



Faculty of Economics, Thammasat University

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**THAMMASAT REVIEW OF
ECONOMIC AND SOCIAL POLICY**

Volume 6, Number 1, January - June 2020

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Myanmar

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Thammasat Review of Economic and Social Policy

Thammasat Review of Economic and Social Policy (TRESP) is a double-blind peer reviewed biannual international journal published in June and December. The journal is managed by the Research Committee under the supervision of the Academic Affairs Division of the Faculty of Economics, Thammasat University. Our editorial board and review panel comprise of academicians and practitioners across various areas of economic and social policies. The goal of the journal is to provide up-to-date practical and policy-oriented analysis and assessment of economic and social issues, with particular focus on Asia and the Pacific region. However, research findings from other parts of the world that are relevant to the theme of the journal may be considered.

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Editorial Introduction

Upon celebrating its third year of publication, Thammasat Review of Economic and Social Policy (TRESP) has successfully applied for inclusion in Thailand Citation Index (TCI) database, Tier 2. In the evaluation, 65 out of 114 applied journals passed the comprehensive criteria. This can be considered a satisfactory start for our young journal. We are grateful to all our contributors, the boards, the reviewers, the authors and the readers.

This issue contains a well-diversified combination of quality research findings that have important policy implications, particularly for developing and emerging countries. In the first article, “The Impact of Migration on Poverty and Inequality in Myanmar”, Zin Shwe, doctoral candidate at the Faculty of Economics, Thammasat University, expands on the established literature on migration and remittances by looking at whether internal migration with remittances in Myanmar has a poverty and inequality reducing effect. The research article makes use of the 2015 Myanmar Poverty and Living Conditions household survey which provides cross-sectional survey data on households which members who have moved to another region for economic reasons, and which households are receiving remittances. A counterfactual approach is undertaken to estimate the effects of migration and remittances, in address concerns regarding selection bias.

The article examines the impact of migration and remittances by categorizing households based on agro-ecological region, low or high income, and rural or urban. The results indicate that, while migration with remittances has an overall effect of decreasing poverty and inequality at the

national level, the effect is higher in certain regions and types of households compared to others.

The article notes that the results are in line with the general literature on urbanization and development, with migrants moving from rural areas to more urban areas to seek better labor opportunities. The author also notes that the results show that households with higher levels of human capital are benefitting more from migration and remittances, due to commiserate higher returns from the labor market. The article concludes that, for internal migration to have a stronger poverty reducing and inequality reducing effect, more needs to be done to link low income households with better labor opportunities.

The second article in this issue, “Thailand’s Personal Data Protection Act: An Understanding from the Perspectives of European Privacy Law” by Tanatas Bumpenboon from the Bank of Thailand, analyses the upcoming introduction of the Thailand Personal Data Protection Act (PDPA) and the implications it has for companies which do business ‘in Thailand’. It is a timely exploration of how the introduction of the PDPA may affect businesses in Thailand with regards to collecting and managing customers’ data by looking at selected cases involving the European Union’s General Data Protection Regulation (GDPR).

The issue of data collection and processing is a complex and multi-faceted issue made even more difficult by the transboundary nature of the information on the internet, and the overlapping regulations that businesses must abide by. The article presents the example of businesses in Thailand which must already abide by the GDPR due to the fact that it serves customers who are nationals of EU countries, businesses which must now also take PDPA regulations into account.

The main focus of the article is on how businesses should operate in order to comply with PDPA regulations with

regards to legally and transparently collecting and managing data. Based on rulings pursuant to the GDPR, the article outlines how consent from customers may be obtained in line with the PDPA. In the absence of consent, the article also outlines other ways that businesses may be able to legally obtain the right to collect and process individuals' data, while also highlighting how companies in the EU have run afoul of the GDPR.

As aforementioned, this article is as timely as it is necessary; many businesses in Thailand will run the risk of contravening regulations laid out in the PDPA without realizing it when its major provisions come into force. The author concludes by stating that, going forward, businesses will need to ensure that they are fully respecting the privacy rights of individuals in the new regulatory environment.

The third article of this issue, “Happiness determinants in a Buddhist community” by Sauwalak Kittiprapas of Rangsit University and International Research Associates for Happy Societies (IRAH) examines a challenging field in economics – the economics of happiness – from a Thai Buddhist perspective. The author studies the determinants of happiness for a community in Thailand located in Bangkajao. The area is known as ‘Bangkok’s green lung’ due to its closeness to Bangkok, and its relatively large green spaces. The article makes use of a survey of inhabitants, with a particular focus on Thai Buddhist concepts of inner peace and sufficiency economy principles promoted by the Government of Thailand, to attempt to determine how these two factors impact the happiness of the residents of Bangkajao.

The article suggests that these two ideas help to promote a way of thinking which runs counter to conventional consumption-driven economic growth, encouraging people to seek happiness through inner peace rather than satisfying materialistic needs. The explanation links the idea of

sustainable development, offering an alternative pathway to achieving sustainable development while increasing the happiness of the population.

The article finds that, beyond a subsistence level of income, happiness derived from income is relative to an individual's perception of their social group. Absolute increases in the level of income beyond the subsistence level does not guarantee increases in happiness. The article also explores the determinants of happiness for various disaggregated groups. The findings show that lower income groups derive greater happiness from Thai Buddhist concepts of inner happiness and self-sufficiency, while higher income groups focus more on income levels. Moreover, compared with younger generations, older generations are less concerned with levels of income and are more concerned with inner happiness. The author suggests that the Government should focus more on promoting achieving happiness through sufficiency and inner peace, and encourages the protection and enlargement of green spaces which are also found to be positively correlated to happiness. This can be considered an interesting case study in one selected location. Nevertheless, it remains an issue of a more comprehensive debate within wider perspectives and substantial proofs in the future research by scholars from various disciplines.

Thammasat Review of Economic and Social Policy (TRESP) is a young biannual double-blind peer reviewed international journal published in June and December. Its first publication was in December 2015. The Faculty of Economics, Thammasat University and the Editorial Team of TRESP seek to provide an effective platform for reflecting practical and policy-oriented perspectives that links the academic and policymaking community. Having devoted to our 'knowledge-for-all' philosophy so as to drive our society forward, the Faculty decided that TRESP published in an open

access model. There are no submission and publication fees. However, the submitted manuscripts must be policy relevant and comply with the scope and requirements of the journal. Authors are responsible for the published articles. The views and opinions expressed in the articles do not necessarily reflect those of the Editors and the Editorial Board. For further information and updates on this journal, or to submit an article, please visit our website at www.tresp.econ.tu.ac.th.

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The Impact of Migration on Poverty and Inequality in Myanmar

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ABSTRACT

Using the Myanmar Poverty and Living Conditions Survey (MPLCS) 2015 household survey, this paper investigates the impact of migration on the welfare of left-behind households. Although applying panel data is an efficient way of identifying migration impacts, the availability of such kind of panel data is limited in developing countries and thus consistent calculations is not always possible. Therefore, by applying cross sectional survey data, this paper estimates counterfactual outcomes for a household which decides not to participate in migration. In order to impute the counterfactual per capita expenditure for migrant-sending households, this paper follows Heckman's two-step model with selection. The findings show that migration with remittances decreases poverty and inequality, with a poverty reduction effect of 11 percent and inequality reduction by 25 percent. These effects vary between different agro-ecological zones, and between rural and urban areas. Households in Coastal Zones are more dependent on remittances from migrants to reduce poverty and inequality.

Keywords: Inequality, Migration, Poverty, Remittances

JEL Classification: O1, O10, O150

1. Introduction

Recently migration has played an important role in the world economy. As migration is considered a development process, poverty and migration have always been interrelated. Migration has become a crucial process for many developing countries across the world. In order to study the relationship between poverty and migration, it is first required to understand how issues regarding poverty is outlined in migration research (Haan et.al, 2009). This paper focuses on internal migration because most poor households tend to engage in this form of migration. This is because while the literature on migration tends to focus on international migration, the more significant factor in poverty reduction is internal migration. Globally, the number of internal migrants is nearly four times the number of international migrants (UNDP, 2009). In Myanmar 9 million people, approximately 20 percent of total population, were counted as internal migrants (census report, 2014). The factors that drive internal migration are large rural-urban and inter-regional disparities, rising labor demand in expanding industrial and services sectors, and land scarcity and few off-farm opportunities in many rural areas (Harris and Todaro, 1970; Stark, 1991; Rozelle, Taylor, & De Brauw, 1999).

Taylor et al. (2005) highlighted that most of the rural areas in the world are the origin of migrants and are also the places where most of the poor are concentrated. Considering this fact, they proposed that the impacts of migration on poverty could be found somewhere in between two extremes, called “optimistic” and “pessimistic” scenarios. In the optimistic scenario, migration reduces poverty in low-income areas by moving people to relatively high-income urban areas. Remittances, as the return of migration, contributes to the incomes of households left-behind. Thus in this view, poor

left-behind households receiving remittances may help to reduce rural poverty. At the other end in the pessimistic scenario, there may be some obstacles which limit the ability of poor households to participate in migrant labor markets. Then, the beneficiaries from participating in migration may exclude the rural-poor due certain constraints, while households able to participate in the migrant labor force benefit. A framework of positive impacts from migration on source communities, developed by Kleinwechter (2012), highlights the positive role of rural-urban migrants in the development of source communities, while also noting that the impact of rural-urban migration are influenced by the administrative, institutional and social environment. Theoretically, extra funds received from migrants could ease households with credit constraints and allow them to take part in investment opportunities (Rozelle, Taylor, & De Brauw, 1999; Stark, 1991). The combination of the effect of migration and remittance may generate changes in production and economic conditions of the source community. Since remittances directly increase the income of households left-behind, these households can spend more on current consumption as well as on investments. Through productive investments, households receiving remittances could create new businesses which in turn increases labor demand in the source community, generating employment opportunities for non-migrant households in the source community.

Most of the studies on the impact of international migration find it consistent with reducing poverty, but the impacts are different depending on the characteristics of recipient countries. Moreover, literature on both internal and international migration has stressed on the selectivity of migrants. If the selection of households with migrants is not random, there could be a methodological issue in attempting to estimate the household welfare effects of migration focusing

on remittances (Phangaphanga, 2013). The absence of randomized selection and the presence of endogeneity of migration in the household welfare model can produce biased estimates. Thus, given that migration of past household members could be an integral part of a household's livelihood strategy, this paper attempts to model the impact of migration on household welfare and to investigate the impact of internal migration on the welfare of left-behind households. In terms of impacts, left-behind households can be positively as well as negatively affected by migration and the impact of migration could be different between poor and non-poor households, as well as between rural and urban households. Therefore, this paper tries to answer followings questions:

- Can migration affect the wellbeing of left-behind households? If yes, is the effect positive or negative? Can migration reduce poverty and inequality?
- Does migration have the same impact on households from different agro-ecological zones?
- Does migration have the same impact on poor and non-poor households?

In the rest of the paper, section 2 reviews relevant literature, while methodological issues and empirical strategy are discussed in section 3. Data and summary statistics are presented in section 4. Estimated results are discussed in section 5. Finally, a conclusion and policy recommendations are provided in section 6.

2. Literature review

Since 1960, a large amount of research on migration has been conducted, starting with the works of Sjasstad (1962), Todaro (1969), and Harris and Todaro (1970). According to the Todaro model, migration takes place because of existing expected earnings disparity between source and destination.

Operating as a cost-benefit process, this model focuses on the welfare of individual migrants who decide to migrate only for their benefit. However, this conceptualization was criticized by the authors who state that migration can be explained as a collective decision of the whole household in order to reduce risks such as uncertainty and market failures, especially in developing countries (Stark and Bloom, 1985; Stark, 1991). Later on, the new economics of labor migration restructured the Todaro model into a form of collective household decision making.

In the literature on migration, a number of studies investigate the extent and effects of migration-related remittances. However, the effect on poverty and inequality due to migration is a developing field of study. Most studies have reached a consensus, indicating that both international and internal migrations reduce poverty (Adams, 2006; Adams & Cuecuecha, 2010; Adams & Page, 2005; Taylor et al., 2009) and contribute to the development process by decreasing production and investment constraints in the economy (Goldring, 1990; Rozelle et al., 1999; Stark, 1991; Stark & Lucas, 1988; Stark et al., 1988; Taylor, 1999; Taylor et al., 1996). Depending on the initial level of sources of migrants, however, migration may increase or decrease income inequality and there seems to be no strong consensus on both the direction and extent of the redistributive impact of migration related remittances (Lopez-Feldman et al., 2007; Taylor, 1999; Adams, 1989; 2006).

Most of the existing studies on migration-poverty interactions are based on rural and village-level data. In a study of rural Egypt, applying counterfactual income scenario, Adams (1989) shows that although the effect of international remittances is small, it is favorable on poverty and an increase in remittances leads to a decline in income inequality in rural Egypt. In the case of Guatemala, comparing the poverty

headcount, poverty gap and squared poverty gap of households that received remittances from international and/or internal migrants, with those of households that did not receive remittances, Adams (2006) found that both internal and international remittances reduced poverty. In a study of 2400 municipalities, studying the proportion of households receiving remittances and the poverty headcount measure, Lopez Cordova (2004) found that a higher level of remittances was associated with lower poverty in 2000.

At the cross-national level, the findings of Adams and Page (2003) suggests that a 10 percent increase in per capita remittances would lead to a 3.5 percent decline in the share of people living in poverty. Similarly, the World Economic Outlook (2005) showed that a 2.5 percent increase in the remittances to GDP ratio would lead to a 0.5 percent decline in poverty. Using a large cross-country panel dataset, Acosta et al. (2008) showed that, given initial country conditions, remittances in Latin American and Caribbean (LAC) countries generally lower poverty, but the elasticity of poverty reduction with respect to remittances differs significantly by country.

To the author's knowledge, no study has explored the impact of remittances from migration in relation to the poverty in Myanmar. This gap is due to the lack of comprehensive and nationally representative data on migration and remittances. This chapter attempts to find enough evidence to interpret any causal impact of migration related remittances on poverty.

3. Methodology

Although the idea that migration is consistent with the reduction of poverty seems to be a conventional fact, careful methodological attention to measure the extent of such impact is still an important issue. Generally, assessing such an impact requires the observation of at least two different states for

observed households. Therefore, longitudinal data are required in obtaining consistent results to analyze the impact of migration. However, the availability of panel data is limited in developing countries. Thus, a consistent estimate of such impact in developing countries is difficult to achieve.

In the study of the impact of migration, a number of statistical techniques use longitudinal, as well as cross sectional data. Although the application of panel data is an efficient way to identify migration impact because the researcher can use the control of time-invariant factors that cannot be observed, the availability of such kind of panel data is limited in developing countries. Thus, consistent calculations may not be obtained in these countries. Subsequently, counterfactual analysis is applied to evaluate the impact of migration by estimating the potential outcomes for households without migrant members using cross section data and to solve the problem of scarce panel data (Adams, 1989; Ravallion, 2009). Therefore, in applying cross sectional data, this paper will estimate counterfactual outcomes that would be obtained if the household decides not to migrate.

3.1 Parametric counterfactual analysis

If the migrant had positive earnings before leaving his/her household, the income of remittance-not-receiving households is likely to be lower after migration takes place. Thus income reported by household with migrants, but not receiving remittances, is not a good representation of the situation of households before having migrants. Therefore, estimating the effect of migration and remittances on welfare and inequality would necessitate the consideration of counterfactual income that the household would have had if the household had decided not to send migrants. To solve this problem, this paper imputes per capita household expenditure for remittances-

received household in the counterfactual scenario of not receiving remittances and not having migrants. If the characteristics of households with migrant and without migrants are identical or if it is randomized selection within the population, coefficients obtained for households without migrants can be transposed onto households with migrants. There are several issues that need to be discussed. In the absence of migrants' characteristics, assumptions about the number and the demographics of migrants are required. Generally, if migrants are more qualified and skillful, then they can earn more money than those who remain at home. The new economics of labor migration suggests that decisions to migrate depend not only on the characteristics of individual migrants but also on the household's characteristics (Stark & Bloom, 1985; Stark, 1991). Based on the decisions of household and individual migrants, some households participate in sending migrants while others do not. In this case, the use of ordinary least squares (OLS) with the sample of households without migrants overlooks the bias of endogenous selection of households having migrants and provides over-estimates for the impact of migrant remittances. To control for the possibility of having migrants, a variable that represents the "propensity to migrate" is added in the context of the two-step estimation framework proposed by Heckman (1979). This framework has been applied for surveys in Latin America and Caribbean countries and sub Saharan Africa (Acosta et al., 2008).

3.2 Econometric framework

In this paper, migration is considered an indicator variable of binary type. Such binary treatment effect can be estimated using social experiments, regression models, matching estimators, and instrumental variables (Imbens & Wooldridge,

2009). Each of these methods has pros and cons depending on the type of available data. In this paper, migration is treated as an indicator variable of binary type. The empirical analysis of this paper is based on the method of instrumental variables. The basic structures of equations that can show the effect of treatment on outcomes are as follows:

$$E(y_i | x_i, m_i) = f(\alpha x_i + \delta m_i) \quad (1)$$

$$\Pr(m_i = 1 | x_i, z_i) = g(\theta x_i + \beta z_i) \quad (2)$$

Where (y_i) is the outcome of primary interest and the expected value of y_i , given x_i and m_i is explained by a linear combination of explanatory variables x_i and indicator variable m_i indicating whether the dependent variable is observed or not. x_i and z_i are vectors of exogenous variables, while α, β, δ and θ are vectors of unknown coefficients.

Under the parametric estimation, this paper imputes per capita household expenditure for remittances received by households with migrant members in the counterfactual scenario of not receiving remittances and not having migrants. The estimated model is the following log-level household per capita expenditure equation:

$$\log Y_i = \alpha + \beta X_i + \gamma H_i + \mu_i \quad (3)$$

where Y_i is the per capita household expenditure.

The vector X_i contains all variables of household characteristics including demographic and location covariates that predict household welfare. Vector H_i is a set of characteristics describing the household's head and μ_i is unobserved heterogeneity in expenditure pattern. The resultant estimated coefficients allow for the prediction of the counterfactual expenditure for remittances-receiving

households. Following Heckman, this paper constructs Heckman's selection equation using a probit specification.

$$M_i^* = \alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i + v_i \quad (4)$$

$$M_i = \begin{cases} 1, & \text{if } M_i^* > 0 \\ 0, & \text{otherwise} \end{cases} \quad (5)$$

$$\log Y_i = \alpha_2 + \beta_2 X_i + \gamma_2 H_i + \beta_\lambda \lambda_i + \varepsilon_i \quad (6)$$

Where M_i^* is a latent variable and a linear outcome of the covariates Z_i and a residual term v_i .

Although the covariates Z_i may overlap with H_i , it is assumed that at least one element of Z_i is a unique and significant determinant of M_i but this element needs to be independent from the expenditure of household with no migrants. In practice, it is difficult to obtain the variables that are exogenous in migration and expenditure equations (Adams and Cuecuecha, 2010). Realizing that social networks are an important force to make decision for sending migrants, this paper chooses the proportion of household with migrants in a specific geographic location as a proxy for social networks to determine M_i with no correlation to household per capita expenditure. This implies that the higher the proportion of household with migrants is, the greater the probability of sending migrants will be. This is because better social networks provide information about job opportunities and secure employment with the lower costs of migration especially for rural people. In equation (4), only the sign of M_i^* can be observed, that is, M_i^* is equivalent to a negative or a positive value. According to the sign of M_i^* , the binary choice of households, that is whether receiving or not receiving remittances, can be observed as in equation (5). It means that negative value of M_i^* indicates the household that does not

receive remittances from migrants and positive value of M_i^* , otherwise. For a second step, equation (6) is an expenditure equation for non-recipient households.¹

The Heckman selection model provides consistent, asymptotically efficient estimates for all parameters. Therefore, the estimation procedure consists of a two-stage process. In the first stage, probit estimates of the selection equation are obtained to account for differences between the two sub-samples for household with remittances sending migrant and without migrant (not receiving remittances). In other words, the decision for sending or not sending migrants is a function of observed variables and unobserved ones. Basically, the idea of this estimator is to evaluate the impact of indicator for being a household with and without migrant and to control directly for the correlation of indicator dummy variable with the unobservable error term in the outcome equation. In Heckman's model, this is referred as the inverse of the Mills' ratio. Following Heckman's procedure, probit estimates are obtained from following the selection equation.

$$\begin{aligned}\Pr(y_i \text{ observed} | z_i) &= \Phi(z_i\gamma) \\ &= \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)\end{aligned}$$

From these estimates, Heckman's inverse of the Mills' ratio, λ_i for each observation i is computed as:

$$\lambda_i = \frac{\varphi(z_i\hat{\gamma})}{1 - \Phi(z_i\gamma)}$$

¹ For equation (4) and (6) the assumptions are $\mu_i \sim N(0, \sigma)$, $v_i \sim N(0, 1)$, and $\text{corr}(\mu_i, v_i) = \rho$, where $\rho \neq 0$ and standard regression techniques applied to the first equation yield biased result.

$$\lambda_i = \frac{\varphi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)}{1 - \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)} \quad (7)$$

$$\beta_\lambda \lambda_i = E\left(\frac{v_i}{u_i} > -\beta_1 X_i - \gamma_1 H_i - \omega Z_i\right) \quad (8)$$

where φ is the normal density and Φ is normal distribution.

In the second step, the expenditure equation is estimated to obtain β by adding the regression equation with the choice of households. Under the assumption where the unobservable error term and unobserved variables are assumed to follow a joint normal distribution, the conditional outcome expectations are:

$$E(Y_i \setminus M_i = 1) = E(y_i \setminus M_i^* > 0) = \beta_1 X_i + \gamma_1 H_i + \beta_\lambda \lambda_i$$

Where $\beta_\lambda = \rho\sigma_v$ and the impact of being household with remittances sending migrants can be constructed easily. If λ_i can be controlled, the remaining unexplained component ε_i will have the usual desirable i.i.d. properties. If λ_i is a significant predictor of earnings, it means that the selection into the non-migration status is indeed correlated with factors that affect the household earnings, implying that OLS estimates of equation (3) would be inconsistent. Since, the purpose of this paper is to analyze an underlying regression model or to predict the per capita expenditure household that would be observed in the absence of selection, it is appropriate to apply the Heckman's two-step procedure.

3.3 Variable selection

Considering the choice of basic unit of analysis is important before constructing the empirical model in relation to welfare. In Myanmar, where agriculture and small enterprises are major sources of income and where expenditure

is collected among household members, choosing the household unit as the unit of analysis is an appropriate choice. Household consumption and household incomes are commonly used to indicate poverty and welfare. Shan and Stifel (2003) suggest that income is commonly used to measure poverty in developed countries, whereas consumption expenditure was used favorably as an indicator for poverty in developing countries. In Myanmar, being a developing country, welfare aggregates based on consumption expenditure seems to provide a more accurate indication of household's well-being than welfare aggregate based on income because income usually varies across seasons, whereas consumption remains stable. Moreover, households normally remember exactly what they have consumed rather than what they have earned. An accurate estimate of income is difficult to obtain because most people who take part in the agricultural sector are self-employed. Thus, using per capita household expenditure as an indicator of poverty and welfare of household seems practical.

The next challenge is to decide which variables should be included in the analysis of household welfare. Generally, based on a theoretical model for how household income, consumption, or poverty is determined, a standard choice of variable can only be made. According to growth and production theory, as the income and consumption of households and individuals are related to their production capacity, their income and consumption depend on their access to production factors and the quality of these production factors. Principally, a significant determinant of income or production is human capital, in terms of education or experiences (Mincer, 1958; Schultz, 1988). The environmental condition can also influence the income and consumption of the household or individual in several ways. Thus, institutions, public policy, and the amount and quality of public

infrastructure are important characteristics that affect household production that may differ in terms of location.

As mentioned above, information on household consumption are collected from household members, which takes into account additional household characteristics, such as household size or the share of working age people relative to dependent children and elders. Most household heads often act as the main income earner. Thus, in this paper, the human capital characteristics of household heads, such as age and gender are included in predicting household expenditure. If more than one income earner exists in households, the head's education level likely affects the household's earning capacity. In this case, the highest educational attainment of people in the household should be included as household income predictors (Joliffe, 2001).

From the probit specification, households who are non-recipients of remittance are obtained by using the same set of variables as in per capita expenditure equation. The basic idea of using these variables follows the standard human capital model (Becker, 1993), specifying that human capital variables are likely to affect migration because more educated people could enjoy greater possibilities of employment and expected income earning in destination areas. Following the standard literature on migration and remittances, this equation is augmented by one additional variable as the exclusion restrictions, the proportion of household with migrants in a specific geographic location as a proxy for the presence of migrant social networks.

4. Data and Summary Statistics

4.1 Data

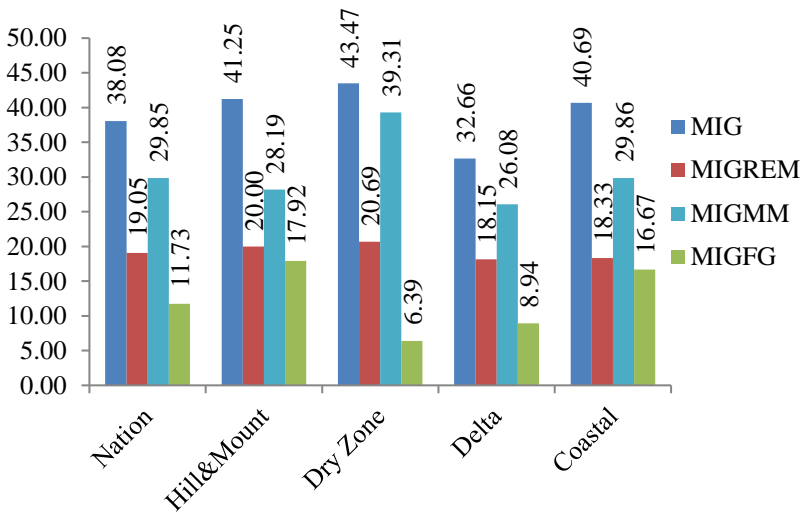
This study uses both ground survey data and satellite data. The ground survey data, the Myanmar Poverty and Living Conditions Survey (MPLCS), was conducted by the World Bank and Myanmar's Ministry of National Planning and Economic Development in the year 2015. Further, daytime and nighttime satellite imageries are applied in order to present human activities and urban change at regional scale. Daytime high spatial resolution imagery (HSRI) data are obtained from Open Street Map (OSM) data files providing geographically referenced data, information on transport networks and location or service centers. Nighttime light (NTL) emissions obtain from the Version 4 DMSP-OLS Nighttime Lights Time Series of National Oceanic and Atmosphere Administration (NOAA).

The MPLCS data set provides the demographic composition of household members and socioeconomic characteristics that contain the information that is applicable to the purposes of this study. Regarding the information about migration and remittances, the MPLCS asks the questions “Are there any individuals who were part of the household during the last 10 years, but currently live abroad or elsewhere in Myanmar and are no longer part of this household?” and “Has anyone in the household has received remittances from anyone outside of the household (either abroad or elsewhere in Myanmar) during the last 12 months?” On the basis of the first question, households with migrant members can be observed directly. The second question focuses on whether the household receives remittances or not. The important fact to be noted is that some household may face the case in which

they may have family members living elsewhere as migrants but do not receive remittances.

Applying the information from these two questions, this paper classifies households with at least one migrant (MIG) member, households with at least one migrant and receiving remittances (MIGREM), households with at least one internal migrant (MIGMM), and households with at least one international migrant member (MIGFG) in all agro-ecological zones. In all zones, migration can be studied because more than one third of the households in each zone have at least one migrant member (Figure 1).

Figure 1. Shares of Households



Source: Author's calculation

On average among households with migrants, almost half receive remittances (19.1 percent of the 38.1 percent of households with migrants). It should be stressed that the share of households with at least one internal migrant are much higher than that of households with at least one international

migrant in all zones. In order to complement the survey based household data, building density, paved and unpaved road lengths and NTL are added in this study (Appendix A). Krizhevsky, Sutskever, and Hinton (2012) state that the objects obtained from daytime and nighttime satellite imaginaries are strongly correlated with local income and wealth. A list of variables used in this paper is presented in Table 1, including log per capita expenditure, explanatory variables and exclusion restriction.

Table 1. Description of Variables

Variable name	Description
log(Y)	Log of per capita household expenditure
hh_mig	Dummy variable for household with at least one migrant: yes=1
hh_migrem	Dummy variable for remittance receipt household from migrant
poor	Dummy variable for poor household
Household head Characteristics	
hd_age	Head's age in years
hd_age2	Age-squared of head
hd_gender	Dummy variable for gender of head: male=1
hd_edu	Years of schooling for head (formal education)
hd_noedu	Dummy variable for head with no education
hd_infedu	Dummy variable for head with no formal education
hd_priedu	Dummy variable for head with primary education at most
hd_secedu	Dummy variable for head with secondary education at most
hd_hgedu	Dummy variable for head with higher education
Human capital characteristics	
avg_edu	Average years of schooling in each household
max_edu	Maximum level of educational attainment of household member
u15	Number of household member younger than 15

o65	Number of household members aged older than 65
hh_priedu	Number of household members with primary education
hh_secedu	Number of household members with secondary education
hh_hgedu	Number of household members with higher education
tot_work	Number of household members currently works
temp_job	Number of household members with temporary job status

Physical capital characteristics

hh_ownland	Dummy variable for owned-land household
hh_ownhouse	Dummy variable for owned-house household

Exclusion restriction

pro_mig (Network)	Proportion of household with migrants in primary sampling unit
rual	Dummy for household lives in rural
HM_zn	Dummy for household lives in Hills and mountains zone
Dry_zn	Dummy for household lives in Dry zone
Delta_zn	Dummy for household lives in Delta zone
Coastal_zn	Dummy for household lives in Coastal zone
NTL-index	Night time light index
Building	Density of building in districts
Road	Road length in districts (kilometer)

4.2 Characteristics of the sample

According to the MPLCS, a summary of socioeconomic and demographic characteristics of all households and the sub-samples that (i) receives remittances from migrants, (ii) does not have migrants, and (iii) receive remittances are presented in Table 2. The subsample of remittance received households includes the households who answered completely to the question of whether or not they received remittances from migrants. According to MPLCS about 20 percent of all households reported that they received remittances.

Table 2. Summary statistics

Variable of interest	All households	Households		Difference	T-test
		With remittance	Without remittances		
Sample size	3648	695	2953		
Sample proportion	1	0.19	0.81		
Per capita Expenditure (mean)	4704.925 (164.238)	4533.059 (321.111)	4745.374 (188.307)	0.0541	0.244
Poverty incidence (headcount index)	0.33 (0.47)	0.31 (0.46)	0.33 (0.47)	-0.0180	0.92
Household head characteristics					
Age	50.96 (14.42)	57.27 (12.72)	49.47 (14.39)	7.7925	0.00
Male	0.78 (0.42)	0.68 (0.47)	0.80 (0.40)	-0.1263	0.00
Average years of schooling	4.99 (4.11)	4.58 (3.96)	5.08 (4.14)	-0.4953	0.0042
No education	0.0140 (0.0019)	0.0086 (0.0035)	0.0152 (0.0022)	-0.0068	0.182

Informal education	0.1228 (0 .0054)	0.1583 (0.01385)	0.1144 (0 .0058)	0.0349	0.0015
Primary	0.400 (0.008)	0.401 (0.019)	0.400 (0.009)	0.001	0.954
Secondary	0.29 (0.45)	0.27 (0.44)	0.30 (0.46)	-0.03	0.1653
Higher	0.06 (0.24)	0.05 (0.21)	0.06 (0.24)	-0.01	0.145
Other households' characteristics					
Household size	4.56 (2.15)	4.34 (2.14)	4.62 (2.14)	-0.28	3.13
Aged under 15	1.32 (1.32)	1.21 (1.33)	1.35 (1.32)	-0.14	2.47
Working age (15-65)	2.97 (1.54)	2.73 (1.55)	3.02 (1.54)	-0.29	4.50
Aged over 65	0.28 (0.55)	0.39 (0.62)	0.25 (0.53)	0.14	-6.35
Human capital					
Max-education	10.24 (0 .0883)	10.53 (0.2075)	10.17 (0.0976)	0.36	0.1181

primary	2.91 (2.05)	2.80 (1.89)	2.94 (2.08)	-0.14	0.0922
Secondary	1.34 (1.41)	1.27 (1.36)	1.35 (1.43)	-0.08	0.1708
Higher	0.32 (0.78)	0.27 (0.66)	0.33 (0.81)	-0.06	0.0891
No. of work-person	1.88 (1.32)	1.59 (1.27)	1.95 (1.32)	-0.36	0.000
No. of person with permanent job status	0.474 (0.0147)	0.355 (0.0265)	0.5025 (0.0171)	-0.148	0.0001
No. of person with temporary job status	0.18 (0.50)	0.15 (0.46)	0.18 (0.51)	-0.03	0.1155
Agriculture income	0.44 (0.50)	0.38 (0.49)	0.45 (0.50)	-0.07	0.0011
Manufacture income	0.2099 (0.0067)	0.1856 (0.0147)	0.2157 (0.0075)	-0.0301	0.0796
Service	0.4213 (0.0081)	0.3827 (0.0184)	0.4304 (0.0091)	-0.048	0.0220
Physical capital					
owned-house	0.86	0.92	0.84	0.08	-5.43

	(0.35)	(0.27)	(0.36)		
Regional characteristics					
Rural	0.63 (0.48)	0.67 (0.48)	0.63 (0.48)	0.04	-0.77
HM	0.20 (0.40)	0.21 (0.41)	0.20 (0.40)	0.01	-0.72
Dry	0.20 (0.40)	0.21 (0.41)	0.19 (0.40)	0.02	-1.25
Delta	0.41 (0.49)	0.39 (0.49)	0.41 (0.49)	-0.01	1.16
Coastal	0.20 (0.40)	0.19 (0.40)	0.20 (0.40)	-0.01	0.55
Urbanization Index					
NTL	3.90 (10.25)	3.56 (10.27)	4.00 (10.24)	0.402	0.93
Building	38090.08 (68137.73)	34969.12 (62824.29)	38824.61 (69318.71)	-3855.49	1.34
Road	5.00 (3.51)	5.23 (3.25)	4.93 (3.57)	0.3461	-2.34

Standard errors in parentheses

Source: Author's calculation

The mean value of per capita household expenditure of remittance household is lower than both of the whole samples and subsample of non-remittances households. This means that, on average remittance households have lower per capita expenditure than non-remittances household. Applying the national poverty line², the samples are categorized into poor and non-poor households. Although according to per capita household expenditure remittance-received households are poorer than remittance-not-received households, it can be suggested that remittance from migrant can reduce poverty incidence since 31 percent of migrant households are poor while 33 percent of its counterpart subsamples and the whole sample are being poor and on average, heads of remittance-received households are less educated than heads of remittance-not-received households. About 12 percent of all households in the sample are headed by a person who did not attend formal education system, while the subsample of remittance-received households has the higher proportions in that category. However, the proportions of households in primary education category are indifferent between both subsamples. Thus, it can be concluded that remittance-not-received households have more educated household heads than remittance-received households.

Average household size of remittance-received households is lower than that of remittance-not-received households. When household members are grouped into 3 categories according to age (below 15, equal and between 15 and 65, and over 65), remittance-received households have a larger elderly dependency ratio than average household. According to household size and household member in each

² According to 2015 living condition in Myanmar, poverty line is set at 1303 kyat per day. An individual in Myanmar considered being poor if he or she lives in a household which can only afford 1303 kyat per capita consumption expenditure per day or less.

age category, it can be suggested that some of household members in working age category have migrated. Overall, the sample characteristics describe that on average remittance-received households in Myanmar are less poor and small family size with a higher educational attainment.

5. Results and discussion

Firstly, this paper explores per capita household expenditures for remittances-received households in the counterfactual scenario of the case in which household does not receive remittances and does not have migrants. Following Heckman's two-step procedure, the results of the estimation are reported in Table 3 with three models. Each pair of equations refers to three specification based on the different representations of education variables (head's educational attainment in category, and maximum and average of household education). In all models, the inverse Mills' ratio (λ), the variable associated with the propensity to not receive remittances from migrants, is positive and statistically significant at the 1 percent level and it can be suggested that the error component in non-selection equation and the error component in expenditure equation are positively correlated. It means that households with a higher probability of not having migrant are more likely to have higher per capita income. According to the standard migration argument, the findings are consistent because potential migrants decide whether to move for work by comparing the returns at home and in their potential destination. Thus, OLS estimation would provide upward biased parameter estimates. It means that unobserved factors that make remittances from migrants are more likely to be associated with higher per capita expenditure.

Table 3. Per capita expenditure model with household head's categorized education and maximum and average education in household using Heckman's model

	Model A		Model B		Model C	
Variable	(1) Exp	(2) Rem	(1) Exp	(2) Rem	(1) Exp	(2) Rem
hd_age	-0.010 (0.010)	-0.099*** (0.014)	-0.013 (0.010)	-0.097*** (0.014)	-0.013 (0.010)	-0.099*** (0.014)
hd_age2	0.000 (0.000)	0.001*** (0.000)	0.000 (0.000)	0.001*** (0.000)	0.000 (0.000)	0.001*** (0.000)
hd_male	0.041 (0.056)	0.188*** (0.062)	0.050 (0.056)	0.175*** (0.061)	0.037 (0.055)	0.176*** (0.061)
avg_edu			0.063*** (0.013)	-0.017 (0.016)		
max_edu					0.013*** (0.004)	-0.002 (0.005)
hd_noedu	0.132 (0.176)	0.408* (0.247)				
hd_inf	0.065 (0.082)	-0.083 (0.097)				
hd_pri	0.017 (0.064)	-0.095 (0.078)				
hd_sec	0.019 (0.075)	-0.069 (0.092)				

u15	-0.131*** (0.017)	-0.030 (0.021)	-0.097*** (0.019)	-0.054** (0.023)	-0.130*** (0.017)	-0.029 (0.021)
o65	-0.114** (0.055)	-0.015 (0.063)	-0.054 (0.057)	-0.048 (0.065)	-0.125** (0.055)	-0.011 (0.062)
age15_65	-0.139*** (0.022)	0.068** (0.028)	-0.118*** (0.023)	0.055* (0.028)	-0.143*** (0.021)	0.069*** (0.027)
tpr_educ	0.082*** (0.022)	-0.019 (0.028)	0.008 (0.025)	0.005 (0.031)	0.074*** (0.019)	-0.021 (0.024)
tsec_educ	0.129*** (0.034)	0.053 (0.043)	0.038 (0.037)	0.088* (0.048)	0.106*** (0.032)	0.066 (0.042)
hhm_work	0.084*** (0.027)	0.070* (0.035)	0.103*** (0.027)	0.073** (0.036)	0.089*** (0.027)	0.071** (0.035)
temp_job	-0.092** (0.044)	-0.019 (0.058)	-0.095** (0.045)	-0.012 (0.058)	-0.092** (0.044)	-0.019 (0.058)
nfarmown	0.084*** (0.027)	0.003 (0.037)	0.070** (0.028)	-0.005 (0.037)	0.081*** (0.027)	0.003 (0.037)
farmown	-0.004 (0.028)	0.033 (0.038)	-0.018 (0.029)	0.026 (0.038)	-0.007 (0.028)	0.033 (0.038)
ownhouse	0.160** (0.063)	-0.147 (0.090)	0.164** (0.066)	-0.130 (0.091)	0.161** (0.063)	-0.155** (0.090)
rural	-0.090* (0.055)	0.084 (0.067)	-0.043 (0.058)	0.071 (0.069)	-0.081 (0.055)	0.089 (0.066)
hm_zn	0.154** (0.075)	0.217** (0.093)	0.232*** (0.078)	0.204** (0.094)	0.163** (0.075)	0.225** (0.093)
dry_zn	0.174***	0.183**	0.196***	0.174**	0.173***	0.186**

	(0.061)	(0.078)	(0.064)	(0.079)	(0.061)	(0.078)
cos_zn	-0.218**	0.248***	-0.218***	0.230***	-0.215***	0.241***
	(0.070)	(0.087)	(0.071)	(0.088)	(0.069)	(0.087)
NTL	-0.022**	0.030**	-0.022**	0.027**	-0.023**	0.029**
	(0.010)	(0.013)	(0.010)	(0.013)	(0.010)	(0.013)
Building	0.000	0.003**	0.000	0.003*	0.000	0.003**
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Road	27.385	-34.979	24.469	-18.54	28.760	-35.606
	(28.37)	(36.18)	(29.30)	(36.75)	(28.28)	(36.10)
Pro-mig		-1.780***		-1.745***		-1.789***
		(0.152)		(0.149)		(0.151)
_cons	8.146***	4.203***	7.854***	4.164***	8.115***	4.170***
	(0.253)	(0.393)	(0.274)	(0.408)	(0.248)	(0.389)
athrho		0.777***		0.836***		0.776***
		(0.126)		(0.113)		(0.125)
lnsigma		0.122***		0.127***		0.120***
		(0.023)		(0.022)		(0.023)
Obs	3648	3648	3648	3648	3648	3648

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculation

The results in column 1, obtained from all models, are corrected for the selection bias associated with not having a migrant by the selection equation in column 2. All the selection equations show that the use of exclusion restriction variable, the proportion of households that received remittances from migrants in primary sampling unit, as the proxy of presence of migrant networks, is negative and statistically significant at 1 percent level. It means that the higher the presence of migrant networks, the lower the probability of the household never having had a migrant. Other estimates in the selection equations allow the model to be identified and explain the characteristics of the non-migrant households such as household head age, gender, number of working age people and number of currently working people and regional characteristics. Households with younger heads are less likely to have migrants but when they get older, the effect will be lower. Households with a man as head of household have a lower probability of having a migrant. Generally, woman headed households are often poor and remittances from migrants become one of the possible sources when they want more income to fulfill the requirements of their living condition. On the other hand, the need for income is lower in households with a larger number of working age people and currently working people. Although coefficients are not significant, it may be observed that higher dependency and more people with temporary work are “push” factors for migration. Since regional dummies of Hills-Mountains Zone, Dry Zone and Coastal Zone are statistically significant with positive value, households in these zones are less likely to have migrants than household in Delta Zone. Only dummy variable of household head with no education is positive and statistically significant while other estimates of education are not significant. Although estimates of education are not significant in all models, it can be suggested that the higher

educational attainment for both head and all household members reduce the probability of never having migrants. The explanations of urbanization index state that the greater the density of NTL and building is, the lower the probability of having migrants. It can be suggested that people in more urbanized areas are less likely to leave their home of origin since they satisfy their current settlement and employment condition. Although estimates of road lengths are not statistically significant, their explanation for migration is acceptable. The ease of transport networks induces people to move from one place to another. The explanations of all of urbanization index prove that they are practical to include in the shaping of migration decisions.

The obtained estimates from the log per capita expenditure equations can be used to interpret exactly as though observed data for all households in the sample and all estimated coefficients represent the marginal effects of the regressors in the log per capita expenditure equation. The obtained results state the significance of households' demographic composition. The number of persons at all ages in the household reduces the log per capita expenditure, while number of persons working and persons with higher educational attainment raises log per capita expenditure. The number of persons with temporary job status reduces the capability of spending. If a household owns a house or non-farm enterprises, the household can spend more. The marginal impact is weak for expenditure of households in farm enterprises reflecting that non-farm enterprise owners in Myanmar are more profitable than farm enterprise owners. Rural households can spend less than urban households. In terms of agro-ecological zones, household in coastal-zones spend less compared to households in other zones. Economic activities in coastal zone are not favorable for those who live in this zone. Although the marginal impact is far weaker for

density of building and road length, nighttime light index warrants a study of whether urbanization can reduce welfare of people.

These estimates allow constructing and comparing observed and counterfactual household per capita expenditure in order to know the impact of migration through remittances on the welfare of households left-behind (Margolis et.al., 2013). Following Joliff (2001), the rest of this paper applies model C, assuming that the maximum education attainment of people in the household is better to include as household income predictors. With model C, the next section will discuss about the impact of migration on welfare of left-behind household.

5.1 Impact of migration on welfare of remittance-received

Table 4 shows the observed average of per capita expenditure of household with remittances from migrants and its counterfactual to find the impact of migration on welfare of households left-behind. The results attempt to predict the welfare-increasing effect of remittances from migration, based only on the analysis of before (obtained from counterfactual scenarios) and after (observed) remittances receiving households. Generally, migration raises the welfare of households left-behind. However, the degree of impact is different across agro-ecological zones or rural and urban areas and also between poor and non-poor. In all agro-ecological zones, households with remittances from migrants experience the positive effect of migration and among these zones Hills and Mountains Zone has the highest positive effect of migration. It should be noted there is a surplus of labor in these zones. If they are able to participate in migration and get chances to get a job at their potential destination, their remittances can ease the credit constraint of their household

left behind. This finding is also consistent with the previous findings of probit estimate for not having migrants. Households with migrants in Coastal Zone receive the lowest welfare-increasing impact of migration. This result is same as the one discussed in the descriptive analysis.

Table 4. Average impact of migration on welfare of household left-behind

Level of interests	Average per capita household expenditure of remittances received household (Kyat)		
	After receiving remittances form migrants (Observed)	Before sending Migrants (Counterfactual scenarios)	Differences
Nation	4533.06	1784.51	2748.55
Hills-Mountains	5949.31	1872.66	4076.66
Dry Zone	6070.71	2080.38	3990.33
Delta Zone	3866.33	1780.82	2085.52
Coastal Zone	2616.13	1361.93	1254.20
Urban	5036.04	2047.76	2988.28
Rural	4259.22	1641.19	2618.03
Non-poor	6218.45	1882.31	4336.14
Poor	845.31	1570.52	-725.21

Source: Author's calculations

In terms of differences between rural and urban, urban households benefit more from migration than rural households. The reason is that rural migrants would lead to loss of labor and reducing production in agricultural activities if the wages earned by migrants are lower than the earnings from their source and if household receiving remittances do not invest in improving agriculture. However, in terms of poverty status, the poor suffers more from the negative impact of migration. If migration is costly and risky, there may be obstacles to participate in migrant labor markets for poor

households. Then the poor are excluded from the positive effects of migration.

5.2 Impact of migration on inequality

Table 5 shows estimates of the Gini Coefficient³ using counterfactual imputed non-remittance income for household with remittance sending migrants.

Table 5. Gini coefficient of remittance-received households and their counterfactual scenarios

Region	Gini coefficient
Nation	
Before receiving remittances from migrants	0.61507
After receiving remittances from migrants	0.36786
% Change	-0.40192
Urban	
Before	0.61109
After	0.33305
% Change	-0.45499
Rural	
Before	0.61405
After	0.3766
% Change	-0.38669
Hills-Mountain	
Before	0.67781
After	0.42155
% Change	-0.37807

³ Although many measures of inequality have been developed, this paper applies the Gini Coefficient, which is the most widely used single measure of inequality. It is based on the Lorenz curve, depicting the variance of the size of distribution of income from perfect equality.

Dry Zone	
Before	0.57831
After	0.40842
% Change	-0.29377
Delta Zone	
Before	0.59171
After	0.30093
% Change	-0.49142
Coastal Zone	
Before	0.57151
After	0.31513
% Change	-0.4486

Source: Author's calculations

In comparison to results obtained when using observed income of household with no remittances from migrants, for the whole nation, remittances from migrants contribute to a 40.19 percent decrease in inequality. Thus, remittances from migrants have a positive equalizing effect. Comparing urban and rural effects, positive equalization effect in urban (45.50 percent change) is larger than that in rural (38.67 percent change). Income distribution becomes more equal in Delta Zone with the lowest Gini coefficient of 0.3 after receiving remittances from migrants. And also, it can be seen that the Delta Zone has the highest positive equalization effect of migration (percent change of 49.14).

5.3 Impact of migration on poverty

This section attempts to estimate the poverty reducing effect of remittances based on the analysis of observed per capita expenditure assuming that the effects of migration would be over-estimates. In order to analyze the poverty impact of migration, this paper applies FGT weighted poverty

measures⁴ developed by Foster, Greer and Thorbecke (1984). According to the FGT weighted poverty measure, headcount poverty index, poverty gap and squared poverty gap are applied based on poverty line set by 2015 living condition in Myanmar. In 2015, an individual in Myanmar is considered to be poor if he or she lived in a household with per consumption expenditure of 1303 kyat per day or less.

Using this poverty line, Table 6 summarizes the simulations of effects of remittances from migration on poverty levels. The results are what we would expect. On average, when moving from a scenario without remittances to with remittances, poverty is estimated to fall by 34 percent. It can be seen that remittances from migration leads to large reduction in poverty levels of 31.03 percent and 20.44 percent in the scenario without remittances and with remittance respectively. It can be seen that this level of impact of migration on poverty headcount figures hide important disparities between urban and rural and among agro-ecological zones. Notably, urban poverty is estimated to fall by more than 52 percent while rural poverty is estimated to fall by 25 percent. Besides, more than one-fourth of rural households are still below the poverty line despite sending out migrants while about 10 percent of urban households are poor. The level of poverty reduction caused by migration is much lower in rural areas compare to urban areas. Among the agro-ecological zones, the lowest level of poverty reduction caused by migration (6 percent) is found in coastal zone. After having

⁴ An estimate of FGT poverty measures can be expressed as $P_\alpha = \frac{1}{N} \sum_{i=1}^q \left(\frac{z-y}{z} \right)^\alpha 1(y_i \leq z)$: where N = total number of household, q = the number of poor households, z = scalar value of poverty line, y = household per capita expenditure per day, α = degree of poverty aversion meaning that P_0 is poverty headcount index, P_1 is poverty gap and P_2 is squared poverty gap.

migrants, the poverty incidence in Coastal Zone is 44 percent which is far higher than the national poverty incidence, 20 percent.

Table 6. Poverty measures of migrant-sending households and their counterfactual scenarios

Region Nation	Poverty headcount (%)		Poverty Gap (%)		Squared Poverty Gap (%)	
Before remittances	31.0307	(0.4627)	11.1638	(0.2096)	5.64	(0.1383)
After remittances	20.4222	(0.4032)	4.9874	(0.1321)	1.99	(0.0732)
% Change	-0.3419		-0.55325		-0.6466	
Urban						
Before	23.0481	(0.4213)	7.44	(0.1676)	3.36	(0.1009)
After	9.3844	(0.2917)	1.86	(0.0755)	0.60	(0.0336)
% Change	-0.5928		-0.74943		-0.8200	
Rural						
Before	35.62176	(0.4790)	13.31	(0.2276)	6.95	(0.1542)
After	26.77029	(0.4429)	6.78	(0.1527)	2.79	(0.0873)
% Change	-0.2484		-0.49021		-0.5983	
Hills-Mountain						
Before	28.75	(0.4529)	12.45	(0.2382)	7.22	(0.1728)
After	15.13889	(0.3587)	4.05	(0.1264)	1.76	(0.0725)
% Change	-0.4734		-0.67495		-0.7563	
Dry Zone						
Before	21.3889	(0.4103)	6.99	(0.1678)	3.30	(0.1059)
After	12.2222	(0.3278)	2.72	(0.1004)	1.08	(0.0569)
% Change	-0.4286		-0.61078		-0.6730	
Delta Zone						
Before	29.2339	(0.4550)	9.58	(0.1887)	4.48	(0.1163)
After	15.5242	(0.3623)	2.99	(0.0929)	0.95	(0.0427)
% Change	-0.469		-0.6877		-0.7871	

Coastal Zone						
Before	46.6667	(0.4992)	17.33	(0.2410)	8.80	(0.1607)
After	44.0278	(0.4968)	12.32	(0.1944)	5.29	(0.1162)
% Change	-0.5655		-0.289		-0.3990	

Source: Author's calculations

Regarding poverty gap and squared poverty gap, the results suggest that, on average, remittances from migrants tend to reduce the intensity and severity of poverty. At the national level, intensity and severity of poverty are reduced from 11.2 to 5 percent, and from 5.6 to 2 percent respectively. Comparing rural and urban areas, migration can reduce more poverty in urban than in rural areas, by 74.9 percent and 49.02 percent respectively. Among the agro-ecological zones, migration greatly reduces poverty by 68.8 percent in the Delta Zone. Therefore, at the national level there is a positive association between migration and reducing the intensity and severity of poverty.

6. Conclusion

This paper aims to estimate the household welfare impact of migration through remittances in the case of Myanmar. In order to predict household per capita expenditure, following Heckman's two-step procedure, this paper finds evidence of sample selectivity, where the probability of being a household with remittance sending migrants would be higher if welfare outcomes of household are high because of the decision of households to take part in migration is a function of their individual characteristics and those of their families and their communities. It can be concluded that overall the impact of migration through remittances on welfare of households left-behind is positive. However, there is a difference in impacts from migration among agro-ecological zones and between

rural and urban areas. Moreover, migration in Myanmar has a positive equalizing effect and positive poverty reducing effect. Similarly, the degree of these effects varies among zones and between rural and urban areas.

This study also finds evidence of the negative impact from migration on the welfare of poor households. It is likely that if migration is costly and risky, when poor households take part in migration, they may acquire more cost than benefit from migration while non-poor obtain positive migration impact. Some poor in Myanmar use informal loans with high interest rates to cover the cost to migrate. Mostly, in the migrant labor market, unskilled labor are vulnerable to losing their jobs. In this case, households left-behind need to pay interests before receiving remittances from their migrants and the systems used for sending remittances to households left-behind are informal, since most of poor in Myanmar do not have education for using bank and other financial business. In order to be pro-poor and allow poor households to benefit from migration, the obstacles to participating in migration should be lowered for the poor.

Based on the findings, this paper suggests that among the agro-ecological zones, the conditions of labor market are better in Delta Zone. The reason is that although it has the lowest share of household with migrants as well as households with remittances sending migrants, the poverty reducing impact and equalizing impact are high in the Delta Zone. Moreover, the results from the non-selection of migration equation states that the probability of not being households with migrants from other zones are less. It can be suggested that households in these zones face lack of employment opportunities and they are likely to send their labor surplus as migrants to Delta Zone where employment opportunities are better. Since Yangon, the former capital city, is located in Delta Zone, formal employment is more developed and the

reduction of poverty and equalizing effect are larger in Delta Zone than those in other zones. Although this paper focuses on the effects of internal migration on poverty and inequality in Myanmar, it captures the patterns of international migration. Beyond internal migration, international migration from Myanmar has also increased. Therefore, further study is needed to compare the effects of remittances between internal and international forms of migration.

Finally, this study finds the evidence that there exists linkages between urbanization, migration and welfare outcomes of households. Households in more rural areas are more likely to have migrants. Mostly, in the early stage of development, growth may exist in urbanized areas while stagnation may be found in peripheral rural areas. As economic development proceeds, individuals move from rural to urban areas. Therefore, it can be suggested that in the context of development urbanization and migration plays a vital role in Myanmar. According to the results, degree of urbanization can somewhat affect the welfare of households. This evidence encourages conducting further study to investigate whether urbanization can raise welfare of people. Understanding the relationship between urbanization, migration and economic growth could contribute to conducting policy in more effective and socially desirable ways. Therefore, the role of urbanization and migration need to be studied for boosting economic growth, poverty reduction and balancing economy.

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Appendix

Nighttime and daytime satellite imageries have produced significant interest as a potential supplement to household data. Historically, nighttime lights (NTL), measuring human light activity captured by satellites, have been utilized in many economic models (Elvidge et al, 2007; Doll et al., 2000; Sutton et al., 2007). Nighttime light emissions are derived from nighttime satellite imagery provided by the Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS). With six sensors: F10(1992-1994), F12(1994-1999), F14(1997-2003), F15(2000-2007), F16(2004-2009) and F18(2010-2013), an archive of annual time series NTL data from the year 1992 to 2013 can be freely available from the website of Earth Observation Group, EOG: <https://ngdc.noaa.gov/eog/dmsp/downloadV4composites.html>.

Table A1 presents average NTL of Myanmar. Figure A1 shows differences of NTL in 1992 and NTL in 2012 and differences of NTL among all districts of Myanmar in 2012.

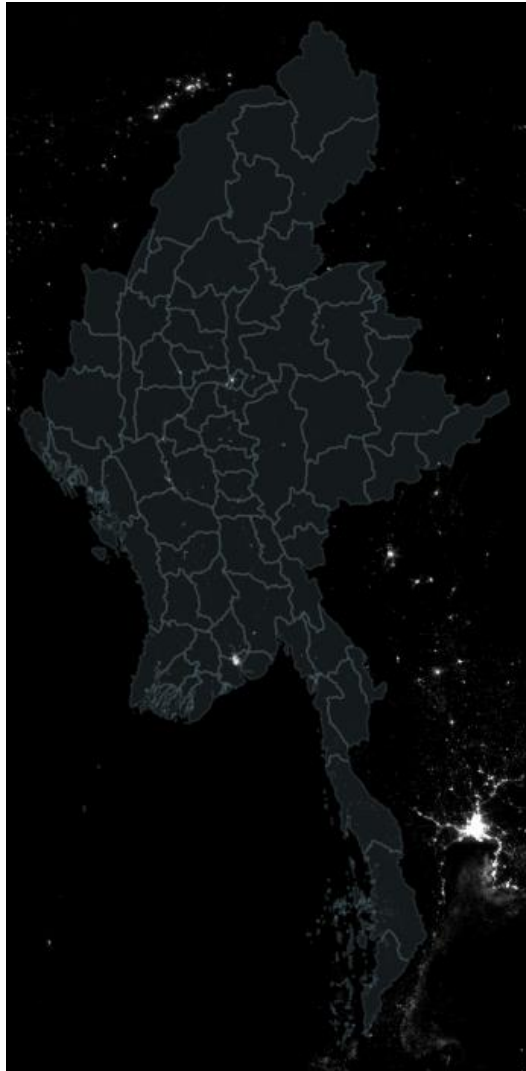
Table A1. Average NTL of Myanmar

Variable	Mean	Std.Dev	Min	Max
Average NTL (1992-1995)	0.6129	0.2922	0.2424	0.9057
Average NTL (1996-1999)	0.7997	0.2171	0.5878	1.0490
Average NTL (2000-2003)	0.7307	0.1362	0.5937	0.9045
Average NTL (2004-2007)	0.8162	0.2451	0.6034	1.1466
Average NTL (2008-2011)	1.3730	0.5036	0.9308	2.0300
Average NTL (2012-2013)	1.2809	0.6520	0.8199	1.7420

Source: Author's calculations based on DMSP-OLS/NTL dataset

Figure A1: NTL in Myanmar

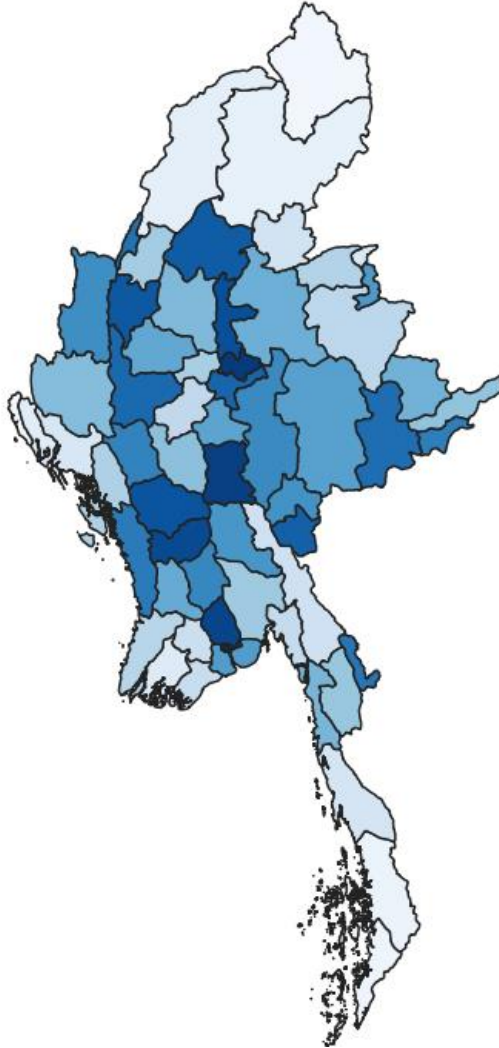
a. Average NTL in 1992



b. Average NTL in 2012



c. Average NTL among districts in 2012

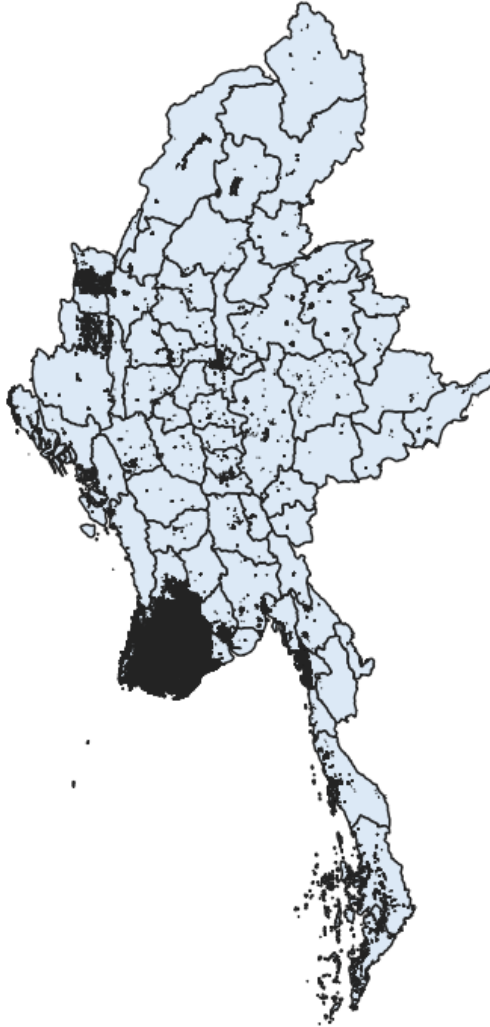


Source: Author's calculations based on DMSP-OLS/NTL dataset

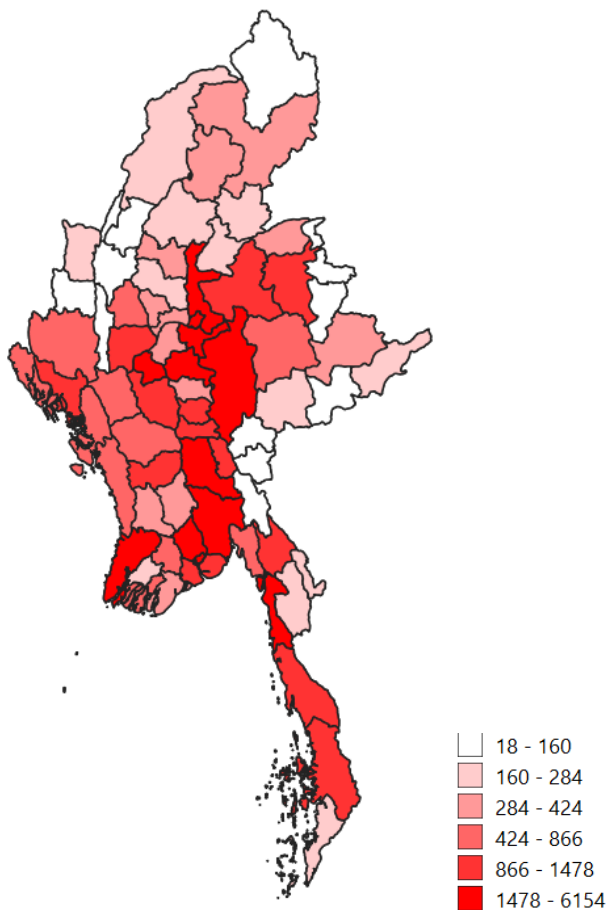
Moreover, continued technological advances in computer vision algorithms are allowing analysis to utilize valuable information from daytime satellite imageries. Daytime high spatial resolution imagery (HSRI) data can be obtained from Open Street Map (OSM) which provides object-based features by a topological data model including number of building and the density of paved and unpaved roads of different widths. Any interested parties can download OSM datasets from Open Street Map web site, <https://www.openstreetmap.org>. In this study, the data about number of buildings and length of road are from OSM and these data are converted into shapefiles data format by using Geographic Information System, QGIS. Obtaining data are presented in Figure-A2 and Figure-A3.

Figure A2. Number of Buildings in Myanmar

a. Number of buildings in Shapefiles Data format



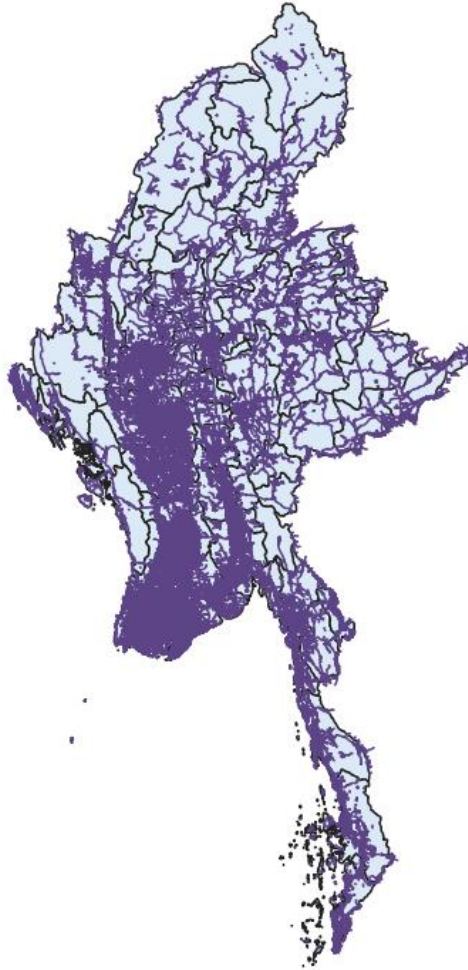
b. Distribution of buildings among districts in Myanmar



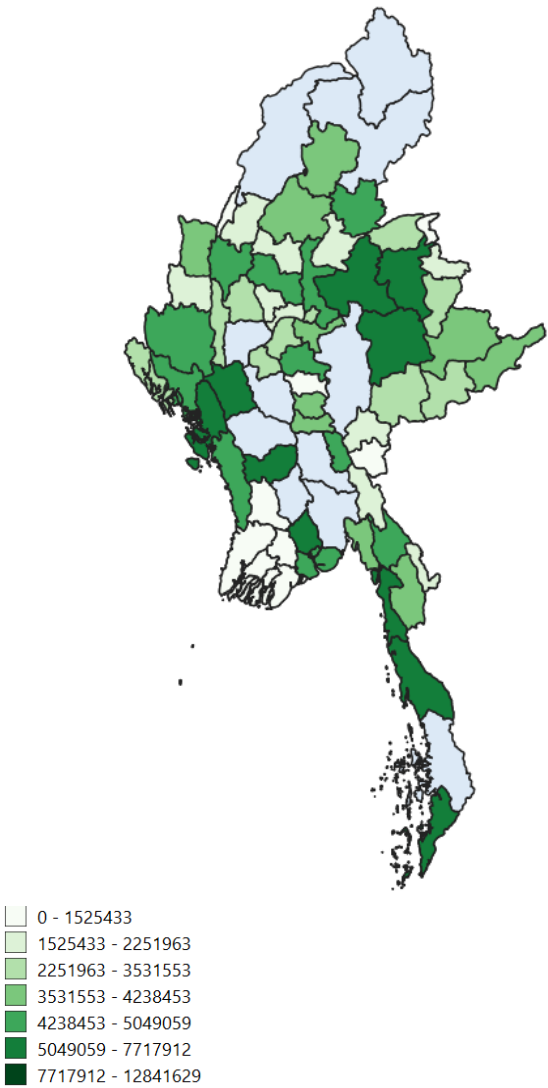
Source: Author's calculations based on OSM dataset

Figure A3. Length of roads in Myanmar

a. Length of roads in Shapefile data format



b. Length of roads among districts in Myanmar



Source: Author’s calculations based on OSM dataset

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Thailand's Personal Data Protection Act: An Understanding from the Perspectives of the European Privacy Law

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ABSTRACT

The Thai Personal Data Protection Act B.E. 2562 (2019) (PDPA) is Thailand's first omnibus law that governs personal data protection in Thailand. It is predominantly based on the General Data Protection Regulation (Regulation 2016/679 or GDPR) of the European Union that came into force in 2016. Hence, there are several similarities between the two.

As PDPA's practicality and enforceability remain largely untested in Thailand since its major operative provisions will come into effect in the middle of 2020. Thus, the author therefore compares PDPA with GDPR by investigating into GDPR and its applicability to determine best data protection practices for a company that deals with provision of financial services.

For personal data protection, PDPA and GDPR require satisfaction of one or more legal bases in order for a company to collect and process data of an individual. Obtaining consent is often seen as one method of this. However, the author finds that obtaining a consent is a key but – oftentimes – not necessary. There are several other legal bases that are as strong, if not stronger, than consent, e.g. contractual relationship and legitimate interests. Despite validity of legitimate interests as a legal basis, its coverage and applicability are not well-defined and yet conclusive. The company has to consider and evaluate individual experiences and expectations, along with industry best practices to carefully determine whether such legitimate interests have been realized and prudently balanced against individual rights.

Keywords: Laws, Privacy, Data Protection

JEL Classification: D82, G20, K20

1. Introduction

Disruption is an inescapable challenge for all industries and one of the most notorious is data disruption (Accenture, 2019).² The inexorable march of big data has been relentless and the trend is irreversible.³ It is the new oil whose value has been realized and harvested in all possible avenues. All kinds of businesses – from online retailers to offline conglomerate wholesalers – are mining this wealth of information to better serve their customers and such data is considered the main pathway to succeed.

Inundated with data, financial services are no different. The impact of data on financial institutions can hardly be overestimated.⁴ Financial data – ranging from bank transactions to online loan applications – convey messages to banks about what their customers are doing and what products are of their interests. Data analytics enhances banks' performance by improving how they segment, target, acquire, and lastly retain customers. It helps banks expand their customer bases and gain insight that may lead to further marketing opportunities, including new products, and new communication channels. For

² Some are tackling the so-called 'disruption challenge' very well; while others are not. Among top 10,000 companies, as much as USD 41 trillion in enterprise value is already exposed to disruption today.

³ Today, more data is generated in a 24-hour period than ever before (IBM, 2017) and by 2025, it is estimated that 463 exabytes of data will be created each day globally (equivalent to 212,765,957 DVDs daily) (World Economic Forum, 2019). The influx and outflow of data are originated from many sources, including but not limited to, personal devices, internet of things (IoT), machine learning and artificial intelligence (AI).

⁴ Just as cloud, the rise of IoT further explodes the amount of customer data gathered from networks of products; whereas the rise of open architecture (such as Open APIs) allows financial institutions to collect valuable data about their customers from data stored at other entities as well.

example, targeted and customized loan products for businesses with seasonal sales, predicted by big data models.

The paper is organized as follows. In the previous section I briefly outlined the background of data disruption, and demonstrated the extended benefits of big data, the phenomenon has challenged regulators to balance the said benefits with an appropriate level of data privacy right. Section 2 then recapitulates data privacy laws in the global context along with their developments and legal similarities (or lack thereof) among different jurisdictions. Section 3 focuses on the Thai personal data protection law and Section 4 highlights its major obligations, namely consent and validity of legitimate interests to collect and process data. The author delves into the same provisions of GDPR and attempts to explore GDPR's interpretation regarding those provisions. Multiple case laws and administrative rulings are examined to determine the extent to which the concept of consent and legitimate interests are put into use. Finally, the author summarizes the lessons learned from GDPR and offers a guidance for companies, and in particular, financial institutions, to navigate through this labyrinth of personal data protection laws.

1. Data Privacy Laws in the Global Context

Data privacy laws have never been as important as they are today. The number of privacy laws worldwide has grown from 20 in the 1990s to more than 100 at the present (Deloitte, 2015; UNCTAD, n.d.). Some countries have sectoral coverage. That is, different industries or economic sectors have their own data privacy laws. For instance, prior to 2019, the Thai Financial Institutions Businesses Act, B.E. 2551 (2008) (FIBA) governs major issues relating to data privacy that involves financial institutions, whereas the Thai Telecommunications Business Act, B.E. 2544 (2001) (TBA)

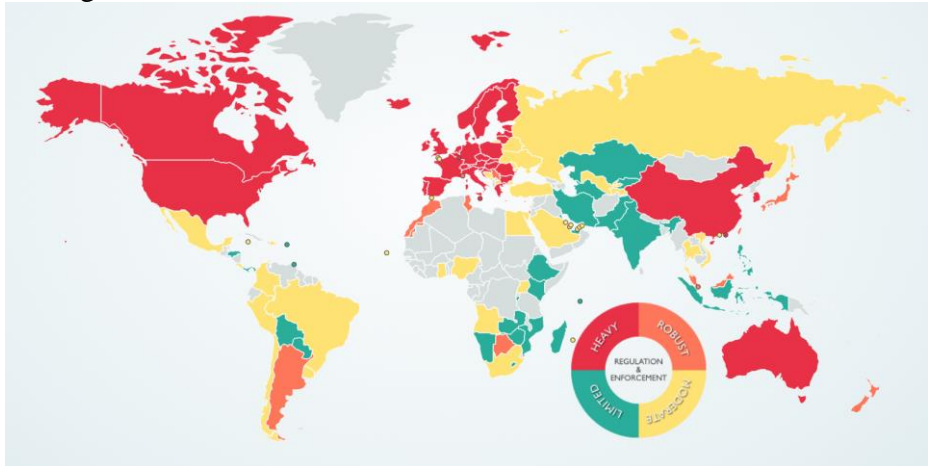
governs telecommunication data of individuals.⁵ On the other hand, some countries have omnibus coverage, with a national data protection law in place of, or complementary to, provincial or sectoral regulations. In the global context, the paper primarily focuses on GDPR. It is the European new framework for data protection laws that replaced the previous 1995 omnibus data protection directive and aims to harmonize data privacy laws across Europe and be a governing law applicable to all member states. GDPR has fully come into force since May 25, 2018. It ensures that personal data can only be collected and managed under strict conditions.⁶ Its obligations and implications toward data protection will be extensively discussed in Section 4.

While these data protection laws from different jurisdictions all benefit customers and preserve individual rights, there exist significant differences in beliefs and regulations concerning customer data around the world. These differences and their contrasting levels of rigidity burden companies who have to navigate through this labyrinth of inconsistency and, as things stand, will be one of the most challenging tasks going forward.

⁵ The US has several sector-specific and some omnibus data privacy laws that are enforced by individual states. For example, the California Consumer Privacy Act of 2018 (CCPA) applies across all sectors and introduces an overarching privacy protection. However, its coverage – by nature of being a state law – is limited to within the state of California.

⁶ As of 28 January 2020, the EU member states are also pushing reform on privacy regulation framework, the ePrivacy Directive. In the same fashion as GDPR, the proposed ePrivacy Directive ensures that all communications over public networks or electronic channels maintain respect for data privacy rights. It ensures that consent must be obtained before cookies are stored and used to enhance users' experiences in their computers.

Figure 1. Data Protection Law in Selected Jurisdiction



Source: DLA Piper, 2020

3. Personal Data Protection in Thailand

3.1 History of Personal Data Protection prior to 2019

Prior to 2019, before the Personal Data Protection Act, B.E. 2562 (2019) (PDPA), there was no single omnibus statutory law directly governing data privacy as well as the overarching issues of data protection in Thailand. However, the fundamental right to privacy has duly been recognized in the Constitution of Thailand while the general application of data protection and privacy is prescribed under the Civil and Commercial Code (CCC) and in some sectoral specific laws such as those governing financial services and telecommunication services.

The Constitution of Thailand codifies:

Section 32. A person shall enjoy the rights of privacy ...
Any act violating or affecting the right of a person ... or
exploitation of personal information in any manner
whatsoever shall not be permitted, except by virtue of a
provision of law enacted only to the extent of necessity of
public interest.

The Constitution upholds the rights of privacy and the government could only deprive a person of stipulated rights pursuant to laws. The provision acts as a safeguard from arbitrary denial of rights by the government and balances interests of individuals whose rights were deprived of and public interests that the laws bring about.⁷ However, for disputes among private entities and individuals, a court generally considers other bodies of laws – such as CCC or sectoral laws that impose specific obligations rather than the overarching concept in the Constitution (Decision of the Thai Supreme Court, 2015).

Among individuals, rights and duties of privacy including data privacy and data protection are applied through CCC under the principle of tort.

⁷ The provisions are somewhat similar to those of the US Amendments, where no person shall be deprived of liberty – in this case privacy – without due process of law. For example, the US Supreme Court first recognized a zone of privacy in *Griswold v. Connecticut* that upheld marital privacy and struck down bans on contraception (*Griswold v. Connecticut*, 1965). Pursuant to the Fifth Amendment and Fourteenth Amendment of the US Constitution:

“No person shall be ... nor be deprived of life, liberty, or property, without due process of law; ...” (U.S. Const. amend. XIV)

“... No State shall make or enforce any law ... nor shall any State deprive any person of life, liberty, or property, without due process of law; ...” (U.S. Const. amend. XIV)

Section 420. A person who, willfully or negligently, unlawfully injures the life, body, health, liberty, property or any right of another person, is said to commit a wrongful act and is bound to make compensation therefore.

Section 421. The exercise of a right which can only have the purpose of causing injury to another person is unlawful.

Pursuant to CCC, when a company has a duty to maintain privacy and safeguard information of an individual, if the company fails to keep the information safe or fails to protect it from unauthorized access causing damages to the individual, the individual may bring a case against a company under CCC.

Aside from FIBA and TBA explained earlier, specific laws such as the Credit Information Business Act, B.E. 2545 (2012) (CIBA) also provide data protection and safeguard individual data rights with respect to credit information and credit-related financial activities. However, like FIBA and TBA, coverage of CIBA is limited to data regarding financial statuses and credit records from financial institutions and rights of individuals are restricted only to those stipulated therein. As a consequence, an individual is unable to exercise other rights *per se* that he is not entitled to. For example, pursuant to Section 25 of CIBA⁸, an

⁸ Section 25. For the purpose of protections given to the Owner of Information, the Owner of Information is entitled to: (1) right to know which of his or her Information is kept by the Credit Information Company; (2) right to check his or her Information; (3) right to request for correction of incorrect Information; (4) right to object when his or her Information is incorrect; (5) right to be informed the result of the checking of his or her Information within specified time; (6) right to know causes of refusal of the application for Credit or services from Financial Institution in the case that the Financial Institution uses Information of Credit Information Company as reason for refusal; (7) right to appeal to the Committee pursuant to Section 29 ...

individual may not remove or withdraw his information from the credit bureau database since the law does not empower the individual accordingly (Decision of the Thai Supreme Court, 2009).

Despite the fact that several bodies of law are governing data protection and data privacy from different perspectives, attempts to enact an omnibus privacy law were made several times. In 2014, the Office of the Prime Minister first published the draft Data Protection Act in 2014 that provided criteria for collecting, using, and disclosing personal data. The 2014 draft granted personal data protection rights and established a Data Protection Committee. The draft underwent several rounds of changes and later was approved in principle by the Cabinet on 6 January 2015, but was further revised as proposed by the Council of State in May 2015. After several rounds of revision, in December 2018, the Council of State eventually approved the long-awaited draft Act and the National Legislative Assembly finally passed it into laws in 2019 (ETDA, 2020).

3.2 The Personal Data Protection Act, B.E. 2562 (2019) (PDPA)

PDPA is Thailand's first consolidated data protection law. It was published in the Thai Government Gazette on May 27, 2019 and has been in effect since May 28, 2019.⁹ However, the main operative provisions on data protection and individual rights¹⁰ will not come into force until after a one-year grace period from

⁹ The unofficial English version of PDPA can be found here: https://www.etda.or.th/app/webroot/content_files/13/files/The%20Personal%20Data%20Protection%20Act.pdf

¹⁰ Under Chapters 2, 3, 5, 6 and 7 and Section 95 and Section 96. Chapter 2: Personal Data Protection; Chapter 3: Rights of Data Subject; Chapter 5: Complaints; Chapter 6: Civil Liability; Chapter 7: Penalties and a few transitional provisions.

the publication date, i.e. May 27, 2020.¹¹ PDPA prescribes standards and practices on protection of personal data and issues relating to data privacy and imposes obligations on companies when collecting, using, and disclosing personal data.

4. Key Obligations and Practical Implications – from the Perspectives of GDPR

This section aims to delineate important aspects and illustrate key provisions of PDPA, which is largely based on GDPR. Most of GDPR's major provisions are considered new as there were no omnibus data protection laws in Thailand before. Hence, considering PDPA from the perspectives of GDPR will give companies, practitioners and individuals a better understanding on what implications PDPA could have on data protection and obligations that a company has to follow.¹²

Aside from analyzing GDPR to better understand PDPA, recognizing regional differences is equally important because customer data increasingly crosses sovereign boundaries. In the past, companies were often subject to regulation in a single jurisdiction (i.e. their domicile). Now they may need to account for their customers' locations, their storage centers, and data processing facilities when considering what

¹¹ As of April 22, 2020, due to the Coronavirus pandemic, the Digital Economy and Society Ministry is seeking to postpone enforcement of some of the main provisions under PDPA. Readers are advised to refer to official announcement or cabinet resolutions that may result in such delay or temporary suspension of PDPA. See more at <https://www.bangkokpost.com/business/1905210/delay-mulled-for-personal-data-law-enforcement>

¹² However, there are some provisions in PDPA that require further clarification by additional issuance of notifications and those secondary regulations. As a result, business practitioners and consumers are strongly recommended to keep updated.

regulations will apply to their activities. Particularly, for companies that engage foreign customers, process data internationally (including data of foreign entities processed domestically), or leverage multiple cloud-based service providers, identifying the appropriate jurisdictions may already be challenging.

The section then continues discussing the importance of obtaining relevant consent to proceed on data management. For businesses, it seems that obtaining valid customer consent ensures smooth and pleasant experiences for companies to manage customer data. However, it is unlikely the case that a company is capable of securing consent from all of its customers. That is, some of the customers might already lose contact with the company, while others might have established their relationship with the company long before PDPA was passed into laws. Hence, the company may need to rely on other legal bases to proceed with such customer data management. In this light, one of the less-rigid grounds that the company may turn to is ‘legitimate interests’. Unfortunately, PDPA and the Thai juridical branch have not provided guidelines or court decisions on disputes relating to legitimate interests yet. Therefore, considering GDPR practices to gain an understanding on PDPA may provide the company with noteworthy insight, preparing and equipping the company with a greater understanding to duly collect and process customers’ personal data.

4.1 Extraterritorial Jurisdiction

Jurisdiction is an aspect of state sovereignty, defined as juridical power and authority to hear, and adjudicate a dispute via exercising of relevant judicial power. Traditionally, domestic laws govern those who reside in a territory within a scope of sovereignty – not those outside, unless the laws

contain extraterritorial enforcement clauses. Therefore, by being a domestic law, PDPA *initially* applies to the collection, use, or disclosure of personal data by an entity¹³ that is in Thailand regardless of where the collection, use or disclosure of personal data takes place.

Not only does PDPA enjoy its domestic application, it also extends its enforcement extraterritorially. PDPA's extraterritorial jurisdiction applies to entities outside Thailand under two circumstances: (1) the collection, use or disclosure of personal data are of individuals who are in Thailand, or (2) their activities relate to the offering of goods or services to or behavior of individuals in Thailand.¹⁴ It is worth noting that PDPA specifically use the phrase 'in Thailand' rather than of the 'Thai nationality'. Therefore, PDPA also protects all individuals therein regardless of nationality. The extraterritorial application of GDPR takes the same approach. GDPR applies to the processing of personal data by companies established in the EU, regardless of whether the processing takes place in the EU. GDPR also applies if processing activities are related to the offering of goods or services to individuals in the EU or to the monitoring of behavior of individuals in the EU.¹⁵

One of the very first questions that a financial institution needs to carefully consider is whether PDPA is applicable to it. These extraterritorial jurisdictions warrant a thorough understanding to assess its applicability. In this light, PDPA formulates 3 layers to determine whether a company is subject to PDPA:

(1) is it located in Thailand?

¹³ PDPA Section 6. An entity subject to PDPA under 2 categories: data controller and data processor.

¹⁴ PDPA Section 5.

¹⁵ GDPR Article 3.

(2) does it offer goods or services in Thailand?

(3) does it monitor behavior of individuals in Thailand?

Any affirmative statement to any question stated above means the financial institution is indeed subject to PDPA, which is applicable to most of the financial institutions in Thailand by nature. For a foreign bank located outside Thailand, consider a centralized function that conducts financial surveillance for fraud or Anti-Money laundering and Counter Terrorism Financing (AML/CFT) or an ordinary marketing material that seeks customer information. Pursuant to PDPA's extraterritorial application, if that foreign bank engages Thai customers, manages or monitors data of Thai residents (or any entity in Thailand), the bank will be subject to PDPA. Also, if that foreign bank is located in the EU, given its location and GDPR's intra-territorial enforcement, it must satisfy GDPR as well. On the other hand, a Thai bank that uses data of EU residents is likewise extraterritorially subject to GDPR; and because it is a Thai incorporated company, it needs to domestically comply with PDPA as well. Hence, many financial institutions, in particular those that conduct businesses internationally, will be subject to various data protection laws from different jurisdictions depending on their coverage, groups of customers, and data collected.

As a case in point, the Canadian company, AggregateIQ Data Services Ltd (AIQ), was issued a warning by the United Kingdom's (UK) Information Commissioner's Office (ICO).¹⁶ AIQ was involved in targeting political advertising on social media to individuals whose information was supplied to them by various political parties and campaigns. After an

¹⁶ The UK's independent authority set up to uphold information rights in the public interest, promoting openness by public bodies and data privacy for individuals. It exercises supervision on GDPR and domestic laws relating to data protection.

investigation by ICO, AIQ was found not to have adequately complied with GDPR.¹⁷ However, the most interesting point about this dispute is that although AIQ is based in Canada, the UK's ICO still exercised its jurisdiction over AIQ that processed data of individuals in the UK and ruled that AIQ must erase all the personal data relating to UK individuals obtained without appropriate GDPR legal bases.

4.2 Legal Grounds

PDPA and GDPR share similar principles. That is, all personal data must be collected and processed *lawfully, fairly* and in a *transparent* manner.

Fairness and transparency mean that personal data shall be collected only to the extent necessary.¹⁸ This does not mean that data collected has to always be essential. Rather, it must be a targeted and proportionate way of achieving the purpose taking into account of quantity and manner of data collected. Hence, neither is it sufficient nor reasonable to contend that data processing and data collecting are necessary because a company is operating in a particular way. In other words, the question is whether data collecting and data processing are necessities for the stated purpose, not whether it is a necessary part of the *business's choice* of method for pursuing that purpose (ICO, n.d.).

On May 16, 2019, the Lithuanian Data Protection Supervisory Authority (VDAI) fined MisterTango, an

¹⁷ Among others by: (1) not processing personal data in a way that the data subjects were aware of, (2) not processing personal data for purposes for which data subjects expected, (3) not having a lawful basis for processing, (4) not processing the personal data in a way for which it was originally collected, and (5) not issuing the appropriate fair processing information to those.

¹⁸ PDPA Section 22 and GDPR Article 6.

electronic payment service provider for over EUR 61,500. The charge was for the lack of implementation of data minimization, disclosing personal data, and failing to report a breach. MisterTango processed more data than necessary to achieve its purposes, which was to carry out customer payments. In addition to the personal data necessary for the transaction,¹⁹ the company also superfluously collected information on (1) dates of provision of unopened electronic invoices, their senders and amounts; (2) dates, topics and texts of unread notifications; (3) purposes, types, amounts of the loans; (4) names of the pension funds, accumulated units and amounts, value thereof; and (5) types of credits, due balances, amounts and dates of payments, numbers of the issued payment cards and amounts in such payment cards (VDAI, 2019).

One of the most interesting aspects in this decision is that VDAI issued its finding without assessment of the market practice within the payment industry, although there was no indication that the ruling would change if it did so. It simply indicated that MisterTango collected and processed excessive – and unnecessary – data in relation to executing the payments. Hence, the rule of thumb is to keep data collecting and data processing to the extent necessary and proportionate to the purpose a company aspires to achieve.

In addition to being fair and transparent, collection and processing are *lawful* only if a company possesses a lawful basis under relevant provisions, which are similar under both PDPA and GDPR.²⁰

¹⁹ such as customer's name and family name, ID, account number, currency, purpose of the transaction and it's code where applicable,

²⁰ PDPA defines personal data – to be protected – as any information relating to a person, which enables the identification of such person, whether directly or indirectly, but not including the information of deceased persons. Differing from the GDPR, PDPA does not specifically

In summary, a company may not collect, use, or disclose personal data without appropriate consent unless:

(1) for purpose relating to preparation of historical documents, research, or statistics, in which appropriate safeguard is put in place;

(2) for suppressing danger to a data subject's life;

(3) when processing is necessary for the performance of a contract;

(4) for the performance of a task carried out in the public interest by the data controller the achievement of the purpose relating to public interest research and statistics;

(5) for the legitimate interest of the data controller where such interest does not override those of the data subject; or

(6) is necessary for compliance with a law to which the data controller is subjected.²¹

Deciding which lawful basis applies is critical to ensure that data is lawfully collected and processed – and subsequent rights of individuals thereafter. A company must determine a lawful basis before starting to process personal data and it is important to be confident of the company's pick of the basis for the first time.²² If the company finds that the chosen basis was inaccurate, it may be difficult to simply swap to a different one, even if a different basis could have actually applied from the start (ICO, n.d.).

address IP addresses, cookie identifiers and radio frequency identification tags as online identifiers that may be considered as personal data, such as IP addresses, cookie identifiers, and radio frequency identification tags.

²¹ PDPA Section 24 and GDPR Article 6.

²² No one basis should be considered always better, safer or more important than the others. Also, the company does not need to choose only one basis. More than one basis is allowed.

In Greece, PriceWaterhouseCoopers Business Solution SA (PWCBS) was fined EURO 150,000. The Hellenic Data Protection Authority (HDPa) held that PWCBS was responsible for failing to ensure of lawful, fair and transparent processing of its employees' personal data. Although PWCBS successfully obtained consent from its employees, HDPa ruled that their consent was invalid for two reasons: (1) PWCBS actually relied on other bases – not consent; and (2) consent was not freely given, regardless. HDPa clarified that the choice of consent as the legal basis was inappropriate, as the processing of personal data was directly linked to the performance of employment contracts, and was in compliance with its *legal obligation* to ensure smooth and effective operation of the company – warranting any other legal bases but not consent. Nevertheless, it had failed to notify the employees about those other legal bases, leading employees to misconstrue that their data processing was carried out under their consent. Furthermore, PWCBS failed to prove that consent was freely given providing the fact that there was significant imbalance of power between parties, one was an employer and the others were employees (Hellenic DPA, 2019).

Although PDPA does not specifically spell out 'lawfulness, fairness and transparency' like that of GDPR²³, such overarching principle appears throughout. Similar to GDPR, subsequent swap of legal basis to collect and process customer data is likely prohibited under PDPA as it requires that a company shall inform an individual of the purpose of the collection for use or disclosure of the individual data, including the purpose which is permitted without the individual's consent.²⁴ Therefore, even if a company does not

²³ GDPR Article 5(1)(a).

²⁴ PDPA Section 23.

need to obtain consent from an individual under certain legal bases, the company still needs to inform the individual of the purpose the individual's data is being use in any case.

4.2.1 Consent

As mentioned earlier, collecting and processing personal data are generally prohibited, unless it is expressly authorized by law under appropriate legal grounds, or an individual has consented to such collecting and processing. Consent *per se* allows companies to do just about anything with the individual data as long as it is considered valid and legitimately obtained. As a result, PDPA and GDPR specifically set out a high standard for consent as consent is one of several legal bases to collect and process data.²⁵ Pursuant to GDPR²⁶,

... '[C]onsent' of the data subject means any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her ...

[Consent] should be given by a clear affirmative act ... This could include ticking a box when visiting an internet website, choosing technical settings for information society services or another statement or conduct which clearly indicates in this context the data subject's acceptance of the proposed processing of his or her personal data. Silence, pre-ticked boxes or inactivity should not therefore constitute consent ...

In order to ensure that consent is freely given, consent should not provide a valid legal ground ... where there is

²⁵ PDPA Section 19; GDPR Article 4 and its preamble.

²⁶ GDPR Preamble (32 and 43), Article 4.

a clear imbalance between the data subject and the controller ...

Unlike GDPR, PDPA does not provide definition of consent. However, it set out requirements on what a valid consent should be, which is quite similar to that of GDPR.²⁷

A request for consent shall be explicitly made ... unless it cannot be done by its nature. In requesting consent from the data subject, the Personal Data Controller shall also inform the purpose of the collection, use, or disclosure of the Personal Data. Such request for consent shall be presented in a manner which is clearly distinguishable from the other matters, in an easily accessible and intelligible form and statements, using clear and plain language, and does not deceptive or misleading to the data subject in respect to such purpose. ... In requesting consent from the data subject, the Data Controller shall utmost take into account that the data subject's consent is freely given...

In terms of consent, comparing to PDPA, GDPR provides clearer guidance as it requires that consent must be unambiguous and involve a clear affirmative action (an opt-in). It specifically prohibits pre-ticked opt-in boxes.²⁸ On the other hand, PDPA is silent on whether a 'boilerplate' consent form (sometimes include a pre-ticked opt-in consent) is valid as long as other requirements are satisfied. For example, the question remains on validity of a boilerplate consent provided under a clear manner, distinguishable from other matter, freely given, using plain and clear language.

For example, regarding financial institutions, the Bank of Thailand has issued the Notification on market conduct

²⁷ PDPA Section 19.

²⁸ GDPR Preamble (32)

allowing disclosure of customer data to other entities for marketing purpose as long as certain conditions are met. Among others, a bank must clearly notify customers that the disclosure is for marketing purposes. It must inform customers a list of recipients of data so that the customers can decide whether they will give their consent. The Notification further allows the bank to update a list of recipients of data to include additional parties but it must honor rights of the customers to *decline* the disclosure of data, and to raise their objection. That is, it is worth noting that that customers' consent is considered given to the disclosure of data if the customers do not raise any objection within the specified timeframe. Yet, there must be a process to ensure that the customers have been aware of that request (The Bank of Thailand Notification No. SVG. 1/2561, 2018).²⁹

Nevertheless, both PDPA and GDPR requires that consent must be freely given. That is, a simple consent is not sufficient unless it is also proven that it is freely given. For example, consent of individuals in the context of employment relations cannot always be regarded as freely given due to the clear imbalance between the parties, namely the employer and the employees (Hellenic DPA, 2019).³⁰

In 2019, Google LLC was fined EUR 50 million by the Commission Nationale de l'Information et des Libertés of

²⁹ The Bank of Thailand releases and updates Notifications from time to time. Therefore, it is recommended to keep the information up to date as the Bank of Thailand Notification, No. SVG. 1/2561 (2018), Re: Regulations on Market Conduct is released in 2018 before PDPA is enacted in 2019.

³⁰ Also, in Sweden, the Swedish Data Inspectorate fined a high school in the country after it trialed the use of facial recognition technology to monitor student attendance. The regulator determined that the school was responsible for processing sensitive personal data unlawfully. Although the consent is obtained, that that consent was invalid because there was an imbalance in power in the relationship between the school and its students.

France (CNIL) for various failings under GDPR. Pursuant to GDPR, consent must be sufficiently informed, specific, and unambiguous. It must also be granular (as separated from other parts of agreement and as requiring separate consent for separate things)³¹ and obtained through a form of active acceptance. CNIL held that individual consent was not freely given. It was pre-opted in as it was a pre-ticked box. In addition, individuals were not given enough information about what their consent would mean in terms of the Google services they have been offered, why Google processed their personal data, and how long their data was kept. CNIL further clarified that it was not entirely the case that the information was not there. Rather, the ruling attacked accessibility of the information. That is, most of the information was there, but it was scattered via various different links (CNIL, 2019).

For consent, best practices for companies, and in particular financial institutions, are to ensure it is easy for customers to fully understand what the companies are doing with their data. A financial institution often requires customers to release their personal data to help them provide services. In most cases, a part of customer data is used for such services but other parts may be used for cross-selling other products and developing models for other uses. As previously mentioned, the company – financial institution included - may not collect, use, or disclose personal data without appropriate consent unless it is exempted by other legal bases. It follows that obtaining valid consent seems to be one of most viable ways to gain access to customer data. Therefore, a comprehensive privacy notice should be clear and concise, easily understandable, and be as accurate as possible about what data are being collected and why they are being used.

³¹ Vague or blanket consent is not sufficient.

To further ensure that consent is freely given, the financial institution must avoid creating impression that there is imbalance in negotiation power between the customer and the financial institution. One suggested solution is to let the customer sign the notice or the agreement acknowledging that he is not forced into disclosing his personal data that is not directly related or considered unnecessary to the services or product he receives. Many financial institutions include a clause allowing the customer to refuse disclosing his data and that will not have any impact of his receiving of products and services. Lastly, the financial institution should inform customers of all legal bases they rely on for processing such data as well, as subsequently switching legal bases *ex post facto* will be considered unfair and misleading thus opposing the principle of accountability and transparency of PDPA.³²

4.2.2 Legitimate Interests

PDPA and GDPR set a high standard for consent yet it is a common misconception that consent is required for all data processing. PDPA and GDPR lay down a principle that consent is appropriate if only companies can offer individuals

³² For instance, consider a case where a financial institution decided to process customer data on the basis of consent, and obtained consent from individuals. An individual subsequently decided to withdraw their consent, as is their right. Even the financial institution could have originally relied on other legal grounds, it could not do so at a later date. It should have made clear to the individual from the start that there were other grounds to process such data as well, regardless whether consent was given. Leading the individual to believe that they had a choice was inherently unfair if that choice would be irrelevant. This could be done by obtaining consent and also simply indicating that the financial institution also possessed other legal grounds to process individual data. However, by failing to inform the individual of other legal bases, the financial institution may not process the individual data when the individual withdrew consent thereafter.

real choice and control over how they want their data to be used. As mentioned earlier, if a company cannot offer a genuine choice, consent will not be appropriate, and will not be considered legally valid. Consequently, requesting consent in such case is misleading and deemed unfair. Nevertheless, a company may not need consent if it can find other lawful bases as consent is not considered inherently better or more important than other alternatives. That is, if consent is difficult to obtain, a company may consider other alternatives.

Among those six legal bases,³³ the ground of legitimate interests seems to be the least self-explanatory, and, at the same time, a less-rigid basis that a company may turn to in the case that it fails to obtain consent.

Pursuant to Article 6(1)(f) of GDPR,
Processing shall be lawful if ... [it] is necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject which require protection of personal data, in particular where the data subject is a child.

Similar provisions are also found in PDPA,³⁴

³³ (1) for purpose relating to preparation of historical documents, research, or statistics, in which appropriate safeguard is put in place;
(2) for suppressing danger to a data subject's life;
(3) when processing is necessary for the performance of a contract;
(4) for the performance of a task carried out in the public interest by the data controller the achievement of the purpose relating to public interest research and statistics;
(5) for the legitimate interest of the data controller where such interest does not override those of the data subject; or
(6) is necessary for compliance with a law to which the data controller is subjected.

³⁴ PDPA Section 24.

The Data Controller shall not collect Personal Data without the consent of the data subject, unless: ... it is necessary for legitimate interests of the Data Controller or any other Persons or juristic persons other than the Data Controller, except where such interests are overridden by the fundamental rights of the data subject of his or her Personal Data ...

A company can consider legitimate interests of its own, or any third party, including wider benefits to society (ICO, n.d.). However, both PDPA and GDPR balance their broad coverage of legitimate interests by weighing them with rights of individuals. To assess whether data processing will be lawful under this basis, the proposition can be broken down into a three-part test: (1) *Purpose test*, (2) *Necessity test*, and (3) *Balancing test* (ICO, n.d.; The Law Society, 2019; UCL, n.d.).

The purpose test requires that a company must pursue legitimate interests. A wide range of interests may be classified as legitimate interests. They can be a company's own interests or the interests of third parties, commercial interests as well as wider societal benefits. According to ICO, legitimate interests may be compelling or trivial. However, the more trivial they are, the more they will be considered overridden by individual rights in the balancing test (ICO, n.d.).³⁵ GDPR specifically provides a few cases whereby the uses of data are considered serving legitimate interests including: the processing of personal data to prevent fraud, to carry out direct marketing activities, to undertake internal administrative purposes, or to ensure network and information securities.

³⁵ Balancing test will be discussed later.

... The processing of personal data strictly necessary for the purposes of preventing fraud also constitutes a legitimate interest of the data controller concerned. The processing of personal data for direct marketing purposes may be regarded as carried out for a legitimate interest.
...³⁶

... Controllers that are part of a group of undertakings or institutions affiliated to a central body may have a legitimate interest in transmitting personal data within the group of undertakings for internal administrative purposes, including the processing of clients' or employees' personal data. ...³⁷

The processing of personal data to the extent strictly necessary and proportionate for the purposes of ensuring network and information security ... constitutes a legitimate interest of the data controller concerned.³⁸

The necessity test means that the processing of data (in terms of manner and quantity) must also be a targeted and proportionate way of achieving the purpose. The processing will not be deemed necessary if there is another reasonable but less intrusive way to achieve the same result (UCL, n.d.). The test is very much aligned with the principle of GDPR, where data collecting and data processing must be carried out to the extent necessary.³⁹

The Hungarian data protection authority (NAIH) levied a EUR 3,100 fine against a Hungarian financial institution for unlawfully rejecting a customer's request to have his phone

³⁶ GDPR Article 47.

³⁷ GDPR Article 48.

³⁸ GDPR Article 49.

³⁹ See also Section IV(2) Legal Grounds.

number erased after arguing that it was in the company's legitimate interest to process this data in order to enforce a debt claim against the customer. Applying the necessity test to assess whether there was legitimate interest, NAIH ruled that the customer's phone number was not necessary for the purpose of debt collection since the creditor could also communicate with the debtor by post. Keeping the superfluous phone number of the debtor therefore violated the principles of data minimization and purpose limitation, failing the necessity test as a result (NAIH, 2019).

NAIH also ruled that Tax IDs may not be used as client identifiers, since the practice was – similar to the collection of phone number – a violation of the GDPR's data minimization principle. In its ruling, the NAIH held that private entities can only process tax IDs with consent of the client or to fulfil their obligations to the tax authority, therefore also failing the necessary test (NAIH, 2019).

The principle of necessity is discussed in the N26 case from Germany. N26 is a German neobank (mobile bank) started as a FinTech and fully launched as a bank in 2016. N26 had collected and processed personal data of all former customers; some of them are proceeded without permission. The bank acknowledged that it had retained data relating to all former customers in order to maintain a blacklist, so that it would not make a new account available to these persons, safeguarding against money laundering. The Berlin Commissioner for Data Protection held that N26's practice of collecting and process personal data was illegal as the practice was beyond what considered necessary and not proportionate. In order to prevent a new bank account from being opened, only data of individuals who were actually suspected of money laundering should only be kept – not those of all former customers. (Berliner Beauftragte für Datenschutz und Informationsfreiheit, 2018)

The balancing test weighs a company's so-called legitimate interests against an individual's interests. What is challenging for the balancing test is individuals have distinguished interests that are subject to their characteristics, experiences, and relationship with a company. Hence, legitimate interests are more likely to be justified when a company uses data that an individual would reasonably expect and practically foresee and that have a minimal privacy impact. Where there is an impact on individuals, legitimate interests may still apply if a company can show there are even more compelling benefits to the processing and the impact on individuals is to the degree acceptable. In particular, if the individual would not reasonably expect the company to use data in a certain way, or it would cause the individual unwarranted harm, it is likely that the individual's interests would override those legitimate interests of the company (ICO, n.d.). It follows that pure economic interests or convenience are not considered legitimate interests and therefore cannot override the interests of the customer, in any case. (NAIH, 2019). In order to rely on legitimate interests to lawfully disclose personal data to a third party, the company should consider why the third party wants the information, whether the third party actually needs it, and what the third party will do with it (ICO, n.d.). Similarly, a company needs to demonstrate that the disclosure is justified, whereas the third party will be responsible for determine its lawful basis for its own processing (ICO, n.d.).

Equipped with data through customers' inquiry and customers' self-disclosure, a financial institution should avoid using legitimate interests if it is using personal data in ways that its customers do not understand and would not reasonably expect them being used (or if it thinks some customers would object if they are aware of its usage). The bank should also avoid this basis for data processing if it could cause

unwarranted harm, unless it is confident there is nevertheless a compelling reason to do so that justifies the impact.

5. Conclusion and What to Expect in the Future

The pinnacle of PDPA and GDPR is that data must be collected and processed lawfully, fairly and in a transparent manner. Obtaining consent provides a strong legal basis to collect and process data as it puts individuals in control, building trust and engagement. Valid consent should be considered a genuine customer-centric data management best practice. However, consent is appropriate if and only if a company can offer people real choice and control over the company's use of data. One major factor to determine validity of consent is therefore whether the consent is freely given. In order to be considered freely given, a company must take into account of an individual's understanding of consent language, scope, and clarity. In addition, consent will not be considered freely given if there is a clear imbalance of power between the individual and the company.

Consent is one lawful basis for collecting and processing data, but there are several alternatives. If obtaining consent is difficult, a company may turn to other legal grounds. Legitimate interests seem to be one of the lesser-rigid grounds to collect and process data as legitimate interests can be a company's own interests, a third party's interests, or as broad as other societal interests. Determining whether the company can rely on legitimate interests generally depends on the three-part test. That is, a company can claim legitimate interests when collection and processing of individual data are necessary for the purposes, and when comparing to interests, rights and freedom of an individual, there is sufficient overriding interests for the company to collect and process data.

Financial institutions in Thailand are beginning to feel the effect of either PDPA or GDPR – or in many cases, both – on their routine operations. PDPA and GDPR are comprehensive and omnibus in nature, and it would be easy to get overwhelmed by its reach and complexity. That said, the basic pillars of data protection remain. Data belongs to an individual – not a company. The individual possesses data rights – not the company.

One of the guiding principles to navigate through GDPR and PDPA is that the company should adopt approaches that incorporate privacy practice *by design and by default*. Privacy by design simply means that privacy should be a foundation of any systems, business processes and company products. It follows that a financial institution should design and provide an individual with a product that does not invade his or her privacy. Hence, the product should not require the individual's inputs of data that are deemed unnecessary for the product. Neither should it monitor other transactions nor unreasonably keep personal information of the individual for an extended period of time without legitimate interests.

In addition, privacy by default assures that a company should adopt practices that assume an individual will want to preserve the privacy of his or her information. Similarly, it follows that a financial institution should honor the principle of fairness and transparency. All of the consumer choices provided by the financial institution should be privacy-preserving by default, without the individual having to request. Email addresses, by default, should not be used for marketing and should not be shared with other companies without affirmative customer consent.

Finally, as regulations that focus on business processes that continuously change and evolve over time, PDPA and GDPR will likely necessitate a company to incorporate privacy by design and privacy by default into the company's

DNA, one that represents professional values and beliefs held by the company's executives and all of its personnel. Therefore, one of the best practices to encourage privacy by design and by default may begin with a simple step such as employee training and awareness raising. Appropriate tone at the top that prioritizes legitimate uses of customers data may be considered as a major driving force to increase customer trust overall.

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Happiness determinants in a Buddhist community: Where Inner Happiness Matters

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ABSTRACT

This case study explores happiness determinants in a green-space community with Buddhist culture in Bangkok's periphery. The study conceptualizes indicators from various happiness determinants for empirical tests. A primary survey of almost 500 samples of community residents during late 2018 to early 2019 was conducted. The study reveals that much of the happiness of community members is generated by inner happiness and environment quality, among other significant factors such as the perception of equal income status, good family and community relationship, health, and time balance. In addition, appropriate household economic management (with sufficient net income) is highly significant for creating happiness in this community, while absolute income is not necessarily significant. The study also examines happiness determinants and their effects on different sub-groups in the community.

Keywords: Happiness, Inner Happiness, Subjective-Well-being, Sustainable Happiness, Sustainable Development, Happiness in Buddhism.

JEL Classification: I31, Z12

1. Introduction

Happiness has been one of the most stimulating new developments in economics in recent years (Frey and Stutzer, 2005) and is becoming an object of serious research in 21st century economics (Van Praag, 2007). As happiness is an important area for academic and development studies, determinants of happiness have been studied and categorized in various ways. While a lot of happiness studies have been conducted with Western concepts, little has been studied with Eastern concepts with case studies. Therefore, this study aims to explore another concept of happiness based on Eastern Buddhist Philosophy, in order to test the Buddhist concept of inner happiness.

As noted in Kittiprapas (2018b), happiness in Buddhism focuses on mind-based and wisdom-based happiness (or so called inner happiness), rather than physical-based happiness such as materials and outside dependence. Based on Buddhist concept, people can be happier with less consumption or moderate consumption, rather than continued increasing consumption (reflecting increasing well-being as assumed by mainstream economics' utility function). In other words, people can be happy with living in moderation and contentment, which is in line with sufficiency economy philosophy (SEP) initiated by H.M.King Bhumipol Adulayadej of Thailand. However, little has been done to test the significance of these factors to happiness.

There have been studies indicating the significance of mind-based happiness such as role of giving and positive psychology to happiness; however, happiness studies so far have not focused much on wisdom-based happiness such as mindfulness, unattachment to suffering, and knowing 'what is

moderate² for one's life or feeling "enough". Thus, this study would like to capture these factors of inner happiness. This may shed some light on happiness theories that are mostly dominated by Western thought.

The study conducted in a community in Thailand where people are Buddhists to test factors affecting their happiness by including these inner happiness factors that have not been covered in other studies. Bangkajao community has a unique geographical landscape surrounded by Chao Praya river- like an island with a lot of greenspace – while being in close proximity to Bangkok in Samutprakarn province, was selected for this community case study. The community has preserved its green environment for a long time, while surrounding urban areas of both provinces have a lot of concrete buildings and materialistic life styles. It is interesting to investigate factors affecting this community happiness, which can vary in different societies with different culture and values.

The structure of this paper is as follows: first the literature is reviewed and related concepts are discussed, then this study conceptualizes a model of happiness determinants for this community, followed by discussions on empirical results and analysis leading to conclusion and recommendations.

2. Rationale of the Study and A Review Discussion of Happiness Determinants

Happiness studies have different focuses and results from different cases /areas have different stages of development, cultures and values. To be beneficial for policy making, happiness economists such as Bruno Frey suggested that it is more useful to do micro studies of happiness determinants of

² For example, what is an appropriate amount for consumption, or what is the 'right amount' is conceptually explained in Payuto (1992); It is the "right amount" to meet real quality of life (in Buddhist meaning).

particular groups/places/societies than try to maximize happiness numbers/indicators in macro level which still have problems with regards to concept, methodology and data. Frey (2007) suggests that happiness research should produce insights into the policy discussion process to improve life, both individually and collectively. Instead of using a single national indicator, happiness researchers should construct a number of indicators to reflect well-being in different aspects of life, as well as disaggregate the happiness indicators into regional, country and community levels. Frey and Gallus (2012) also suggest that using official national happiness index to guide development seems useless as it will be easily distorted or manipulated by political interests and the government. Thus, it seems more useful to try to understand what affect people's happiness insightfully which would be useful for policy design on how to improve population happiness.

Factors affecting happiness in any society or community depends on the particular context of development and human behavior in each society. Thus, knowing happiness determinants of a population in different areas is useful for development plans and policy responses to targets. Kittiprapas (2018a) investigates happiness determinants of different groups in a case study of Bangkok and found that happiness determinants and their effects can vary by sub-groups in that case study. For example, income though generally has little effect, it has a larger effect on the unemployed than the employed.

As this study is designed for a micro community level, it covers happiness determinants at micro level only. Although macro level factors such as inflation, political stabilization and freedom, or economic structure and power may affect population happiness nationwide, the study includes only micro community-related factors of happiness. In addition, this study does not focus on personal demographic factors as

it aims to investigate specific happiness domains at the community level and to explore whether inner happiness in Buddhist happiness concept is important or not.

Conceptually, there are common happiness domains significant in many studies. Kittiprapas et. al. (2007, 2009) draws a synthesis and noted that social relationship and health are among the two of the most important determinants of happiness for people everywhere including in Thailand, while income is also an important instrument to improve quality of life but its impact may be relatively less than other non-economic factors.

Hussien and Heshmat (2010) concluded from many researches and noted that much of an individuals' happiness depends on non-economic factors, such as relationships, emotional state, self-confidence, freedom, equitable chances, good education, good health, altruism and fairness, which are not market mechanisms. Layard (2005) mentions relationships with family, friends and community, work, health, personal freedom and value as affecting happiness. Also, well-being indexes used in different countries may have different domains. For example, Australia's wellbeing index³ currently uses seven domains: standard of living, health, achieving in life, relationships, safety, community-connectedness, and future security.

The study considers only domains relevant for this community case; some factors which do not vary much among individuals in this community are not included.

2.1. Role of Income, income distribution and relative income

How much of an effect income has on happiness is an interesting question for many happiness economists. Easterlin

³ <http://www.acqol.com.au/instruments#measures>

(1974) using US panel data showed that although the increase in income makes individuals happier in short run, over time the increase in income cannot lead to the increase in happiness of individuals. This so-called “Easterlin paradox” has drawn the attention of economists to consider the effects of income to happiness and seek explanations. Other researchers such as Clark et. al. (2008) also found that happiness for the case of US has not increased for over thirty-year period (1973-2003) while real income per capita increased. Consistently, Kusago (2007a, 2007b) also found similar findings for the case of Japan that subjective-wellbeing of population has not increased with the rising national income over time and even slightly declined over the twenty-year period (1978-1999).

Many cross-country findings are also similar in finding that happiness rises with income to a certain level, but over time happiness in many countries remained constant despite economic growth (Kittiprapas et. al., 2009). In addition, Kahneman and Deaton (2010) indicates that higher income does not lead to more happiness nor the relief of unhappiness or stress in the United States when income is higher than \$75,000. Veenhoven (2007) drawing from 90 nations in late 1990s found that the correlation of income and happiness regression line is almost flat after reaching the point \$20,000. This also indicates that when income (either for individuals or for a country) is higher beyond a certain level, its effect on happiness declines. Clark et. al (2008) mentioned that the ‘subsistence level’ or above poverty line that income is not the main sources for well-being could be as low as \$10,000 (Frey and Stutzer, 2002). These reflect the belief that income is not a prime factor affecting happiness when income is higher beyond basic needs. This is consistent with Buddhist thought.

Other researchers with cross-sectoral surveys find positive relationships between income and happiness in both developed and developing countries such as Blanchflower and

Oswald (2004) for UK and US, Graham and Pettinato (2001) in Latin America and Russia, and Sarracino (2007) for Italy. However, the effect of income on happiness depends on the particular case. For example, Frijters et. al (2004) find positive relationship in life satisfaction and income in East Germany after the reunification. Generally, countries with low income or developing countries seem to have happiness gain with income growth more than developed countries. Similarly, individuals' happiness increases with income when they are poor, but they gain less happiness when they are richer. This can be explained by the diminishing marginal returns of happiness to income. Thus, the positive or negative relationship of income to happiness in different studies also depends on what status of the individual or country's income is.

The Easterlin paradox which states that while income can bring happiness, but over time it cannot raise happiness can be explained by psychological effects such as the theories of social comparison/aspiration and adaptation. Clark et. al. (2008) empirically demonstrates the importance of social comparisons and adaptation. For social comparison, as people care about their positions/income levels relative to other people in their reference group, individual's gain in actual income may not generate the same increase in happiness. In other words, relative income has more effects than absolute income. People normally compare their statuses with others, which drives competition and often results in stress/tension, weak family and social relationship. Negative effects of social comparison to happiness are found in many studies in many countries such as Clark and Oswald (1996) using British Panel data and Luttmer (2005) using US Data.

According to aspiration theory, individuals' happiness is affected by the difference between levels of aspiration and achievement (Frey and Stutzer, 2001). It may imply that if a

person cannot achieve what they aspire for, they would be less happy. Interestingly, it is found that the richer residents are, the higher an individual's aspiration level. This may be a factor to explain why getting richer does not result in more happiness. Thus, the Buddhist concept of feeling contentment with what ones have can reduce this negative effect from aspiration. That seems difficult for people in modern economic system that drives high competition and unlimited want that can bring in suffering.

Hussien and Heshmat (2010) suggests that government media tools need to avoid the negative impact of high aspirations, related to higher income levels, on happiness through reminding people of moderation in consumption and appreciation of the concept of 'sufficiency economy'. This reflects the belief that the Buddhist concept of sufficiency economy can help promote happiness by reducing aspiration effects.

Another reason for the fade down of happiness from material goods and income over time is adaptation. International studies have found that positive effect of the increase in income has decline year after year. Di Tella et al (2005) using German socio-economic panel during 1984-2000 found that after 4 years of the increase in income, only 42 % of the positive effect to happiness still remains. Inglehart and Rabier (1986), using pooled Eurobarometer data from ten Western European countries between 1973 and 1983, showed that life satisfaction and happiness scores are essentially unrelated to the level of current income, but are positively correlated with a measure of change in financial position over the past twelve months. Their conclusion is that aspirations adapt to circumstances, thus, in the long run, stable characteristics do not affect well-being. In this connection, Clark et. al. (2008) mentioned that the only way to achieve the

same effects of increasing happiness is to continually increase income.

This income phenomenon can also be applied for material goods. One can be very happy when get new items, but after a while their happiness from that item decreases due to adaptation. This is a type of temporarily or unsustainable happiness. In Buddhism, continually increasing wants or position goods cannot bring in real happiness; instead that can cause suffering when those wants are not met.

Income inequality

Inequality affects social happiness and well-being. Van de Stadt et. al. (1985) found that past income distributions also matters in determining one's present well-being. Alesina et. al (2004) also found the degree of inequality negatively affect happiness in the US and some European countries. This is obviously the effects of relative income, aspiration and social comparison. Sarracino (2007) found that those in the lower income quintiles are less happy than those in the higher quintiles. In addition, Coccia (2018) found that socio-economic inequality at country level negatively affects human behavior and leads to high rates of violent crime in society. Socio-economic inequality is one of the contributing factors that generate aversive environments, unhappiness and, as a consequence, high rates of intentional homicides in society. Social problems also increase with socio-economic inequality, combined with high density of population, hot climate and other factors, as it may generate high levels of psychological stress (e.g., frustration and anger) that most likely induce violence (Regoeczi, 2003).

Role of relative income

The above research discussions imply that ‘relative income’ from comparing with their peers is more relevant to happiness than actual income. Rising national income in poor countries with low inequality can make people happier, but rising national income in rich countries with high inequality may not increase happiness accordingly due to counter effects of worsening “relative income”.

Clark et. al. (2007) which explains Easterlin paradox by ‘relative income’ also referred to Knight and Song (2006) which found that relative income is at least twice as important for individual happiness as actual income, even in poor regions (in their case rural China). Controlling for own income, and for village income, those rural respondents who say that their income was much higher than the village average report far higher happiness than those who say that their income was below the village average. This study indicates that relative income is the most important variable.

However, the role of relative income can be subjective such as the ‘perceived relative income’. Happiness depends on whether people feel poorer than others in their reference group or not. Gray and Kranmanon (2007) found from a case study in Chainat, Thailand, that people who do not feel poor report the highest level of happiness, compared to those who feel as poor or poorer than their neighbors. This is the effect of “relative perceived poverty” to happiness.

In sum, higher aspiration and social comparison are negative to happiness and that is why an increase in actual income may not lead to an increase in happiness. Relative income and the reduction of income inequality are more likely to have an effect on the happiness of individuals and society as a whole.

2.2. *Health*

Health is likely a top factor contributing to happiness from a number of studies; physical health and mental health inarguably affects well-being. As mentioned in Diener et. al. (2009), it is evidenced that individuals who suffer life-threatening illnesses or illnesses that interfere their daily life and causes pain have considerably lowered happiness levels. Steptoe (2019) mentions that the mechanisms potentially linking happiness with physical health include lifestyle factors, such as physical activity and dietary choice, and biological processes, involving neuroendocrine, inflammatory, and metabolic pathways. Physical health benefits surrounding happiness include a stronger immune system, stronger resilience in the face of stress, a stronger heart and less risk of cardiovascular disease, alongside quicker recovery times when overcoming illness or surgery. There is even a body of research that indicates being happy may help us to live longer lives. Positive emotions predicted increases in both resilience and life satisfaction (ibid). Higher levels of happiness are related to lower physical and mental illness, as well better coping abilities in adversity (Machado, 2015).

Layard and Clark (2015) found that, in Britain, one in six of all adults suffers from depression or a crippling anxiety disorder and roughly a third of families include someone who is mentally ill. Mental illness is not only common, but it can be truly disabling through its impact on people's ability to care for themselves, to function socially, to get around and to avoid physical and mental pain, so mental pain is as real as physical pain and is often more disabling (ibid). It also suggested that tackling mental health problems in society can actually save governments money as the economic benefits would be greater than the cost of the treatments. This also confirms the importance of mental health to happiness.

Clark et al. (2018), drawing on a comprehensive range of evidence from longitudinal data on over one hundred thousand individuals in Britain, the US, Australia, and Germany, found that the mental well-being of young people is a prime determinant factor for happiness in adults. The effects of mental health is even 4 times higher than the effects of income. Thus, this study indicates that the strongest factor predicting a happy adult life is not children's qualifications on academic records or I.Q., but their emotional health (even correlated with mother's mental health).

However, given the positive correlation between health and happiness, it is intriguing that researchers sometimes have reported weak and sometimes nonexistent correlations between happiness and objective health as assessed by medical personnel (Diener et al., 2009). Whereas associations between objective health and happiness are often weak, research documents the consistently strong associations between happiness and subjective health—as reported by the individual (Okun et al., 1984). Diener et al. (2009) discusses that this kind of curious phenomenon seems to be the consequence of (1) clinical error, meaning that objective health measures are sometimes not as objective as one would hope, and (2) the notion that subjective reports of health reflect emotional adjustments on the part of the individual, thus inflating the correlation between self-reported health and happiness.

However, in general, studies across the globe clearly confirmed the significant of health for happiness (for example, Camfield et. al, 2007; Gray and Kramanon, 2007; Mahaarcha and Kittisuksathit, 2007; Kittiprapas (2018a) for case studies in Thailand; Sabatini (2014) for Italy; Mendes et. al. (2007) for Portugal; Van den Berg (2007) for Australia, and Hussien and Heshmat (2010) for Egypt). The positive relationship of health and happiness is more obvious and much less controversial than the case of income.

2.3. Social and family relation

Relationships both within family members and among social/community members are one of the most significant variable to happiness. Many studies report that having good family and having groups of friends and social activities are often ranked as highly important to a good life (Mendes et al., 2007). Having close friends and a network of social support has a distinct positive effect on happiness, which some scholars have suggested that such kind of relationship could be the single most important source of happiness (Reis & Gable, 2003). Diener and Seligman (2002) support this view as their study found that every single ‘happy’ person had excellent social relationships.

Clark et al. (2008) noted an argument that when individual income rises above a poverty line or ‘subsistence level’, the main source of increased well-being is not income but rather friends and a good family life. In addition, people’s happiness increases with having membership with voluntary organizations (Putnam, 2000; Helliwell, 2003, 2006), or participation with organizations (Sarracino, 2007), and social supports including from family members, friends, colleagues, neighbors (Liping, 2001).

2.4. Time use and balance

Time balance is an important factor conducive to happiness. Happiness economists suggest work-life balance to promote happiness (Layard, 2005). Bataineh (2019) indicates that work-life balance positively and significantly affects happiness and employee performance. Similarly, Alesina et al. (2006) points out that people who work fewer hours have been demonstrated to have higher life satisfaction. This shows that time balance significantly affects happiness.

A number of studies indicate that leisure activities such as music, exercise, and reading significantly contribute to happiness (Argyle, 2002). Machado et al. (2015) indicates that physical leisure activities have been shown to increase subjective well-being both in the short and long term; involvement in sport also appears to have a causal relationship with higher levels of happiness. Balatsky and Diener (1993) even reported that, among Russian students, leisure satisfaction was the single best predictor of happiness. Thus, this reflects that time use or time balance is a very important factor determining happiness. Time use is also a domain of Gross National Happiness (GNH)'s indicators of Bhutan.

2.5. Environment

Krekel and Mackerron (2020) studies how the natural environment and its quality affect our happiness around the world, using data from the Gallup World Poll covering more than 160 countries (about 1000 observations per country). Given this extensive coverage, it was found that environmental quality affects happiness worldwide, the importance of the natural environment and its protection to their continued well-being, and the particular threat posed by climate change. The study also focuses on the case of London and found that being outdoors in green or blue spaces is predictive of a significant boost in happiness. Responses that are from public green spaces such as parks and allotments are on average approximately one percentage point happier than responses that are not (after taking into account all controls).

There is evidence that green or natural environments are positive for physical and mental health and human wellbeing. For example, observational and experimental studies report the beneficial impacts of natural environments on health and wellbeing. MacKerron and Mourato (2013) indicates that

green or natural environments are positive for physical and mental health and wellbeing.

MacKerron and Mourato (2013) shows evidence from their primary research study exploring the relationship between momentary subjective wellbeing (SWB) and individuals' immediate environment within the UK. It is found that happiness is greater in natural environments. On average, study participants are significantly and substantially happier outdoors in all green or natural habitat types than they are in urban environments. This study provides some evidence strengthening the link between the exposure to nature in daily life and subjective wellbeing.

O'Brien (2005) defined 'sustainable happiness' as the pursuit of happiness that does not exploit other people, the environment, or future generations. The concept of sustainable happiness holds significant possibilities for individual, community, and global well-being. This combines sustainability and happiness concepts.

However, a Buddhist approach defines 'sustainable happiness' as a higher level of happiness (up to wisdom-based or inner happiness) beyond physical-based temporary happiness that is easily affected by adaptation and aspiration. This higher level of happiness (or called as sustainable happiness) can also lead to effective sustainable development (Payutto, 2006). Thus, the concept of Buddhist Sustainable Development (BSD) of which inner happiness is a pathway was introduced to link happiness and sustainable development (Kittiprapas, 2018b).

2.6. Inner happiness

Buddhist approach place more weight on happiness generated from inside oneself. Payutto (2011, 2012) indicates that happiness in Buddhism focuses more on inner happiness,

which is more important and more sustainable pattern than material-related happiness as it is usually accompanied by less suffering. Being less concerned for oneself and less dependent on materials, higher or inner happiness can lead to more societal happiness with peace and sustainable development. The key implication from this approach is that people can be happy with moderate or less consumption and acquisition, thus there is no need to accelerate consumption as per the consumption led-growth model, which is counter to the sustainable development path. Therefore, it is important to realize a more sustainable happiness and living with moderation, rather than keep increasing unnecessary wants and try to meet those desires that could generate sufferings. Thus, BSD can be achieved through inner happiness.

Therefore, higher levels of happiness focused in Buddhism are far beyond material goods or feelings of satisfaction that mentioned in Western economic and happiness theories, which mostly relate to sensual pleasures and involve unnecessary wants that can also bring conflicts and tensions among people. Happiness development in Buddhism is dynamic that it encourages people to move up their happiness from lower type of physical happiness into higher type of inner happiness (ibid), (Kittiprapas, 2018b).

This Buddhist development approach encourages people to realize real value of products/materials to be consumed only for improving real quality of life, rather than to meet defilements that never end. The concept classifies human desires at the physical level into two types: (1) that really needed for true human well-being, and (2) unlimited wants not necessary for real well-being (Payutto, 1992). With inner happiness in mind, the second type of want is less important, not necessary or over-accumulation. Also, this type of want may not lead to the increase in happiness but can use a lot of natural resources.

Following that happiness from this Buddhist approach, this study also aims to investigate factors affecting this kind of happiness, especially those relating to inner happiness in Buddhism. With negative effects of social comparison, aspiration and adaptation as discussed earlier, Buddhist concept of inner happiness which is less dependent on material outside oneself can help promote happiness with higher quality and more sustainable whereas can reduce the over consumption and resource exploitation (Kittiprapas, 2018b).

Thus, this study, conducted in Thailand where the majority are Buddhists and the “sufficiency economy philosophy” was introduced, will examine how the application of sufficiency economy philosophy and Buddhist values can contribute to happiness of this community. The findings could contribute to new knowledge in the happiness subject and lead to different implications for development direction and policies.

3. Concept and Methodology for this Study:

The term “happiness” used in different studies may vary in terms of concepts and definitions due to different cultures/perspectives or disciplines. While a number of happiness studies done by Western academics and researchers focus on Western theories/concepts, this paper introduces a new concept based on Eastern philosophy of Buddhism and tests some variables or proxies of inner happiness in addition to other important domains /indicators.

Therefore, as discussed, domains of happiness designed for this case study are: economics (i.e., income, real income, and family income), health, time, family and community/social relationship, and environment, as well as inner happiness indicators such as levels of mindfulness, levels

of stress, feeling of “enough” in materials, want beyond basic needs, giving, and management of suffering.

Model

These above factors are independent variables, or X_i , denoted as a vector of independent variables. The dependent variable or Y is subjective well-being or happiness.

The relationship of the dependent and independent variables are: $Y = f(X_i)$; where $X_i = x_1, \dots, x_n$, in the empirical model as: $Y = \alpha + \beta_i X_i + \mu$.

Then, what should be a good proxy for happiness (Y). Life-satisfaction is mostly used in happiness research to measure ‘overall happiness’. For example, Veehoven (1984, 2007) suggests it is measured by the degree to which someone evaluates the overall quality of his or her present life-as-a-whole positively. Happiness of individuals is defined by respondents’ scale which is an objective measurement and does not depend in any way on the observer (Van Praag, 2007). Thus, it has been academically accepted that happiness can be well measured using self-reports and self-rated scales.

Thus, for dependent variable (Y), overall life satisfaction scaled (from 0 to 10), is used as a proxy of happiness. People were asked: “considering life as a whole, how much are you satisfy with your life?”, where 0 represents the lowest level and 10 is the highest rank. For independent variables (X_i), indicators or their proxies are shown in Table 1.

Table 1. List of Variables and Indicators in Happiness Equations

Variables (and definitions)	Proxy indicators and explanations	Remarks
Income (economic indicators including actual and relative terms as well as household economic status)	1. Absolute income monthly (ranging 0-10,000; 10,000 -20,000; 20,000-40,000; 40,000 -70,000B, and beyond 70,000 Baht. 2. Relative income perception (self-rated economic status compared to others in the community: poorer, similar, or higher) 3. Family net income (household income minus expenditure: surplus with saving, sufficient, lower or in debt)	Choose one or two from these three income indicators for each estimation depending on purposes of the tests.
Health	1. Actual health situation (informed from their health units) 2. Self-rated health perception	Physical health ratings of which 1) and 2) are similar in this case, so both choices are consistent. The study chooses 1) as it is less subjective, while the rest of indicators inevitably have a lot of subjective self-rated ones.
Family relationship	1. Self-rated warm family 2. Proud of family members by levels	The study uses 1) to reflect family relationship
Community / social relationship	1. Self-rated relationship with community members 2. Frequency of community participation 3. Being a member of informal community group	There are several proxies for community participation in the survey, but the empirical tests choose 1)- relationship to reflect social relationship
Environment (community environment)	1. Rating quality of environment level 2. Rating well environmental management level of the community	This study uses 1) to reflect levels of community's environment quality .
Time (Time available for useful and personal preferences)	Having enough time for doing useful/ creative activities and for personal & family preferences. Rating levels of time available for these activities.	Levels of overall time used for these activities
Enough (enough in materials beyond basic needs)	Feeling “enough” in materials, or not enough	Reflecting in dummy variables 1, 0

Suffering management (ability to manage sufferings when occur, or un-attachment)	Self-rated levels of management of suffering	Skill of suffering management or un-attach to suffering, represented by low to high levels.
Stress Management (ability to leave stress)	Self-rated levels of stress management	Levels of stress management from low to high ranks
Giving (actions of giving)	Frequency of donation or volunteer work in a month	Using levels of frequency instead of quantitative amount.
Want in materials (wants more than subsistent level of living)	levels of want/ demand in materials (beyond basic needs)	Meaning extra wants beyond basic needs they have, from low to high levels.
Mindfulness (mind development)	Self-rated levels of mind development or mindfulness/ Dhamma practice, including participating in temple activities	How much (in levels) the one do these activities at home and in temples overall.

As this case study aims to test some factors affecting inner happiness at mind and wisdom levels besides those affecting happiness at physical level that often founded in general studies, related questions were particularly designed for self-rating on subjective aspects to cover these related variables/ indicators.

Data Collection and Process

The study was planned in early 2018; geographical locations of 6 Tambons were considered for distributing samples to each Tambon according to their proportions of community population. The whole Bangkokjao population of 6 Tambons are about 50,000 persons. Following Yamane's formula (Yamane, 1967), the study aims to collect at least 400 samples for the empirical study.

The survey was randomly conducted in 6 Tambons in Bangkokjao community during late 2018 to early 2019 with

direct questions asking both objective and subjective aspects of relevant happiness domains as well as general information. For example, health, social (community) and family relationships, environment, time used, income, perceptions of economic status (relative income) and family net income, as well as subjective aspects of inner happiness and cultural aspects. Target interviewees were those who have lived in the community for a long period, through generations, or those who were born there. They were asked by accidental sampling in different types of locations: their houses, temples, parks, street corners, food shops and markets, etc. There are in total 490 samples from the community survey randomly obtained from 6 Tambons. After screening variables and selecting most suitable indicators as well as cross -checking all correlations among variables, the data with selected indicators are run using ordinary least square (OLS) by the program ‘STATA’.

4. Empirical results

This section aims to show various results from empirical tests, both from general tests (with different proxy variables for income) and from classified groups (by disaggregating samples to test for different groups). There are in total eleven empirical tests to examine determinant factors in question presenting significant variables at 95% confidence.

The first empirical result is the general one, covering all samples, as shown in Table 2. Factors significantly affecting happiness of the community members are: perception in relative income, health, time, enough, management of suffering, family relationship, community connected, and environment quality; whereas actual income is not significant.

Table 2. Happiness determinants of community members
n = 490

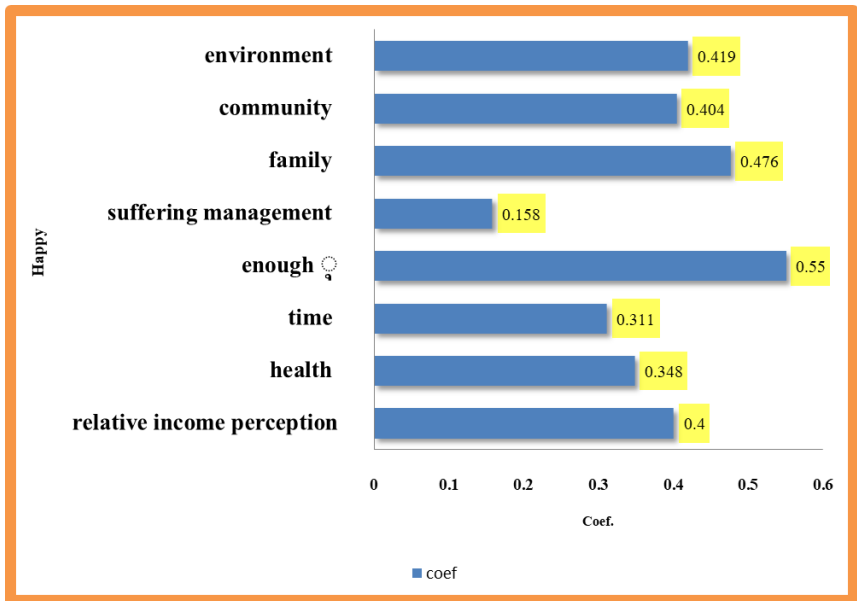
Variables	Coefficient	p> [t]
Income	-0.043	0.466
Perception in Relative Income	0.409	0.003
Health	0.348	0.00
Time	0.311	0.039
Giving	0.080	0.484
Enough	0.555	0.00
Manage of suffering	0.158	0.041
Family	0.476	0.04
Community	0.404	0.00
Environment	0.419	0.00
Constant	1.923	0.00

The empirical test confirms the importance of non-economic factors. The community members are happy from feeling “enough” as this variable has the strongest effect (.55 coefficient), followed by family relationship (.47 coef.), environment quality (.42 coef.), perception in relative income (.41 coef.) and community relationship (.40 coef.). These are among the strongest effects, which is consistent with other country studies discussed earlier. Other non-economic factors such as health (.35), time (.31), and management of suffering (.16), are positively significant for happiness. These results also confirm that in the reviewed discussions of happiness determinants in section 2.

The positive relationship of community happiness and environment is also consistent with MacKerron and Mourato (2013) because this community residents live in green areas or have natural exposure in daily life. They are able to link that kind of environment to their happiness more than those in urban environments.

Also, in line with reviewed theories and studies, actual income does not increase happiness accordingly, but relative income matters in this study. While monetary income is not significant, the perception in relative income/ economic status is significant and positive, reflecting that the higher perceived economic status to their reference group they are, the higher happiness they feel. This study indicates that the perception of economic status relative to their neighbor or subjective aspect of relative income, is more important than absolute number of income. This result confirms and is consistent with other studies' results already discussed in the role of relative income and social comparison sections.

Figure 1. Factors significantly affect happiness by sizes



Selecting only significant variables to happiness from Table 2, the magnitudes of the effects of these significant

variables to happiness (in comparative scales) are illustrated in the Figure 1.

This figure clearly shows that ‘enough’ has the largest effect. The high effect of feeling enough confirms the theoretical strong negative effect of the feeling associated with aspiration, social comparison and adaptation, because these effects could be low if people felt satisfy with what they have (or feeling enough).

Next, the study aims to explore the effect of household’s economic management on happiness. In Table 3, the individual income variable is changed to be family net income (indicating whether income can cover the expenditure or not (or with surplus or deficit)). When using the economic indicator as ‘family net income’ reflecting levels of family economic management instead of levels of individual income (which is not significant in Table 1), the results are shown in Table 3.

It is found from the Table 3 that the variable of family economic management is positively significant and has the strongest effect (.588 coef.). Thus, the higher family net income is, the higher happiness they gain. This also supports the concept of sufficiency economy that as long as households can manage to reduce expenditure from unnecessary things, the low level of monetary income does not matter because they are able to have saving or no debt. Survey data also shows that the majority of respondents can manage their economic situation to live happily with simple living⁴, although some may have problems with family economic management.

⁴ The majority answered that they have sufficient income for expenditure with no debt (about 68%) and about 15% have surplus net income and for saving.

Table 3. Happiness determinants (using family economic management as a proxy for income)

n = 490

Variables	Coefficient	p> [t]
Family net Income	.588	0.000
Health	.315	0.001
Time	.348	0.018
Giving	-.059	0.793
Enough	.452	0.002
Want	-.067	0.214
Manage suffer	.171	0.024
Family	.431	0.050
Community	.396	0.000
Environment	.385	0.000
Constant	2.006	0.000

Other significant factors are similar to Table 2; namely, feeling enough in material, role of relationship with family and community, environment, time balance, health, and the level of suffering management. This supports the argument discussed in section 2 that when income is beyond subsistent level, more influential factors to happiness is non-income factors such as relationship with family, friends, and social groups, time balance, and health, which are among proven factors highly determining happiness in other countries/case studies.

Both Tables 2 and 3 indicate two important economic indicators for happiness: roles of relative income and family's sufficient net income, which can be used alternatively for actual income variable. The study results show that perception in relative income, not absolute monetary income, significantly effects happiness. As the majority of community members have similar range in economic status, they do not

feel that they are poorer than others⁵. Thus, the perception of equal status affects their happiness significantly. This would have implications for building equality in any society. In addition, the family net income (relative income and expenditure) has a strong positive relationship with happiness. Even if their actual income levels seem low⁶, if they have enough income to cover their low expenditures and are not in debt, they can live happily in moderation. This kind of economic management is in line with sufficiency economy principle which they can apply to manage their households' income and expenditure economically as well as live happily, even if they cannot earn very high income.

Related to theories discussed previously, community happiness is likely to due to low negative effects of aspiration and social comparison. It is shown from these tables that the feeling “enough” is a crucial factor to happiness in this community. Satisfaction in the mind can reduce suffering; in other words, it increases happiness. As this relates to inner happiness which has not been much explored in other happiness studies, the study investigates more details about characteristics of happiness of different groups with additional tests.

The study then disaggregates samples by occupations, income levels, and age groups for specific groups' empirical tests in order to see happiness determinants that may be varied by sub-groups. The study can also explore further how much effects of ‘enough’ for different groups. Results show that the effect of ‘enough’ in agriculturalists are stronger than that of

⁵ From the survey, 78 % of them perceived they have similar economic status with other community members, while about 10% feel higher than average and the rest feel poorer.

⁶ Their average income is likely to be lower than other towns as about 43% have monthly income less than 10,000 Baht and 33% is between 10,000 - 20,000 baht.

the non-agriculture group and is also stronger for the lower income group (indicated in the Tables 4, 5, 6, 7, and 8 as follows).

Break down by occupation

The study has covered samples in different occupations in the community and grouped into two main categories: agriculture and non-agriculture (of which a lot are under service sector such as community's food related, local transportation, etc.).

Table 4. Happiness Determinants of the Agricultural Group

n= 126

Variables	Coefficient	p> [t]
Income	.117	0.390
Health	.231	0.140
Time	.371	0.236
Giving	-.353	0.428
Enough	1.04	0.002
Want	-.055	0.562
Manage suffer	.457	0.003
Family	-.116	0.835
Community	.521	0.006
Environment	.454	0.001
Constant	1.89	0.033

For the agricultural group, the feeling of “enough” has the largest significant effect (with 1.04 coef.) on happiness, followed by the effects of good community relationship, management of suffering, and quality of environment respectively. Unsurprisingly, those who remain in agricultural

sector, whereas a lot have changed careers for not working hard with uncertainty income as those in agriculture, must have self-satisfaction in mind. Of course, living in that green community and environment are important factors for their happiness; otherwise, they may work in non-agricultural sector elsewhere.

Table 5. Happiness Determinants of the Non agriculturalists

n= 352

Variables	Coefficient	p> [t]
Income	-.019	0.791
Health	.361	0.001
Time	.287	0.111
Giving	-.113	0.661
Enough	.591	0.001
Want	-.107	0.137
Manage suffer	.076	0.409
Family	.808	0.002
Community	.388	0.000
Environment	.377	0.000
Constant	3.157	0.000

For the non-agricultural, the feeling of ‘enough’ also has a positive effect on this group’s happiness, but its coefficient is smaller than the agricultural group (0.591, compared to 1.04), reflecting the lower magnitude of ‘enough’ to happiness compared to those of agriculture. Moreover, family and community relationship, quality of environment and health are also positively significant. However, the effects from community and environment are lower, comparing with those in the agriculture.

Break down by income levels

When breaking down by levels of monthly income into three levels: (1) less than 10,000 Baht, 2) between 10,000-20,000 Baht, and 3) beyond 20,000 Baht), the variable of relative income is used for income variable due to the limited range in nominal income of each group. The results also show that the lowest income group has the largest effects of ‘enough’. Those who have monetary income below 20,000 baht are the groups that “enough” are significant to their happiness, but it is not significant for those with income higher than 20,000 baht/month (as shown in Tables 6, 7, and 8).

Table 6. Happiness Determinants of those earn less than 10,000 Baht a month

n=204

Variables	Coefficient	p> [t]
Relative Income Perception	.468	0.058
Health	.290	0.041
Time	.407	0.125
Giving	.362	0.306
Enough	.551	0.033
Want	-.076	0.400
Manage suffer	.090	0.450
Family	.598	0.107
Community	.154	0.339
Environment	.290	0.014
Constant	3.117	0.000

From Table 6, factors significantly affecting happiness of the lowest income groups are the feeling of ‘enough’ (with the largest coef. of .55), followed by environmental quality and

health (with .29 coef.). For the lowest income group, the prime factor for their happiness is the feeling of enough in materials. Obviously, satisfaction with what they have is crucial for happiness of the low income. They are also happy with good health and quality of environment.

Table 7 shows factors affecting happiness of the middle-income group (of this study); it is shown that community relationship, enough, environment, and health are significantly positive to happiness respectively, while levels of wants beyond basic needs have significantly negative relationship. This reflects that increasing wants (beyond necessities) which can reduce happiness as it can induce suffering (according to aspiration theory and Buddhist concept). Thus, reducing want (beyond basic need level) or eliminating unnecessary want can increase happiness of the middle-income group.

Table 7. Happiness Determinants of those between 10,000 – 20,000 Baht a month

n=158

Variables	Coefficient	p> [t]
Relative Income	.182	0.477
Health	.267	0.048
Time	.171	0.531
Giving	-.707	0.135
Enough	.510	0.042
Want	-.226	0.024
Manage suffer	.298	0.064
Family	.564	0.239
Community	.630	0.000
Environment	.332	0.016
Constant	2.961	0.002

Comparing tables 6 and 7, “enough” has more effects to the lower income group, as it is positively significant to happiness of the lowest income group (with coef. .55), higher than that of the middle group (with coef. .51). In contrast, “enough” is not significant to happiness for those who have relatively higher income group (more than 20,000 baht) as shown in Table 8 below. It implies that for the relatively highest income group, their happiness does not relate to “enough” in materials.

For this relatively higher income group, factors significantly affecting their happiness are environment, community/social relationship, and health, while enough is not significant. Appreciation of environment quality can lead to happiness of all groups across income levels; this confirms the positive effect of community environment to happiness.

Table 8. Happiness Determinants of those higher than 20,000 Baht

n=116

Variables	Coefficient	p> [t]
Relative Income	.349	0.110
Health	.347	0.026
Time	.234	0.336
Giving	.412	0.364
Enough	.316	0.211
Want	.004	0.971
Manage suffer	.098	0.470
Family	.555	0.121
Community	.475	0.002
Environment	.512	0.000
Constant	1.413	0.007

These last three tables interestingly present that the groups with relatively low income and uncertainty in earning (i.e., agriculturalists) feel “enough” or sufficiency in materials with larger effect to happiness. However, “enough” is not significant for the highest income group in comparison (above 20,000 baht a month). Thus, the feeling of sufficient in materials does not relate to how much materials they have. Those who have lower level of materials seem to have satisfaction in material than those who have more materials. Thus, the feeling of enough relates to subjective well-being rather than actual level of income.

Break down by Age groups

Another group category is divided by age group. The study divided the generations into two groups (below 40 years and above 40 years) as happiness studies often found that happiness pattern changes from midlife (around 40-50 years). For example, a study by Mroczek et al. (2005) found that life satisfaction increased from age 40 to 65, but then declined, particularly with impending death. As the survey of this study categorized senior age group for over 60 (not 65 years old), so it groups people between 40 and 60 together with the above 60 as one group. In addition, the community has largely changed from the past 40-50 years with a lot of reduction in green space (from about 95% to 45% now) which can affect the change in environment for the new generation under 40 years.

Table 9 shows that factors positively significant to happiness for the older group are family relationship (with the largest coefficient .84), followed by time (.54), enough (.45), environment (.38), and community relationship (.32) respectively. It shows that family and time-balance are very important to happiness for people above the middle age.

**Table 9. Happiness Determinants of the above 40 years old
n= 271**

Variables	Coefficient	p> [t]
Income	-.075	.345
Health	-.022	.528
Time	.5414	.007
Giving	.033	.758
Enough	.454	.050
Want	-.093	.177
Manage suffer	.174	.066
Family	.840	.046
Community	.320	.010
Environment	.380	.000
Constant	3.85	.000

**Table 10. Happiness Determinants of the below 40 years old
n= 155**

Variables	Coefficient	p> [t]
Income	.248	.032
Health	.670	.000
Time	.333	.230
Giving	-.187	.376
Enough	.490	.044
Want	-.116	.284
Manage suffer	.007	.960
Family	.918	.020
Community	.690	.000
Environment	.403	.004
Constant	1.307	.125

From Table 10, the largest significant effect on happiness for the younger generation is family (.92), which is similar to the older group, followed by community relationship (.69) and health (.67), enough (.49), environment (.40), and income (.25). Although income is not significant for the older group, it is significantly positive to happiness for the younger. While time balance is significant for the older group, it is not significant for this younger group. However, family and community relationship, environment and enough are significant for both age groups.

The significant of income to the younger group below 40 years old implies that money (income) matters for young workers who may have to secure their economic and family lives. Thus, this is the only group that income is positively significant, although its effect is minimal. In comparison with other groups, this group may need more income as they may look for job in non-agricultural sector or still have low earnings⁷. As discussed in Kittiprapas (2018a), happiness determinants of each specific group can be different; while income effect to happiness is generally small, its effect to the unemployed is higher than the employed. This reflects that income matters for those who are short of money, but may not affect happiness of those who can secure with subsistent income level and beyond because at that stage other factors are more important to their happiness, as mentioned in Clark et al., (2008), Layard (2005) and Bataineh (2019).

In addition, the study investigates further into the sample of those responding as having “enough” in order to examine in more details of inner happiness determinants of this group. Then, another model with only 325 samples of this group (reporting as “enough” in materials) are selected for empirical

⁷ From the survey data, 46% of this group is under 30 years old and 27% of the below 40 is unemployed.

tests. To explore wisdom-based happiness of this group, only related variables are selected; for example, levels of material wants beyond basic needs, management of suffering, level of stress, and frequency of mindfulness practice. The result is presented in Table 9.

Table 11. Happiness Determinants of those feeling enough in materials

n=325

Variables	Coefficient	p> [t]
Want	-.025	0.684
Manage suffering	.457	0.000
Stress	-.053	0.446
Mindfulness	.133	0.049
Constant	6.708	0.000

The table shows that for those who respond “enough”, the management of suffering is the key significant factor for happiness (with .46 coef.). Also, level of mindfulness is another significant factor for this group (with .13 coef). Those feeling “enough” or have sufficient materials would have satisfaction in mind that leads to less negative effects from social comparison and aspiration, associating with less suffering and leading to the increase in happiness. This is supported by the frequency in mindfulness practice which has positive relationship to this group’s happiness. That means happiness of the “enough” group comes tandem with the level of unattachment to suffering and mindfulness practice significantly. This somehow reflects the role of inner happiness at wisdom level.

In sum, these empirical findings discussed earlier confirm that various indicators for inner happiness and moderation in material living significantly relate to the happiness of the community members. The sufficiency in materials and

managed expenditures within limits are crucial economic factors. Social comparison/aspiration (main factor of unhappiness discussed in many studies) is low in this kind of community where monetary income does not matter as long as most of the people feel that they have similar or equal economic status/rank with good financial management within households. This reduces the negative effect of aspiration and adaptation on happiness.

Thus, for those with simple living, economic income may not be the ultimate aim, but other factors matter for their happiness as shown by the empirical results. The sufficiency of materials, quality of environment, and inner happiness can make them live happily in harmony with green space environment that community members have tried to maintain. Drawn from these results and survey data, their life satisfaction comes mostly from subjective aspects such as the feeling that they are not in poor economic status, their pride with family members with strong bonds and good community/social relationship as well as the community's environmental quality. With a moderate and simple life style, they have enough time to do what they like to do and help others as well as having good health. These subjective and objective aspects relate to the increase in happiness.

5. Conclusion and policy implications

The results of this case study show the positive effects of higher level of happiness beyond physical level, role of perception in relative income and family economic management, apart from non-economic factors such as health, time-balance, family and social relationship, as well as environment to happiness. These are consistent with other happiness studies discussed in section 2 about role of income and relative income, health, family and social relationship,

time-balance, and environment to happiness. However, an additional contribution found in this study's findings is the role of inner happiness confirmed by related indicators. Specifically, there are several key conclusions and policy implications drawn from this case study as follows:

First, perception in relative income plays significant role for happiness, while absolute income does not (with only exception for the younger age group). Therefore, policies aim at reducing income inequality would be more likely to have an effect on the happiness of individuals and the society as a whole rather than the aim to increase income or GDP only. As the increase in perceived inequality would reduce happiness, a policy shift to narrowing income gap can lead to an increase in social happiness. Therefore, to distribute benefits from development inclusively or reducing the feeling of inequality would be beneficial to societal/community happiness.

Second, family net income is highly essential for happiness. Although actual income is low, it does not significantly affect their happiness. As long as they can manage family's financial situation without debt or have saving, they can live happily in that situation. This finding is in line with sufficiency economy principle which should be promoted especially in times of economic crisis.

Third, the empirical study found that environment quality is very crucial to happiness of this community, confirmed by the positive significance of environment variable across all groups. Thus, preserving good quality of environment for community happiness is essential. Government policies should support and provide incentives for environmental protection, particularly with people participation.

Forth, findings in this community study confirm that inner happiness indicators are significantly relevant. It is evident that feeling "enough" in materials, with supportive inner happiness indicators, is essential for this community's

happiness. It is a key influential factor for happiness of community people who can live within this kind of environment for a long time.

Interestingly, the feeling of ‘enough’ has stronger effect to happiness for the lower and uncertain income groups such as those with the lowest income group and in agricultural sector. Only those with relatively highest income group in the community, their happiness does not relate to the feeling of enough or satisfaction in materials. In addition, it is found that fewer unnecessary wants leads to higher happiness for the middle-income group. For the group responding with ‘enough’, mindfulness and unattachment to suffering are significantly important, reflecting happiness at wisdom level. Thus, inner happiness should be promoted and policies should raise social awareness about ‘real happiness’ in Buddhism (rather than stimulate unnecessary wants for consumption-led growth policies all the times).

Simple living with moderation also allows community members to have more time to spend for useful activities that they are happy with and creativity works; thus, the increase in such time leads to the increase in happiness, confirmed by positive results of ‘time’ for those in the general group and sub-group of the above 40 years old. In addition, they have time to go to temples and do mindfulness practice allowing them to have some ability of unattachment to suffering. Time balance and quality of environment can lead to good health (physically and mentally). These all affect happiness positively as mentioned in Layard (2005), Bataineh (2019) and Machado (2015).

The case study of Bangkokjao community’ happiness also supports the concept of BSD as presented in Kittiprapas (2018b) that inner happiness is the key to achieving sustainable development. This community happiness with simplicity and moderation can maintain the environment,

while the environment increases their happiness. Thus, inner happiness, especially with feeling “enough” or sufficiency in materials, is crucial for preserving environment and should be promoted as a pathway to sustainable development.

Also, what could be learnt from this case study is that economics of moderation characterized with the sufficiency in household financial management, low income inequality and low social comparison as well as good environment can increase happiness of this community’s population. Thus, this kind of economic system should be promoted, especially in light of the global movement towards sustainable development goals and high uncertainties in world economic situation often facing risks from financial, economic, and pandemic crises.

Moving Policies forward

The study points to a crucial country’s policy movement - narrowing income inequality gap which is very important for people’s happiness; thus, government policies should plan for inequality reduction which is one of the Sustainable Development Goals (SDG) that Thailand has to achieve by 2030.

Concerning equality, one possible policy recommendation to ensure that all have basic needs equally could be basic welfare provision and resources distribution so that people would feel that they have at least sufficient basic needs equally, such as policies which relate to food security, basic health care access, land and shelter, and clothes. Therefore, programs providing basic welfare for all, such as universal health care should be continued with priority, in addition to supporting land distribution to those in need which will also help to guarantee food security if those lands can be used as resources for agriculture under sufficiency economy concept. Sufficient food and clothes at subsistent level could

also be provided as a certain of allowance to the needy, which may be the disadvantaged or the vulnerable in times of crisis. Sufficiency economy philosophy with inner happiness is encouraged for moderate living with care for quality of environment; this should be promoted as a pathway to the achievement of sustainable development goals for Thailand.

However, not only economic indicator for inequality reduction is needed, subjective or qualitative aspects for mind development to increase inner happiness should also be promoted. Mindfulness and living in moderation will reduce the negative effects of social comparison which are a major cause of unhappiness as indicated in the theoretical reviews. As indicated in this study and others, perceived relative income significantly effects happiness. Thus, promoting inner happiness to reduce social comparison is crucial for increased happiness. The importance of inner happiness is consistent with Clark et al. (2018) suggesting that mental well-being is the main determinant of happiness and should be the focus of policy in promoting happiness. Thus, policies focusing on mental well-being could bring in much more happiness of the people than that emphasis on income or economic well-being, comparing the same costs or resources spent. Inner happiness is happiness with low cost and transmissible to others and society. Thus, policy consideration should turn to be inward-looking for personal/mental well-being and promoting inner happiness, rather than only looking for outside but neglect human-inside.

For households, sufficiency economy principle should be promoted for good household financial management; even households which do not have high income they can live happily. The sufficiency economy philosophy (SEP) can also help people to go through economic hardship in any time of crisis. In everyday life, SEP's key principle of moderation is crucial for people to feel "enough" and to not be driven by

unlimited wants that can generate unhappiness. To promote that way of life, policy direction should promote economy of moderation based on Buddhist and sufficiency economy philosophy with supportive policy environment. Policies should encourage people in the society to be aware about benefits of mindfulness, reasonableness, wisdom to know appropriate level of living and consumption, management of stress and suffering for improving mental well-being. On the other hand, policies should not promote greed, continuously increasing wants for unnecessary things or encourage overspending all the time (which has been evident before the time of crisis). As over-stimulating consumption continuously may lead to family's financial problems, policy measures (in normal times) should not escalate consumption led-growth only for short-run GDP concern without due consideration to the long-run effects on resource/budget limitation, non-economic effects and human behavior with carelessness as well as high risks for being indebted. Moreover, over consumption and careless production can destroy natural resources and harmful for lives, which contradict to the movement for sustainable development.

Another important policy implication highlighted from this study is that the government and the society have to urgently preserve environment quality in Bangkajao, as it is crucial for community happiness shown consistently across all groups. In addition, green spaces in Bangkajao have been generating positive externalities to the public at large outside the community. While the ratio of green space in this community has gradually declined since the past 40-50 years, serious environmental protection is urgently needed. As the green area of Bangkokjao is very important for outside community area such as Bangkok and Thailand due to its high production of oxygen and carbon reduction as being called as “Bangkok's green lung”, all parties should try to protect this

large green area which was once called the ‘best urban oasis in Asia’ by Time Magazine Asia in 2006. Otherwise, unplanned business and investment from outside together with poor regulation enforcement will gradually destroy the quality of environment and community happiness. Land use planning and strong legal enforcement for those invading environment regulations should be seriously implemented. In addition, incentives for people participating in environmental protection should be provided with measures supporting them to have returns from investing and preserving those green areas. There are many vacant public land slots that can be reformed for community benefits from green production from those land. Otherwise, this uniquely green community would be at high risk of losing its green area and traditional life style, which can happen very quickly if stakeholders and the government do not seriously protect it nor see its importance - especially when the community cannot resist with the stronger business power and facing strong invasion from materialistic urbanization surrounding them just across the Chao Praya river.

Limitations and future research

This study survey covers community residents who have lived there through generations or for a long time as permanent residents, not outsiders who have come to do business or those from other urban areas who construct their second houses there. However, the future changes in population with new comers and economic structure may bring in new business and investment (such as for tourism related, construction, etc.) that could affect future community happiness. In addition, the survey was conducted in the daytime or working time, so it may not cover those who go out of their houses and the community for work or may be struggle in life. Finally, this micro case study is an effort to test the concept of happiness in

Buddhism which still requires more case studies and data sets for further exploration. More studies should be done to cover greater geographical locations.

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