

Inequality of Opportunity in Wealth: Unpacking the Wealth Myth of Thailand

Rathaporn Boonlert^{1*} and Niramol Ariyaarpakamol¹

¹ School of Development Economics, National Institute of Development Administration, Thailand

* Rathaporn Boonlert, corresponding author. Email: rathaporn.boo@stu.nida.ac.th

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Abstract

Using three waves of Thailand Household Socio-Economic Surveys in 2006, 2011, and 2017, this paper analyzes the inequality of opportunity trend over time and its contribution to total wealth inequality in Thailand. The empirical results based on non-parametric and parametric techniques demonstrate the declining inequality of opportunity in the overall inequality from 2006 to 2017. The lower bound estimation of inequality of opportunity caused by external factors beyond an individual's control (i.e., circumstances) accounted for 16–17% of overall inequality in 2006, compared with only 11–14% in 2017. Based on our analysis, higher education could be one of the crucial elements in narrowing the differences in individuals' wealth.

Keywords

Disparity in circumstances; inequality of opportunity; Thailand; wealth inequality

Introduction

Inequality can be considered in terms of its many dimensions. So far, most studies related to inequality have focused on outcome dimensions such as consumption, income, and wealth. This perspective on inequality results from economic and social processes that determine the distribution of specific outcomes. However, this perspective does not reflect the view of inequality of opportunity that has long been considered fundamentally unfair.

Economists and policymakers should focus on inequality of opportunity due to its importance concerning various aspects of economic development. First, inequality of opportunity is inefficient. It can hinder economic growth and worsen income and wealth inequality (Bradbury & Triest, 2016). A disparity in circumstances at birth might condition the outcomes that individuals can achieve by preventing them from realizing their potential and making the best use of their skills. Second, it is intrinsically unfair when specific individuals or groups have consistently inferior opportunities, which might damage trust and social cohesion and lead to social conflict (Dabla-Norris et al., 2015). Furthermore, such inequality may bring about a lesser degree of confidence in critical economic and political institutions, which might undo hard-won reforms and create significant economic costs (European Bank for Reconstruction and Development, 2016; Manuelyan Atinc et al., 2005). Instead, to promote equal opportunity, individuals' outcomes should ideally be determined by their inherent intelligence, skill, and efforts, not predetermined by their backgrounds.

In societies where inequality of opportunity has existed for an extended period of time, the consequent differences in outcomes can be transmitted across generations, especially regarding wealth. Wealthier people tend to have a more significant opportunity to access available resources and use those resources to earn persistently higher rates of return on wealth. Galal and Enbavy (2020) found that circumstances contributed more to inequality of opportunity regarding assets rather than incomes. One reason was that the distribution of assets was less affected by economic fluctuations and other exogenous shocks. Thus, variation in wealth would provide a superior assessment of inequality of opportunity than income.

Although many studies regarding inequality in Thailand have focused on income, wealth inequality is just as crucial since wealth can be transferred from generation to generation, determining whether or not an individual has a head start in life. Hengpatana et al. (2019) conducted a situation analysis of asset distribution by examining asset ownership amongst the different socioeconomic classes. The results revealed that inequality in wealth distribution seemed to be more drastic than inequality in income distribution. In addition, a report by the Credit Suisse Research Institute (2018) indicated that Thailand had the highest wealth disparity in the world. The wealthiest 1% held almost 67% of the country's wealth, showing Thailand's highly skewed distribution of wealth. This finding is crucial because wealth inequality can bring about other issues regarding individual well-being. Sakunphanit (2021), for instance, found that the wealthiest group was much healthier than the poorest group, and this difference increased with age. Despite this, little research has emphasized the importance of the underlying circumstances that might affect wealth inequality among individuals or households. Therefore, the contribution of this paper is twofold. First, it provides empirical evidence to enhance the understanding of the trend and how much inequality of opportunity and wealth are related in Thailand. Second, we attempt to provide policy recommendations that may help mitigate the inequality of opportunity.

Literature review

The concept of inequality of opportunity originated from the social justice strand of philosophy. The advocates of the theory of distributive justice, such as Arneson (1989), Cohen (1989), Dworkin (1981a, 1981b), Rawls (1971), and Sen (1999), believed that the equality of individual outcomes did not have to be necessitated. However, equal opportunities for individual outcomes had to be. The basic idea is that differences in results from circumstances beyond personal responsibility are not morally justified; differences due to individual effort are. Therefore, society is equitable if opportunities, rather than outcomes, are equally distributed. In addition, such 'leveling of the playing field' is an essential condition for social justice; hence, promoting social justice should be concerned only with ensuring that everyone starts with equal opportunities (or so-called circumstances), letting choices made by individuals be the only determinant of their outcomes.

Roemer (1998) formalized the concept of inequality of opportunity using a model that discusses outcomes as a result of variables that are both beyond and within an individual's control, calling them "circumstances" and "effort." Circumstances are predetermined and exogenous to individuals, while individuals can determine effort. From Roemer's point of view, equality of opportunity can be achieved when the outcome is independent of circumstances. Roemer (1998) also introduced the concept of "types," groups of individuals who share the same circumstances. Based on this idea, equality of opportunity requires compensating persons for the differences in their circumstances but not compensating them for the consequences of the differential application of effort (Roemer, 1998, p. 7). Given equality of opportunity, equality of outcomes depends on whether individuals put in the same effort. That is, opportunities are equalized by distributing resources to those disadvantaged regarding "circumstances" to provide a "level playing field" for all. Then, in theory, those with equal outcomes would be the ones who have devoted the same level of effort (Roemer, 1998, p. 23). On the other hand, some studies (e.g., Bourguignon et al., 2007; Corak, 2013) focused on the importance of circumstances and how they tended to play a more substantial role in determining individual outcomes than effort.

A vast empirical literature has measured the inequality of opportunity in many countries, especially in the cases of Latin American and European Union countries (Bourguignon et al., 2007; Checchi & Peragine, 2010; Ferreira & Gignoux, 2011; Paes de Barros et al., 2009). However, these studies have focused on income as an outcome, while the literature on wealth is relatively thin. Most previous studies regarding wealth inequality, such as Fagereng et al. (2020), revealed that returns to an individual's wealth remain substantially persistent over time. That is, persistently higher returns on wealth will end up generating more wealth, a phenomenon that can perpetuate, sometimes exponentially, across multiple generations, resulting in a situation in which those who are ahead in terms of wealth at the outset tend to run faster than those behind them in terms of wealth. Nevertheless, these papers do not explain through which channel (such as child development, education and human capital, and success in the labor market) unequal opportunity influences wealth inequality over time.

A high level of wealth inequality underpins Thailand's developing economy. Based on data from the Land Department, Laovakul (2016) stressed that the distribution of titled land was highly skewed, as indicated by the Gini coefficient of 0.88—compared to the income Gini coefficient of 0.48. This similar pattern was also evidenced in financial assets, which led to the conclusion that wealth inequality was much more severe than income inequality in Thailand.

Phongpaichit (2016) also emphasized that wealth had become more concentrated at the high end of the wealth pyramid, as evidenced by the growth in the wealth of elite family holdings. Additionally, there has been a growing trend in non-wage income, such as rents, profits, and financial assets. According to the Twelfth National Economic and Social Development Plan (National Economic and Social Development Board, 2016), inequality, a critical, challenging factor for economic development in Thailand, has continually manifested in various dimensions. One of those dimensions is in terms of assets and land holdings. More than 60% of all land was possessed by the top 10% of the landholders, while the bottom 40% held only 1.2%. In this regard, enhancing opportunity for the poorest 40% of the population is one of the vital development agendas of the plan. Henceforth, understanding the underlying factors that drive inequality in wealth, especially the influence of inequality of opportunity in Thailand, is crucial for designing policy interventions that will mainly benefit the target group.

Despite the growing concern regarding the inequality of opportunity, which policymakers should tackle, empirical studies on the inequality of opportunity, to the best of our knowledge, are scarce in the case of Thailand due to the difficulty in measuring intangible opportunities. However, Pinitjitsamut (2014) found that personal socioeconomic characteristics such as age and marital status had—at least in 2009—a positive impact on individual economic opportunity. However, this study did not investigate the effect of inequality of opportunity in wealth nor demonstrate the trend of inequality of opportunity over time. Furthermore, policy interventions to promote equal opportunity in outcomes require the identification of the contribution of circumstances to observed inequality. Therefore, this paper attempts to fill in the knowledge gap by mainly focusing on the trend and determinants of inequality of opportunity in wealth in Thailand across three different cohorts of 2006, 2011, and 2017.

Methodology

Conceptual framework

The conceptual framework of inequality of opportunity was built on the notion that y , the social outcome, is a function of circumstances and effort, which can be written as:

$$y = f(C, E) \quad (1)$$

Based on this basic function, it was assumed that if equality of opportunity was achieved, that is $F(y|C) = F(y)$, circumstances do not affect the outcome, and the effort is distributed independently from the circumstances, according to the condition presented in Eq. (2) and Eq. (3):

$$\frac{\partial f(C, e)}{\partial C} = 0, \forall C \quad (2)$$

$$G(e|C) = G(e), \forall e, \forall C \quad (3)$$

The population can be partitioned into groups, called types, in which individuals of the same type share identical circumstances, and the level of effort exerted is the only thing that differs among them. In other words, this approach considers that there exists an equal opportunity

if and only if the individuals' outcome is the same regardless of their types, given that they put in the same degree of effort. If there is a gap between types, there is an inequality of opportunity due to the difference in circumstances. Therefore, the degree of inequality of opportunity is measured by the extent to which $F(y|C) \neq F(y)$, using both non-parametric and parametric methods.

The literature on inequality measurement suggests that the mean log deviation (MLD), or the generalized entropy (GE) index degree 0 or $GE(0)$, is suitable for measuring inequality due to its decomposability and path independence (Checchi & Peragine, 2010; Galal & Enbaba, 2020; Paes de Barros et al., 2009; Shaheen et al., 2016; Singh, 2012). In general, the GE index is used to measure overall inequality; the higher the value of the index, the greater the overall inequality. However, $GE(0)$ is the only decomposable inequality measure that is path independent (Checchi & Peragine, 2010). Firstly, $GE(0)$ is additively and exactly decomposable. Simply put, overall inequality can be divided into between-type inequality (inequality of opportunity) and within-type inequality (inequality of effort). The decomposability property of $GE(0)$ is thus desirable as this paper attempts to determine the trend of opportunity inequality and its share in overall inequality. The second advantageous property of $GE(0)$ is its path independence. Technically, there are two ways to calculate the inequality of opportunity. The first approach is to directly compute the between-type inequality (assuming the same degree of effort), i.e., inequality resulting from different circumstances. Another approach is to compute the within-type inequality whereby observations in the same subgroup are assumed to share identical circumstances but exert a different level of effort. Therefore, the inequality obtained from this calculation is the inequality of effort. The inequality of opportunity is simply the difference between overall inequality and the inequality of effort. As such, $GE(0)$ is considered path independent because the computed inequality of opportunity is the same regardless of the approach employed. Owing to these two properties of $GE(0)$, it is commonly used in studies regarding inequality of opportunity.

In measuring inequality of opportunity, the non-parametric and parametric approaches are employed. In essence, the non-parametric approach yields results on the inequality of opportunity without assuming any specific relationship pattern between circumstances and outcomes. In contrast, the parametric approach involves specifying a particular pattern of the relationship in order to compute the inequality of opportunity. The detail of each approach is discussed as follows.

Non-parametric method

The concept of this method is that the observations are divided into groups by type, where the members of each type meet the same circumstances. All individuals who exert the same level of effort are placed at the same quantile of their type's distributions of outcome (Checchi & Peragine, 2010; Roemer, 1998). Following this approach, inequality of opportunities is the inequality between different types. To evaluate inequality of opportunity, a smoothing transformation is utilized, using a constant reference value of effort \bar{E} , namely, $f(C_i, \bar{E})$ for all i , where i represents each individual. The smoothed distribution can be represented by the average outcome, $\{\mu_c\}$, of a given type, identified by C . The replacement of each individual's outcome with the type-specific mean outcome level, μ_c helps eliminate within-type inequality. Given an inequality measure I , the opportunity share of outcome inequality can be defined as the share of between-type inequality to total inequality and be represented as follows:

$$\theta = \frac{I(\{\mu_c\})}{I(F(y))} \quad (4)$$

The advantage of the non-parametric method is that, unlike the parametric method, it does not require a functional form to measure inequality of opportunity. Nevertheless, this method is appropriate if there are many observations relative to the number of types. If there is a problem of data insufficiency, the parametric method is an alternative option to estimate the inequality of opportunity, as described below.

Parametric method

The main concept of the parametric method is to incorporate all circumstance variables into one equation using an ordinary least square (OLS) regression. To construct the parametric inequality estimates, let $\tilde{F}(\tilde{y})$ be the counterfactual outcome distribution where all individuals' circumstances are the same. The share of inequality attributable to opportunity can be expressed as

$$\theta_P = 1 - \frac{I(\tilde{F}(\tilde{y}))}{I(F(y))} \quad (5)$$

Following Bourguignon et al. (2007), the log-linear specification model is employed,

$$\ln(y_i) = C_i\alpha + E_i\beta + v_i \quad (6)$$

where $E_i = AC_i + \varepsilon_i$. α and β are coefficient vectors, A is a matrix of coefficients depicting the influence of circumstances on efforts, and ε_i is an error term. This pattern can be written in reduced form as

$$\ln(y_i) = C_i\delta + \gamma_i \quad (7)$$

where $\delta = \alpha + \beta A$ and $\gamma_i = v_i + \varepsilon_i\beta$.

To evaluate inequality of opportunity, the counterfactual distribution is calculated by computing $\tilde{y}_i = \exp(\tilde{C}\delta + \hat{\eta}_i)$.

Based on the limitation of the number of observations in this paper, the parametric method is considered to be superior for conducting the empirical analysis as it economizes on data requirements and tends to yield a better result compared to the non-parametric method, which has a risk of yielding an imprecise estimation in the case of low sample density within the types. However, to ensure the consistency of the empirical results, especially the trend of inequality of opportunity in wealth across different periods, this paper employs both non-parametric and parametric methods.

Data

This paper uses data from the Household Socio-Economic Surveys (SES) for 2006, 2011, and 2017 to examine the inequality of opportunity trend and its determinants over time. As this study began, the 2017 SES was the most recent round. The 2006 and 2011 rounds were selected for showing relatively long-term (10 years) and short-term (5 years) changes in the inequality

of opportunity. The SES is an official data source provided by the Thailand National Statistical Office with the primary objective of providing survey information on households' economic well-being, such as income, expenditure, consumption, and assets. Generally, 40,000–50,000 households are surveyed for each round, covering information primarily on the household and individual levels for some of the surveyed questions (such as individual characteristics and income). However, the analysis in this paper mainly relies on individual-level data, especially the circumstance variables. As some circumstance variables are related to parents' characteristics, only individuals with available parental data are included in this study. Based on this criterion, the number of observations in this study was substantially smaller than the overall number of the surveyed households/individuals in the SES.

This paper investigates the inequality of opportunity in Thailand across different periods based on individuals' wealth as the outcome. While other studies used individuals' self-reported information on asset ownership and value (Hasanbasri et al., 2022) or the asset indexes of household heads and non-heads (Brock, 2020) as outcome variables, the SES data we used provided information only on household wealth. As it was impossible to identify each family member's contribution towards household wealth, this paper used household wealth divided by the adult headcount as a proxy for an individual's wealth in our empirical analysis. The adult headcount included all individuals aged between 20 and 65 who were actively working. "Wealth" was calculated from the total sum of the household reported value of the real estate (comprising house, land, and buildings), vehicles (such as private cars, motorcycles, boats, and tractors), and financial assets for saving or investment purposes (such as cash, bank deposit, government bond, and mutual fund), which was converted into real, inflation-adjusted data, using 2015 as the base year. The SES also provided some characteristics of each family member in a household so we can match individual wealth from calculation with the individual circumstances living in that household.

Table 1 shows the summary statistics for real wealth in each survey round.

Table 1: Summary Statistics of Real Wealth (2015 as the base year)

Wealth (Unit: Thai Baht)	2017	2011	2006
Minimum	1,239	1,063	1,523
Maximum	20,500,000	29,800,000	23,400,000
Mean	656,990	496,494	446,347
Standard Deviation	1,316,023	973,667	1,058,420

Based on existing literature and the availability of data, the circumstance variables used from the survey included gender, area of residence, parental education level, and parents' sector of employment (Bourguignon et al., 2007; Checchi & Peragine, 2010; Ferreira & Gignoux, 2011; Galal & Enbaby, 2020; Pistolesi, 2009; Singh, 2012). These circumstance variables are commonly represented in the existing literature as they reflect the social or family background, which is beyond an individual's control. First, parental education level was included in the analysis as it was believed that more educated parents are likely to place more importance on education and invest more in their children's education (Strauss & Thomas, 1995). Following current literature, the circumstance variables regarding parental characteristics were separately classified into the father's and mother's characteristics to examine which party plays a more significant role in determining individuals' outcomes. Due to data limitations, however, this paper used the highest education level of either the father or mother to represent the parents' education level. Parental education level can be classified

into one of four categories: primary or below, lower secondary, upper secondary, and post-secondary or above. The parents' employment sector was converted into a dummy variable for the father and mother in the agricultural sector (agriculturist = 1). Similarly, male gender (male = 1), and municipal area of residence (municipal = 1) were both designed to be dummy variables. Based on these circumstance variables, some studies indicated that male individuals residing in an urban area and having highly educated parents who work in the non-agricultural sector tended to have greater wealth (Galal & Enbaby, 2020).

In the model, the logarithm of real household wealth per adult headcount was treated as the independent variable, along with the set of explanatory variables representing individuals' specific circumstances. The variables employed in the non-parametric and parametric estimation can be summarized in Table 2.

Table 2: Variables Used in the Model

Model	Variables
Non-parametric	<p>Outcome Variable The logarithm of real household wealth per adult headcount (Wealth is the total sum of the household reported value of the real estate, vehicles, and financial assets)</p> <p>Circumstance Variables Parents' education, father in the agricultural sector, mother in the agricultural sector, male gender, the municipal area of residence</p>
Parametric	<p>Outcome Variable The logarithm of real household wealth per adult headcount (Wealth is the total sum of the household reported value of the real estate, vehicles, and financial assets)</p> <p>Circumstance Variables Parents' education (primary or below = 0), father in agricultural sector (agriculture = 1), mother in agricultural sector (agriculture = 1), male gender (male = 1), municipal area of residence (municipal area = 1)</p>

Table 3 displays the summary statistics for the explanatory variables used in this paper. As the circumstances or the explanatory variables used in this paper were dummy variables that take on only the value of either 0 or 1, the mean of dummy variables represents the percentage of observations with a value of 1 for the variables in consideration. In terms of parents' education level, up to 79% of individuals in 2006 had parents with primary education, but the proportion has slightly declined over time. The share of individuals with parents with lower-secondary education marginally increased from 8% in 2006 to 10% in 2017. In contrast, the share of individuals with parents with upper-secondary education has been slightly more apparent, increasing from 6% in 2006 to 10% in 2017. The share of individuals with parents having post-secondary education or above has been stable at around 8% over the years. As for the parents' employment sector, nearly half of the individuals reported having a father working in the agricultural sector. The share of individuals reporting to have their mother working in the agricultural sector gradually increased from 38% in 2006 to nearly 50% in 2017. Compared to females, the share of males in our sample marginally rose from 54% in 2006 to 57% in 2017. Regarding areas of residence, the share of individuals living in municipal areas has been stable at around 60% over time.

Table 3: Summary Statistics for the Explanatory Variables

Variables	2017			2011			2006		
	Mean	SD	n	Mean	SD	n	Mean	SD	n
Parents' education									
Primary or below	0.72	0.45	4,213	0.76	0.43	4,213	0.79	0.41	4,732
Lower-secondary	0.10	0.30	593	0.09	0.28	493	0.08	0.28	492
Upper-secondary	0.10	0.30	588	0.07	0.26	405	0.06	0.24	352
Post-secondary or above	0.08	0.27	471	0.08	0.27	451	0.07	0.25	392
Father in the agricultural sector	0.45	0.50	4,081	0.37	0.48	3,864	0.47	0.50	3,995
Mother in the agricultural sector	0.49	0.50	5,395	0.45	0.50	5,149	0.38	0.48	4,154
Male gender	0.57	0.50	6,006	0.55	0.50	5,769	0.54	0.50	5,914
Municipal area of residence	0.58	0.49	6,006	0.59	0.49	5,769	0.61	0.49	5,914

Note: SD refers to Standard Deviation; n refers to the Number of Observations

Results

Inequality of opportunity and wealth

Table 4 presents the non-parametric estimation results of inequality of opportunity for wealth. To indicate the share of inequality of opportunity to overall inequality, the GE(0) was used as the index measurement in this paper. However, it should be noted that the estimation result of inequality of opportunity yields only the lower bound of the actual inequality of opportunity as we cannot observe the complete set of circumstances (Bourguignon et al., 2007; Ferreira & Gignoux, 2011).

Table 4: Non-Parametric Results on Inequality of Opportunity in Wealth

MLD	2017	2011	2006
Total Inequality	0.00454	0.00498	0.00542
Within-type Inequality (Inequality of Effort)	0.00403	0.00426	0.00454
Between-type Inequality (Inequality of Opportunity)	0.00051	0.00072	0.00088
Opportunity Share	11.23%	14.46%	16.24%
Observations	3,972	3,779	2,778

The total wealth inequality based on the combinations of all circumstances (including male gender, the municipal area of residence, parents' education level, father in the agricultural sector, and mother in the agricultural sector) ranged from 0.00542 in 2006 to 0.00454 in 2017, indicating a declining trend over time. As for inequality of opportunity, it has decreased from 0.00088 in 2006 to 0.00051 in 2017. In addition, the opportunity share (defined as the percentage of between-type inequality in overall inequality) in wealth has declined from 16% in 2006 to around 11% in 2017, indicating a slight lessening of the relative importance of circumstances on total inequality over time.

In terms of parametric analysis, the results from an OLS regression on the log of wealth per head as the dependent variable and the set of circumstance variables are shown in Table 5. Age and age squared had positive and negative coefficients, respectively, and both were statistically significant in all three rounds. This result indicated an inverted U-shaped relationship between wealth and age. The parental level of education was statistically and positively correlated with wealth in all rounds. This finding was consistent with the study of Palomino et al. (2022), asserting that households with highly educated parents had greater wealth than households with less educated parents. Adermon et al. (2018) also found that parental education was somewhat related to wealth inequality. It is also important to note that the coefficients on parental education significantly increased with higher levels of education in all rounds, suggesting non-linearity increasing impacts of parental education.

Being male, on the other hand, had a negative impact on wealth. This result was consistent with previous studies that focused on observations of low-income groups. Antonopoulos and Floro (2005), for instance, investigated gender differences in asset ownership in terms of tangible assets (such as jewelry, transport/vehicles, appliances, and occupation-related assets), formal financial assets (such as bank deposits), and informal financial assets (such as rotating credit and savings associations, group savings, cooperative savings, and occupational group savings). The study found that females from low-income groups living in urban areas owned slightly more real and informal financial assets than males, although this was not statistically significant. Mutakalin (2015) studied the pattern of asset ownership between men and women in the Northern Region Industrial Estate in Thailand. The result suggested that although males in households tended to own more valuable assets or work-related assets, females owned assets unrelated to occupation, such as motorcycles, bicycles, land for a house, and houses. In addition, whereas males only jointly owned cash as their liquid financial assets, females in the household owned informal and formal financial assets, suggesting a solid fallback position compared to their husbands.

The coefficient on the area of residence was negatively significant only in 2017, but the coefficient signs were stable for all rounds. This result was similar to Pinitjitsamut (2014), which found that people in Bangkok did not necessarily obtain more significant economic opportunities than others. In addition, individuals whose fathers worked in the agricultural sector tended to have greater wealth than those with a father working in the non-agricultural sector. This result was statistically significant in all rounds. Moreover, this finding aligned with that of Hengpatana et al. (2019), who found that most landowning farmers had their land and house in rural areas. Additionally, the 2017 Thailand Household Socio-Economic Survey reported that the value of agricultural land holdings was higher than that of non-agricultural land holdings (National Statistical Office, 2017). Therefore, most individuals whose parents were agriculturists tended to occupy more extensive land areas and live in non-municipal regions, resulting in greater wealth. Nevertheless, we cannot infer from this that individuals whose parents have more land assets will be able to create additional wealth by themselves. Regarding the parental employment sector, the mother's effect seemed less to do with wealth than the father's effect. Indeed, the impact of having an agriculturalist mother on wealth was statistically significant only in the 2006 round, while that of an agriculturalist father was statistically significant in all three years.

Table 5: Regression Results of Individual's Wealth on Circumstances

	2017	2011	2006
Age	0.01051*** (0.00141)	0.00858*** (0.00144)	0.01056*** (0.00169)
Age-squared	-0.00012*** (0.00002)	-0.00010*** (0.00002)	-0.00014*** (0.00003)
Male Gender	-0.01454*** (0.00294)	-0.01434*** (0.00303)	-0.01076*** (0.00336)
Municipal Area of Residence	-0.00750** (0.00301)	-0.00302 (0.00320)	-0.00375 (0.00359)
Parents' Education			
Lower-secondary	0.03193*** (0.00474)	0.03192*** (0.00498)	0.03882*** (0.00575)
Upper-secondary	0.04210*** (0.00478)	0.05867*** (0.00552)	0.05617*** (0.00646)
Post-secondary or above	0.09416*** (0.00537)	0.11571*** (0.00545)	0.13283*** (0.00661)
Father in Agricultural Sector	0.03106*** (0.00347)	0.02882*** (0.00369)	0.03701*** (0.00377)
Mother in Agricultural Sector	0.00151 (0.00344)	0.00016 (0.00343)	0.00990** (0.00388)
Constant	2.32587*** (0.02148)	2.33922*** (0.02099)	2.28583*** (0.02396)
Observations	4,088	3,859	3,717
Adjusted R-squared	0.1376	0.1683	0.1616

Note: Standard errors in parentheses; Significance at * $p < .10$, ** $p < .05$, *** $p < .01$

With regard to inequality analysis, Table 6 shows that the total inequality in wealth slightly declined from 0.00586 in 2006 to 0.00479 in 2017. The inequality due to circumstances (between-type inequality) also appeared to decrease from 0.001 to 0.00069 over time. The share of circumstances in explaining total inequality in wealth became less important as the percentage share dropped from 17.06% in 2006 to 14.48% in 2017, confirming the declining trend indicated by the non-parametric method.

Table 6: Parametric Results on Inequality of Opportunity in Wealth

MLD	2017	2011	2006
Total Inequality	0.00479	0.00497	0.00586
Between-type Inequality (Inequality of Opportunity)	0.00069	0.00088	0.00100
Opportunity Share	14.48%	17.69%	17.06%
Observations	4,088	3,859	3,717

It should be noted that opportunity shares from Tables 4 and 6 are different. The non-parametric method does not require a functional form, unlike the parametric method. The parametric method depends on the functional form specified in the OLS model in which a residual term was included. The parametric approach naturally considers the residual term when computing the counterfactual outcome distribution. Therefore, the opportunity shares yielded from non-parametric and parametric methods were not identical due to the difference in calculating methods. Nevertheless, the empirical results from both approaches were relatively similar; hence, they provided some sense of methodological robustness of a lower bound estimation.

Conclusions and discussion

As wealth inequality and inequality of opportunity are considered damaging to economic growth, this paper attempts to understand whether inequality in wealth has improved across three periods. The result from both the non-parametric and parametric approach reveals that the inequality of opportunity in Thailand has declined over time, ranging from 16–17% in 2006 to 11–14% in 2017, indicating a declining role of circumstances in shaping wealth

distribution. Inequality of opportunity in terms of wealth in Thailand can come from many factors, suggesting that there should be a range of policies that help level the playing field by substantially reducing the effect of these barriers to individual outcomes so that each individual has a comparable chance to compete and progress in life. Early interventions, therefore, are more desirable in closing “circumstantial” gaps earlier in life because they can be more successful and cost less in the long run (Peragine & Biagi, 2019). Nevertheless, it is challenging to craft policies that both help minimize the impact of circumstances and make outcomes more dependent on individual effort.

With regard to gender as one circumstance, this paper highlights the empowerment of women, which has attracted increasing and deserved attention, as evidenced by the National Economic and Social Development Plan and its attention in recent years to gender equality in Thailand (National Economic and Social Development Board, 2016). The European Commission and European External Action Service (2021) reported that Thai women were primarily employed in jobs requiring low science, technology, engineering, and mathematics (STEM) skills. They had a 50% higher risk than men of unemployment due to digital transformation. These suggest a critical gender gap, potentially contributing to unequal economic opportunity in Thailand. Although tackling the gender gap is challenging, some policy interventions could help advance women’s economic empowerment. Promoting skill development for women that meets current and future trends is essential for greater opportunities. This outcome could be partly done by encouraging female students to obtain STEM education, ensuring employment opportunities in the high-demand and high-paid industries.

Furthermore, as females are more likely to be unemployed than their male counterparts due to digital transformation, equipping them with much-needed digital skills ranging from basic digital literacy to intermediate and advanced skills such as programming would significantly reduce the adverse effect of digital transformation. For example, free coding and computational courses are provided for girls in Singapore. One course is specifically designed for those aged 8–16 years to get unprivileged children interested in coding (21st Century Girls, 2022). In the United States, the Hackbright Academy provides coding courses and mentorship exclusively to females, and subsequently, 78% of participants have acquired full-time positions with competitive salaries (Sasakawa Peace Foundation & Dalberg Global Development Advisors, 2017). Based on this success, offering similar free courses could be a step toward closing the gender gap.

Coghlan (2018) indicated that women tended to reduce or leave paid work to care for their children. Thai fathers working in the public sector are allowed a 15-day paid paternity leave. Unfortunately, there exists no mandatory paternity leave in the private sector. With regard to paid maternity leave for civil servants, it was recently approved in principle to extend from 90 to 188 days (Bangprapa, 2022). While this accommodates mothers, it may exacerbate the existing gender gap. In countries such as Sweden, Finland, and Germany, paid parental leave, which either parent can take, is also allowed after maternity leave (European Commission, 2022). Relieving women’s childcare burden can boost equality of opportunity for women, which is possible with appropriate paternity and/or parental leave policy.

Parental education, too, is a relevant circumstantial factor causing inequality of opportunity in wealth. This finding is consistent with other studies on the inequality of opportunity that place importance on parental education (Bourguignon et al., 2007; Checchi & Peragine, 2010; Ferreira & Gignoux, 2011; Galal & Enbaby, 2020; Shaheen et al., 2016; Singh, 2012), leading to the consideration that human capital is an essential tool to tackle inequality of opportunity.

That is, education could be crucial in helping individuals acquire new skills, increase productivity, change their social status, enjoy better earning opportunities, and, ultimately, enhance access to wealth for individuals and their offspring. Therefore, the critical challenge is ensuring that everyone, irrespective of socioeconomic and geographical background, can access decent education (Peragine & Biagi, 2019).

In the current Thai context, UNICEF Thailand (2022) indicated that the COVID-19 pandemic resulted in an additional 300,000 children living in poverty and an estimated 238,707 students dropping out in 2021. According to the Ministry of Education (2022), family living conditions were the main reason for dropping out of school. Durongkaveroj (2022) also pointed out that family problems played a crucial role in students dropping out of school, especially economically disadvantaged students. To address this issue effectively, the government must strengthen household incentives to keep children in school. The government may actively collaborate with private sectors to implement work-based educational programs so that students from disadvantaged family backgrounds can attain academic skills while earning some extra income from their work during the job training program (in terms of the regular part-time jobs throughout the academic term). In doing so, students could relieve their family's financial burden, at least to some extent.

Regarding financial subsidies, a report by the Equitable Education Fund (2022) revealed that the subsidies for poor students in Thailand had not been revised for nearly 15 years, making it more difficult for low-income families to support their children's education. Thus, higher subsidies for the target students from impoverished families can help them cover the cost of living and education.

In addition, the quality of education has been a significant challenge in Thailand for a while (Mahapoonyanont, 2022; Wittayasin, 2018). Vandeweyer et al. (2021) also stressed teacher quality, material resources, and physical infrastructure differences between urban and rural sectors. This issue should not be taken lightly as it affects children's learning outcomes, future employment, and, thus, long-term well-being. Those under-resourced schools, especially in rural areas, must be supported with equitable and effective resource allocation (regarding physical and human resources). To achieve this outcome, the government may review public expenditure and develop investment cases and budgeting models that address issues around education equity (UNICEF Thailand, 2022).

Regarding educational skills, Wittayasin (2018) revealed that Thai students lack English language proficiency and 21st-century skills. Thus, educational program refinement for enhancing language skills and digital-age skills would enable young individuals to stay competitive in a digitalization market. This goal would not be obtained unless teachers enrich their academic and professional skills to teach effectively with appropriate knowledge and teaching practices.

As for parents' employment sector, we find that most individuals whose parents are agriculturists, along with those who live in non-municipal areas, tend to have greater wealth, the bulk of which comes from the value of their land, which generally cannot be liquidated in the short term. However, this relatively wealthy status does not guarantee to generate more wealth. In the United States, for example, farming households have more wealth than the average US household due to assets such as farmland and equipment. Still, more than 39.4% of those farming households have less than the United States median income (U.S. Department of Agriculture, 2022). Thus, further exploration beyond the data limitations of this paper is needed to determine whether the appreciation of land value is due to individuals

or inherited wealth. We believe that this paper can help provide a first step for future analysis based on the aforementioned contributing factors.

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