delta) + \widehat{\varepsilon}_{ij}$ .

Substitute CF ( $\mu_{ij}; \delta$ ) into the utility function  $U_{ij}$ . Therefore, with a given CF specification, we can have the utility function  $U_{ij}$  as follows:

$$U_{ij} = V(X'_{ij}, X_i, m_i, \gamma) + \text{CF}(\mu_{ij}; \delta) + \widehat{\varepsilon}_{ij} \quad (9)$$

## 5. Data and Variables

Our study exploits two primary data sources covering 422 households in three provinces in the northern part of Cambodia, Banteay Menchey, Battambang, and Siem Reap, which represent a high density of international migration and 53% of the total international migration (Dickson & Koenig, 2016; MoP, 2015). To account for the actual official migration cost charged by PRAs, we obtained data from surveying 17 manpower recruiting firms located in Phnom Penh which facilitate sending workers to Thailand.

Probability proportional to size (PPS) sampling is used to determine the study area's sample distribution after the multi-stage random sampling was employed. Data collection took place in December 2019, within 17 villages (Table 2). The sample size is proportionally distributed according to the Ministry of Planning (MoP) (2017) data that states overall approximately 21% of households reside in the urban area and 79% in the rural area.

**Table 2: Sample Distribution by Migration Status**

Province	Number of Villages	Non-Migrant households	Migrant households	Total Samples
Banteay Menchey	6	90	52	142
Battambang	6	96	49	145
Siem Reap	5	89	46	135
Total	17	275	147	422

*Note: Data collection was conducted from 10th December 2019 to 18th December 2019.*

To construct the alternative specific costs of migration, particularly for regular migration, we conducted another survey by randomly selecting 30 registered companies based in Phnom Penh, responsible for managing and sending labour migrants to Thailand. However, only 17 PRAs participated in the survey. To identify registered companies, the study used a list provided by MoLVT (2017), and the Prakas on Private Recruitment Agency by MoLVT (2013) highlights the regular status of a recruiting agency sending workers abroad. A separate version of the household questionnaire was employed to obtain the recruitment and migration cost.

### 5.1. Variables

Our main explanatory variables of interest are the total cost of migration and its components, including the general cost, the financial cost, and the opportunity cost based on the Global Knowledge Partnership on Migration and Development (KNOWMAD) and ILO migration cost survey across different bilateral corridors (ILO, 2016). In this study, we measure the cost of migration by the ratio of the reported actual total cost of migration to the average household's monthly consumption prior to migration. The case-specific variables include household head and household characteristics – age, gender, household size, average household education, occupation (farmer, own business, public servant, and employee), level of monthly household income, dependency ratio, level of household wealth index (poorest, poor, medium, wealthy, wealthiest) constructed by the Polychoric Principle Component Analysis. Because variables at village level are considered important in determining household migration decisions, we also

include the geographic variables such as Irrigation system (whether or not household is located in a village that has an irrigation system), distance from household to school, to nearest border check-point, and to the nearest immigration office.

Migrant characteristics include the length of stay at the destination and years of education, which are the variables theoretically affecting the choice of migration route (Djajić & Vinogradova, 2019). The regression model's control variables include gender, marital status (single, married, widowed, and divorced), occupation at the country of destination (service, factory, construction, and fishing), and migrant health status's dummy variables.

We incorporate immigration policy variable, deportation, measured by numbers of Cambodian migrant being deported (Djajić & Vinogradova, 2019; Mayda, 2010). The data was retrieved from the National Committee for Counter Trafficking (NCCT)<sup>5</sup>, reporting the number of deportees from various destinations each year from 2013 to 2018 across different check-points. Migration stock at the destination at a provincial and regional level, retrieved from the Department of Employment, Ministry of Labour Thailand in 2018, are also included in the models to capture network effect and control for the endogeneity in migration cost (Carrington et al., 1996; Fafchamps & Shilpi, 2013; Ilahi & Jafarey, 1999; Taylor, 1986; Ullah, 2010).

## **6. Results**

Table 3 indicates that all variables of interest are statistically significant at the 1 percent and 5 percent levels with predicted signs. For the alternative specific attribute variables, the finding suggests that total cost of migration has the expected negative sign across all models suggesting that increase in cost of can induce the likelihood of illegal migration. The general cost accounting for the cost of pre-departure training, language training, and brokerage fee also indicates a negative sign suggesting a reduction in the probability of choosing regular migration as cost increases. Irregular migrants do not have prerequisite expenses on pre-departure training or language training, but bare only brokerage fees that are much cheaper and less time-consuming than regular migration. Additionally, dependent on migration networks, job training is marginal since the information has been passed on to migrants through family and friends who help them get a job at the destination (McKenzie & Rapoport, 2007; Orrenius & Zavodny, 2005).

Both financial cost and its square term indicate a statistically significant and appear to a non-linear relationship between the financial cost and migration choice. Our empirical evidence is in contrast with previous findings and can be explained in a number of reasons. Our measurement of financial cost is not accounted by a fix term such as the distance between a place of origin to a place of destination or the transportation cost which are previously used (Davies et al., 2001). We used related costs to construct financial cost which may differ in terms of mode of transportation and associated fees. Furthermore, the Cambodia passport fee, which is used in constructing the financial cost, varies across migrants tend to have a significant variation. This significant differences in passport fee depend on either type of red or black passport migrant worker possesses.<sup>6</sup>

**Table 3: The Determinants of Migration Choice (The Alternative Specific Estimations)**

VARIABLES	Alternative Specific Conditional Logit (Individual Level)			
	Model (1)	Model (2)	Model (3)	Model (4)
Total migration cost	-0.921* (0.510)	-0.899 (0.669)	-1.427*** (0.544)	-1.897** (0.917)
General cost	-13.51*** (3.053)	-17.14*** (4.099)	-17.68*** (3.355)	-24.05*** (5.568)
Opportunity cost	58.17*** (11.66)	65.20*** (13.08)	70.83*** (14.67)	86.19*** (19.34)
Financial cost	1.188** (0.547)	1.422** (0.673)	2.019*** (0.643)	2.832*** (1.019)
Financial cost (Square)	-0.0383 (0.0613)	-0.0725 (0.0697)	-0.0890 (0.0707)	-0.161** (0.0785)
Opportunity cost (Square)	-40.88*** (9.583)	-45.56*** (9.775)	-48.92*** (11.84)	-58.09*** (13.41)
Observations	442	442	442	442

*Note: Individual case specific variables were included in all models and corresponded to the estimated models in Table 4. The CF residual is estimated using OLS with robust standard error. OLS results and the falsification test for exclusion restriction are available in the Appendix materials. Cluster standard error at the household level was used because one household could send multiple migrants. Altwise in McFadden's choice was employed to control for the missing value in the alternative specific attributes. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

The opportunity cost indicates a statistically positive coefficient and negative at opportunity cost square. While we observe the effect of opportunity cost, it varies with the cost of being away from home and not earning during the application process and pre-departure training. Considering this type of cost, linear does not fully capture the variation as the cost could differ in terms of the distance of the household and occupation before migration that deviates from the household's income loss. These estimated coefficients point to inverted U-shapes with particular turning points where the opportunity cost relationship turn negative thereafter. Before the turning point, the relationship is positive. Likewise for the financial cost in Model 4.

Inclusion of the residual derived from equation (8) is addressed in the results of the last column of Table 4. The predicted residual is statistically insignificantly different from zero, implying that our structural equation (9) and results in Table 5 do not suffer from the endogenous cost of moving.

Table 4 reports the key case-specific variables of interest estimates, such as the deportation variable, year of migrant's education proxy for migrant's wage, and length of stay indicate statistical significance with expected signs. Strengthening the immigration policy at the destination prior to the given year of migration seems to influence regular migration positively. This result aligned with previous studies such as Morehouse and Blomfield (2011)

who suggested that the decline in irregular stock in Europe within a period from 2007 to 2011 was due to strengthening immigration policy and combatting illegal migrants. Secondly, consistent with Angelucci (2012), Orrenius and Zavodny (2005), Thom (2009), and Reyes (2001), the relationship between the length of stay at the destination and the immigration status confirms negative and statistically significant at the 5 percent level implying that irregular migrants are likely to stay longer than regular migrants. This findings can be explained in a number of reasons. Due to the nature of irregular migration, crossing the border can be difficult and requires cautions despite Cambodia and Thailand sharing a perilous border; therefore irregular migrant would rather stay at the destination working in informal sector for a certain period of time until the cost of migration is covered and saving reaches their target. Another reason suggesting irregular migrants have longer average length of stay than regular migrants can derive from the fact that each Cambodian regular migrant worker can be offered a work permit in Thailand for two years (24 months) with a further two-year extension which is officially set by the MoU between the Cambodian and Thai Government.

**Table 4: The Determinants of Migration Choice (Individual Case-Specific Estimation)**

VARIABLES	Alternative Specific Conditional Logit (Individual Level)			
	Model (1)	Model (2)	Model (3)	Model (4)
	Reference Migration Choice: Irregular Migration			
Log of deportation (t-1)	3.663*** (1.071)	3.847*** (1.147)	4.373*** (1.094)	5.043*** (1.662)
Length of stay	-0.583*** (0.208)	-0.490** (0.238)	-0.610*** (0.228)	-0.714** (0.360)
Wage	0.166** (0.0736)	0.225*** (0.0820)	0.174** (0.0842)	0.240** (0.104)
Children	-0.671 (0.530)	-0.976* (0.556)	-0.917* (0.536)	-1.204* (0.627)
Widowed	-14.01*** (1.557)	-13.25*** (1.890)	-13.48*** (1.556)	-13.09*** (2.208)
Migrant's occupation at destination				
Fishing boat	-13.67*** (0.981)	-13.20*** (1.259)	-14.94*** (0.778)	-12.99*** (1.346)
Shock_ Crop Damage (before migration)	-	-	-15.12*** (1.567)	-14.31*** (1.671)
Female migrant ratio	-	-	-9.910*** (2.860)	-14.35*** (4.237)
Regional migration stock	-	-1.0305** (4.1006)	-	-8.5406* (5.1806)
Log distance to the nearest border	-	39.44** (16.97)	-	45.62** (18.30)
Log distance to immigration office	-	-48.33** (24.59)	-	-60.96** (24.72)
Household Wealth Index	YES	YES	YES	YES

VARIABLES	Alternative Specific Conditional Logit (Individual Level)			
	Model (1)	Model (2)	Model (3)	Model (4)
	Reference Migration Choice: Irregular Migration			
Provincial dummies	YES	YES	YES	YES
Constant	-41.72*** (12.21)	-4.361 (49.05)	-49.11*** (12.42)	12.38 (43.51)
Observations	442	442	442	442

*Note: Only Significant slope estimates are reported in this table. Alternative case specific variables in all Model (1-4) and The CF residual is estimated using OLS with robust standard error. Cluster standard error at the household level was used because one household could send multiple migrants. Altwise in McFadden's choice was employed to control for the missing value in the alternative specific attributes. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

Employing migrants' years of education as a proxy for wages at the destination, we find that regular migrants are likely to have higher wages than irregular migrants. Several studies emphasize that irregular migrants are commonly exploited and earn less compared to regular migrants. They often work in "3D jobs" (Dirty, Difficult, and Dangerous) (Bylander, 2017; IOM, 2019). However, Our finding contradicts Sobieszczyk (2000) and Djajić and Vinogradova (2019), who suggest that undocumented migrant workers' wages tend to be higher than documented migrant workers working in a more advanced country such as Japan, Singapore, South Korea, and Taiwan. It is northworthy to emphasize that, based on Djajić and Vinogradova (2019), irregular migrants can more flexibly meet the demands of employers faster than regular migrants who require paperwork and a recruitment process. This possibly increases the cost of recruiting for employers. Therefore, employers are willing to pay irregular migrants at a higher rate. Nonetheless, it should be pointed out that the above studies (Djajić & Vinogradova, 2019; Sobieszczyk, 2000) mainly illustrate the context of South-North migration given a significant difference from South-South labour movement.

### 6.1. Marginal Effect of Migration Costs

The results of our analysis on the marginal effect present in Table 5. An average increase in the total cost of migration equal to one month of a household's consumption decreases the probability of choosing migration through an official channel by 15.8 percentage points. Although the cost of migration from Cambodia to Thailand remains relatively low compared to other migration corridors (ILO, 2020), comparing the cost of monthly household consumption on average provides us an important evidence that the costs of acquiring a job at the destination remains problematic since it is relatively high for poor households and migrants from a low-skilled category. The estimated marginal effect indicates a significantly high probability within a change in the cost of migration equivalent to one month of household consumption.

Controlling for migrants' characteristics, we did not find a significant difference from the average marginal effect between the average and conditional marginal effect, 15.8 and 15.7 percentage points respectively. This result implies that the choice of migration from Cambodia

to Thailand may not essential involve migrants' characteristics; yet the labour migration policy which potentially shapes the choice of migration.

We further examine how the likelihood of migration channel selection changes in relation to change in costs of migration by applying cost simulations. Holding other factors constant, we assume that the Cambodian government regulates the zero fee policy in which the cost is borne by employers and PRAs. The finding suggests that the predicted probability is 64.3 percentage points for migrants choosing regular migration and 35.7 percentage points for irregular channels while the predicted probability of choosing regular migration declines significantly as the cost increases. It shows that when the costs can be reduced to zero, this result has shown the feasibility of promoting a safe migration as low cost migration in formal migration becomes more attractive than informal channel despite the network effects that may have influenced their choice of migration in some extent. However, when high costs do not make regular migration channel an option, potential migrants would seek for an alternative migration channel that is inexpensive and allow them to quick access foreign employments. Our findings suggest that the predicted probability of choosing official emigration channel decline from 64.3 percentage points to 8 percentage points as the costs increase equivalent to five months while the predicted probability for irregular choice of migration increase from 14.44 percentage points to 91.7 percentage points.

**Table 5: Average Marginal Effect and Adjusted Prediction at Different Cost of Migration Values**

VARIABLE	Cost of migration (in months)							
	Average Marginal Effect	Conditional Marginal Effect	Zero Cost	One month	Two months	Three months	Four Months	Five months
Regular migration	-0.158** (0.072)	-0.157** (0.0666)	0.643*** (0.144)	0.470*** (0.0886)	0.326*** (0.0465)	0.215*** (0.0167)	0.134*** (0.0152)	0.0827*** (0.0140)
Irregular migration	0.158** (0.0729)	0.157** (0.0666)	0.357** (0.144)	0.530*** (0.0886)	0.674*** (0.0465)	0.785*** (0.0167)	0.866*** (0.0152)	0.917*** (0.0140)
Obs.	442	422	442	442	442	442	442	442

*Note: The Average Marginal Effect is calculated at mean. The Conditional marginal effect; we estimate the conditional probability on migrants' characteristics at mean given the changes on probability when choosing migration choice. Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

While the average regular migration cost is equivalent to 2.65 months of household consumption, emigration through irregular channels remains popular because of its low costs (ILO, 2020; IOM, 2019). Our first case-specific variable of interest, deportation, shows that if the Thai authority strengthens measures to tackle irregular migrants, it increases by 20.9 percentage points the probability of choosing regular migration. This result indicates that tightening immigration policy at the destination has been an effective policy to cope with irregular emigration from Cambodia. Higher wages for regular migration increase 0.9 percentage points as an incentive for Cambodian migrants to opt for formal migration.



Interestingly, the result suggests that with a 1 percent increase in the length of stay, a migrant is less likely to choose regular migration by 2.96 percentage points. This result signifies a number of policy implications to review and reformulate for both government of origin and destination country and relevant stakeholders.

## **7. Conclusion**

Even though there has been an on-going research effort to curb with the high cost of migration, little is known about worker-paid migration costs. Research in both theoretical and empirical modelling of international movement of people has been typically limited by direct migration cost data availability. Therefore, it shows that different proxy variables have been used to control for migration costs. Because of its new research perspective with limited data, it remains an issue of great importance to the global effort in lowering the cost of moving and enhancing migrant's livelihood and the positive return on migration. Therefore, we contribute to recent labour migration literature by exploiting the direct monetary cost of migration from two field datasets from the Cambodian household survey of 422 households and 17 private recruiting agencies to empirically document the effects of direct monetary costs of migration and the determinants of migration decisions.

We addressed the endogenous cost of moving in our empirical strategy by using the control function method with an instrumental variable. The findings suggest that increasing the total cost of labour migration equivalent to one month household average consumption lowers the probability of choosing regular migration by 15.8 percentage points. It validates that high migration cost deter the likelihood of regular migration decisions. We also confirm the theoretical hypotheses that strengthening immigration policy at the country of destination, measured by the number of Cambodian deportees, increases the cost of migration and has a negative impact on irregular migration decision by reducing the probability of Cambodian migrants migrating through illegal channels by 20.9 percentage points. Migrant's length of stay at the destination is associated with irregular migration decisions, suggesting 2.96 percentage points. Finally, higher wages for regular migration increase 0.9 percentage points as an incentive for Cambodian migrants to opt for migration through official channel.

These insightful findings above can add evidence to the recent labour migration literature in order to contain excessive worker-paid migration costs across migration corridors in terms of policy options. Our empirical results also recommend that both governments of origin and destination countries should work cooperatively to manage cost of labour migration and to ensure safe labour migration by re-examining the labour and migration policy. Furthermore, the country of the origin should commit to enhance its institutional quality by reducing its complication of formal migration process, setting a maximum migrant worker-paid fee, and ensuring all licenced private recruiting agencies comply with a standard labour migration guideline and labour recruitment ethic codes of conduct. Finally, this research paper also offers a venue as a guideline for researchers who attempt to investigate the direct worker-paid migration costs further and who wants to examine labour migration from Cambodia to Thailand or in the global south labour migration research.

## Notes

1. Memorandum of Understanding between Cambodia and Thailand on cooperation in the employment of workers (19 December 2015) (MoLVT, 2014).
2. The Nationality Verification (NV) is a legalization process for migrants who have been working illegally in Thailand regardless their initial status of immigration. Between 2014 and 2019, about one million Cambodian irregular migrants completed the NV scheme to legalize their immigration status and work-permit (MoLVT, 2020).
3. Table A.3 report Self-selection bias correction in migration using Propensity Score Matching (PSM) (Liu, Feng, & Brandon, 2018; Roth & Tiberti, 2017). We used logit model to estimate the propensity score for both migrant and non-migrant households. Follow Rosenbaum and Rubin (1983), the valid propensity score exists between 0 and 1;  $0 < Pr(M_i = 1|X_i) < 1$ ; where  $Pr(M_i = 1|X_i) = \frac{Exp(X_i^M \alpha)}{1+Exp(X_i^M \alpha)}$ ;  $X_i$  is a set of exogenous factors affecting the decision to migrate  $M_i$  and  $\alpha$  is the parameter.
4. Table A. 1 indicates that our instrumental variable, migration stock, is valid which is statistically significant affecting migration cost and not the choice of migration channel.
5. The data on number of Cambodian migrants being deported from Thailand is compiled from the National Committee for Counter Trafficking (NCCT) between 2013 and 2018.
6. All Cambodian citizens can apply for a red passport which is valid for travelling, staying, and working abroad based on visa validity. However, the black passport is a recent initiative that facilitates and reduces pre-departure costs for migrant workers. It can only be applied for only by potential migrants wishing to migrate through a Private Recruiting Agency and costs between USD 35 and USD 75 while the normal or red passport costs around USD 100 to USD 250. From our survey with PRAs, to obtain a black passport, each migrant has to pay USD 67 which includes the passport, membership, and the Cambodian Oversea Working Card (OCWC).

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## Appendix

**Table A. 1. Propensity Score Estimates (Treatment = Migrant Households)**

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 4	Model 6
Rural area	0.578* (0.318)	0.545* (0.317)	0.592* (0.318)	0.608* (0.318)	0.593* (0.317)	0.677** (0.322)
Household (HH) gender	0.046 (0.249)	0.087 (0.247)	0.097 (0.249)	0.057 (0.249)	0.065 (0.248)	0.015 (0.253)
HH high school	-0.068 (0.446)	-0.067 (0.445)	-0.070 (0.448)	-0.011 (0.447)	-0.109 (0.448)	-0.060 (0.451)
# Female earns (before migration)	0.463*** (0.156)	0.453*** (0.156)	0.475*** (0.158)	0.487*** (0.157)	0.455*** (0.157)	0.513*** (0.161)
# Female members	0.359*** (0.091)	0.349*** (0.091)	0.346*** (0.092)	0.354*** (0.091)	0.361*** (0.091)	0.366*** (0.093)
Dependency ratio	2.012*** (0.576)	2.031*** (0.575)	2.073*** (0.587)	2.096*** (0.581)	1.989*** (0.577)	2.065*** (0.595)
Irrigation	-0.226 (0.261)	-0.230 (0.261)	-0.230 (0.263)	-0.287 (0.263)	-0.188 (0.263)	-0.240 (0.267)
Distance to school	-0.440* (0.228)	-0.443* (0.229)	-0.411* (0.231)	-0.435* (0.231)	-0.442* (0.229)	-0.399* (0.231)
Poorest household	0.355 (0.301)	- -	- -	- -	- -	0.653* (0.393)
Poor household	- -	-0.103 (0.294)	- -	- -	- -	0.286 (0.384)
Medium household	- -	- -	0.685** (0.280)	- -	- -	0.863** (0.363)
Wealthy household	- -	- -	- -	-0.619** (0.315)	- -	-0.184 (0.386)
Wealthiest household	- -	- -	- -	- -	-0.400 (0.298)	
Provincial dummies	YES	YES	YES	YES	YES	YES
Constant	-2.89*** (0.466)	-2.74*** (0.459)	-2.99*** (0.468)	-2.80*** (0.456)	-2.728*** (0.452)	-3.35*** (0.545)
Number of obs.	422	422	422	422	422	422
Prob>X <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R <sup>2</sup>	0.153	0.151	0.162	0.158	0.154	0.170
Log likelihood	-230.96	-231.587	-228.67	-229.634	-230.7298	-226.274
Balancing property	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied
Remaining obs.	415	413	408	402	418	411
# of blocks	5	5	5	5	5	5

*Notes: Because migration is not a random assignment, the Propensity Score Matching (PSM) technique was used to correct selection bias in migration decision by comparing migrant households (treatment group) characteristics to the non-migrant household's (control group) through the estimated propensity score (Liu et al., 2018; Roth & Tiberti, 2017). Sampling weights are not used to calculate propensity score following Frolich (2007). Standard errors are in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .*

**Table A. 2: Independent Irrelevant Assumption (IIA) Test**

	Hausman and McFadden test
Log likelihood	-64.764164
Chi-square statistics	0.000
Likelihood ratio test statistics	-
Degree of freedom	26
Prob>= Chi-square/ Chi-bar-square	0.999
Decision	Cannot reject H <sub>0</sub>

Note: H<sub>0</sub>: IIA property holds or the mixed logit model produces the consistent result as the conditional logit model; therefore, there is no evidence against the conditional logit model. Discussing in Cheng and Long (2007), the Hausman and McFadden (HM) test performs to compare the estimates  $\hat{\beta}^c$  and  $\hat{\beta}^m$ . Therefore the HM test can be expressed:  $HM = (\hat{\beta}^c - \hat{\beta}^m)' [\widehat{Var}(\hat{\beta}^c) - \widehat{Var}(\hat{\beta}^m)]^{-1} (\hat{\beta}^c - \hat{\beta}^m)$ . The  $\widehat{Var}(\hat{\beta}^c)$  and  $\widehat{Var}(\hat{\beta}^m)$  are the estimated covariance. The implication from the estimation can be conclude that if the value of HM indicated significant, there is a problem and violate the assumption of IIA. However, if the value of HM is distributed as chi-square with the degree of freedom equal to the estimated coefficient in  $\hat{\beta}^m$ , the IIA is hold and not violated.

**Table A. 3: Ordinary Least Squares Regression and Alternative Specific Conditional Logit**

VARIABLES	Determinants of Migration Cost	Regular Migration Choice
	OLS	ASCL
Migration stocks	-9.3706*** (3.1306)	1.04e-06 (0.0000165)
Log deportation	0.186 (0.294)	6.565*** (2.005)
Log length of stay	0.170*** (0.0523)	-.7199** (0.328)
Years of education	-0.00328 (0.0258)	0.268* (0.144)
Female_ Migrant	-0.116 (0.154)	0.354 (0.573)
Single	-0.338 (0.586)	1.155 (1.874)
Married	-0.883 (0.560)	1.115 (1.313)
Widowed	-0.00970 (0.780)	-29.295*** (2.703)
Health_good	-0.357 (0.231)	1.285* (0.658)
# of Children	0.0449 (0.0883)	-0.044 (0.403)
Occupation at the destination		
Factory	0.0438 (0.280)	1.103 (1.165)
Construction	0.131 (0.245)	1.913 (1.338)
Fishing boat	0.231 (0.562)	-12.240*** (2.764)



VARIABLES	Determinants of Migration Cost	Regular Migration Choice
	OLS	ASCL
Service	0.143 (0.270)	0.345 (1.477)
Sibling	-0.732* (0.386)	-1.140 (1.676)
Children	-0.520** (0.252)	-3.828** (1.610)
Relatives	-0.181 (0.521)	-2.018 (1.804)
Parents	-0.901 (0.951)	17.663*** (1.933)
Other relationship	-0.727 (0.285)	-4.478 (1.976)
Shock_ Crop Damage (before migration)	0.696 (0.493)	-10.565*** (2.536)
Female migrant ratio (village)	-0.912 (0.848)	-16.917*** (6.253)
Log distance to the near border	-12.20** (4.972)	52.079*** (15.872)
Log distance to the immigration office	9.975* (5.702)	-70.898** (21.488)
Regional Cambodian migration stock	2.83e-06* (1.53e-06)	0.00001 (6.01e-60)
Household wealth dummies	YES	YES
Provincial dummies	YES	YES
Constant	10.99 (8.298)	11.381 (45.349)
Observations	448	422
R-squared	0.111	-

*Note: All alternative cost specific variables- total cost, general cost, financial cost, opportunity cost, and square terms- are included in the ASCL model. All cost specific variables remain statistically significant at 5 percent level. Cluster standard error at the household level was used because one household could send multiple migrants. Altwise in McFadden's choice was employed to control for the missing value in the alternative specific attributes. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*