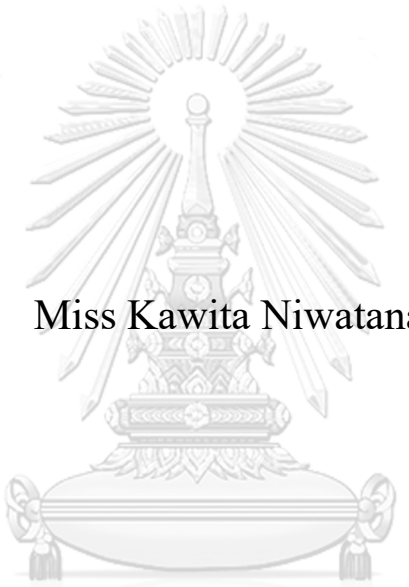
Household Characteristics of Indebted Households with Members Working in the Public and Private Sector

Miss Kawita Niwatananun



A Thesis Submitted in Partial Fulfillment of the Requirements
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ลักษณะของครัวเรือนที่เป็นหนี้และมีสมาชิกทำงานในภาครัฐและภาคเอกชน

น.ส.กวิตา นิวัฒนนันท์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
สาขาวิชาเศรษฐศาสตร์แรงงานและการจัดการทรัพยากรมนุษย์ สาขาวิชาเศรษฐศาสตร์แรงงานและ
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Thesis Title	Household Characteristics of Indebted Households with Members Working in the Public and Private Sector
By	Miss Kawita Niwatananun
Field of Study	Labour Economics and Human Resource Management
Thesis Advisor	Associate Professor YONG YOON, Ph.D.

Accepted by the FACULTY OF ECONOMICS, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Arts

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กวิตา นิวัตเนนันท์ : ลักษณะของครัวเรือนที่เป็นหนี้และมีสมาชิกทำงานในภาครัฐและภาคเอกชน. (Household Characteristics of Indebted Households with Members Working in the Public and Private Sector) อ.ที่ปรึกษาหลัก : รศ. ดร.ยอง ยูน

งานวิจัยวิเคราะห์อิทธิพลของลักษณะครัวเรือนต่อหนี้ครัวเรือนรวมถึงสินเชื่อที่อยู่อาศัย โดยใช้ข้อมูลจากการสำรวจภาวะเศรษฐกิจและสังคมของครัวเรือนในประเทศไทยในปี พ.ศ. 2562 และ พ.ศ. 2564 งานวิจัยใช้วิธีแบบจำลองโลจิต (Logit model) เพื่อระบุลักษณะครัวเรือนที่ส่งผลกระทบอย่างมีนัยสำคัญต่อหนี้ครัวเรือน จากการวิเคราะห์ข้อมูลจาก 2 ช่วงเวลาที่มีความแตกต่างกันทั้งบริบททางสังคมและเศรษฐกิจเพื่อเน้นให้เห็นถึงปัจจัยสำคัญที่มีอิทธิพลต่อการมีหนี้ครัวเรือน ชุดข้อมูลได้ถูกแบ่งออกเป็น 3 ประเภทตามสถานะการทำงานของครัวเรือน โดยแบ่งเป็นครัวเรือนที่มีแรงงานภาครัฐอย่างน้อย 1 คน ครัวเรือนที่ไม่มีแรงงานภาครัฐแต่มีแต่แรงงานภาคเอกชนอย่างน้อย 1 คน และครัวเรือนอื่นๆ งานวิจัยพบว่าในปี พ.ศ. 2562 และ พ.ศ. 2564 ลักษณะต่างๆ ของครัวเรือน เช่น สถานะการทำงาน ที่ตั้ง และการศึกษา มีอิทธิพลต่อแนวโน้มการเป็นหนี้ของครัวเรือนที่ระดับนัยสำคัญ (Level of significance) และทิศทางที่แตกต่างกัน สถานะการทำงานของครัวเรือนเป็นปัจจัยที่มีความสำคัญเชิงบวกและส่งผลกระทบอย่างมีนัยสำคัญต่อการที่ครัวเรือนทุกประเภทมีหนี้และมีความต้องการสินเชื่อที่อยู่อาศัย เมื่อพิจารณาปัจจัยอื่นๆ งานวิจัยพบว่าที่ตั้งของครัวเรือน จำนวนเด็กในครัวเรือน รายได้เฉลี่ยของครัวเรือน กองทุนเงินให้กู้ยืมของรัฐบาล และสวัสดิการด้านการรักษาพยาบาล ส่งผลกระทบอย่างมีนัยสำคัญและมีความสัมพันธ์เชิงบวกต่อแนวโน้มการเป็นหนี้ของครัวเรือนในทั้ง 2 ปี ที่ศึกษา ในขณะที่ระดับการศึกษาสูงสุดของครัวเรือนส่งผลให้แนวโน้มการเป็นหนี้ของครัวเรือนลดลงอย่างมีนัยสำคัญ ในขณะเดียวกันงานวิจัยชี้ให้เห็นว่าจำนวนเด็กในครัวเรือน รายได้เฉลี่ยของครัวเรือน และสวัสดิการด้านการรักษาพยาบาล เพิ่มความต้องการสินเชื่อที่อยู่อาศัยของครัวเรือนอย่างมีนัยสำคัญ อย่างไรก็ตามที่ตั้งของครัวเรือน ระดับการศึกษาสูงสุดของครัวเรือน และกองทุนเงินให้กู้ยืมของรัฐบาลลดแนวโน้มในการกู้ยืมสินเชื่อเพื่อที่อยู่อาศัยของครัวเรือนอย่างมีนัยสำคัญ นอกจากนี้ทรัพย์สินของครัวเรือนส่งผลอย่างมีนัยสำคัญต่อแนวโน้มการเป็นหนี้ของครัวเรือนและการมีหนี้สินเพื่อที่อยู่อาศัยของครัวเรือน แต่จะแตกต่างกันตามปัจจัยและปีที่ศึกษา

สาขาวิชา	เศรษฐศาสตร์แรงงานและการจัดการทรัพยากรมนุษย์	ลายมือชื่อนิสิต .....
ปีการศึกษา	2565	ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

6284005629 : MAJOR LABOUR ECONOMICS AND HUMAN RESOURCE MANAGEMENT
KEYWORD: Household debt, Mortgage, Public sector, Private sector, Thailand

Kawita Niwatananun : Household Characteristics of Indebted Households with Members Working in the Public and Private Sector. Advisor: Assoc. Prof. YONG YOON, Ph.D.

The research analyzed the influence of different household characteristics on household debt, including mortgage debt. Using data from Thailand's Household Socio-Economic Survey in 2019 and 2021, the study implemented a logit model to identify household characteristics with significant impact on household debt. By analyzing data from two different periods that varied in social and economic contexts, the study highlighted critical factors that influenced household debt demand. The datasets were divided into three categories according to household work status. The categories include households with at least one public sector worker, households with no public sector workers but at least one private sector worker, and all other households. The study found that, in 2019 and 2021, different household characteristics, such as work status, location, and education attainment, influenced the households' likelihood of having debt at varying levels of significance and direction. The household work status was a significant and positive factor regarding the probability of having household debt as well as household mortgage demand in all categories of household work statuses. When looking at other factors, the study discovered that households' location, number of children, average household compensation, government loan schemes, and medical welfare services significantly increased the probability of household debt in both years, while the highest household education attainment level significantly decreased the probability of household debt. At the same time, the study highlighted that number of children, average household compensation, and medical welfare services significantly increased household mortgage demand. However, households' location, highest household education attainment level, and government loan schemes decreased the likelihood of household mortgages significantly. In addition, household assets had a significant influence on the likelihood of household debt and household mortgage, but this differed by factor and year.

Field of Study:	Labour Economics and Human Resource Management	Student's Signature .....
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Kawita Niwatananun

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1. Introduction

In the past decade, Thailand's household debt increased dramatically from 60% in 2010 to 90% in 2020 compared to Thailand's GDP. According to the Bank of Thailand (2023), the rise in household debt to GDP could be a result of the country's GDP decreasing in 2020 due to disruptions from the COVID-19 pandemic as well as the increase in household debt due to the implementation of previous economic policies to stimulate the economy in 2011-2012. Despite household debt dropping to 87% of Thailand's GDP in the third quarter of 2022, the likelihood of household debt increasing is still significant and measures will need to be put in place to control the issue. Previous studies have reported on multiple factors that influence the rise in household debt including household mortgages. Magri (2002) and Crook (2001) found that household income was positively related to household debt while Ling and McGill (1998) discovered that income and mortgage were also positively related. In Thailand, Amornlerdphanich (2008) reported that demographic characteristics of the household head such as age, gender, marital status, and education level had a strong influence on household debt demand. Whilst Lerskullawat (2020) highlighted that social factors as well as economic factors including household income and household expenditure played a key role in determining the household debt burden. Similarly, Intarapak and Supapakorn (2020) found that household size, number of people earning wages, remittance receiving, and loan for emergency affected the level of household debt.

Multiple studies have analyzed the key factors driving household debt in Thailand, most use the household head as the household representative. However, to better understand the influence of the household as a unit on the probability of household debt, the research analyzed household-level data from Thailand's Household Socio-Economic Survey (SES) from 2019 and 2021. Using data on the household level allowed the study to examine the influence of different household characteristics on household debt including debt in the form of loans for the purchased or hire-purchased of a house and/or land. Also, by analyzing data from 2019 and 2021 that differ in context as a result of the COVID-19 pandemic, the study highlighted crucial factors that affected household indebtedness in Thailand. The study used 2020 as the baseline for the start of the COVID-19 pandemic in the country since the first known COVID-

19 case in Thailand was reported in January 2020. Therefore, 2019 represents the period before the pandemic while 2021 represents the time during the pandemic.

The research aimed to identify household characteristics that have significant impact on household debt demand as well as disaggregate the relationship between the two factors. The study has one main hypothesis which is:

1. When compared across different socio-economic factors, all other households would have a lower probability of having household debt including debt in the form of loans for the purchased or hire-purchased of a house and/or land .

The results of this study could provide a better understanding of how household characteristics influence household debt, specifically household mortgage. The information can then be used by policymakers and financial institutions to improve financial policies, programs, and products, which will better accommodate borrowers' needs and capabilities.

Lastly, the study is organized into six chapters. Following this introduction, Chapter 2 reviews the theoretical framework used to describe household borrowing and empirical evidence on various factors related to household debt. Chapter 3 focuses on the research methodology including the conceptual framework, data collection, and data analysis. Chapter 4 presents the overall characteristics of households in the dataset and the dataset's debt characteristics. Chapter 5 reports the results of the analysis and highlights the significant findings including supporting information from related papers. Finally, Chapter 6 restates the study's major findings and suggestions for further research.

2. Literature Review

2.1 Theoretical framework

Two main models are used when discussing debt or income over one's lifetime. The first model being the permanent income hypothesis which was introduced by Friedman (1957) and the second is the life-cycle hypothesis model developed by Modigliani and Brumberg (1954). For this study, the theoretical framework used is based on the life-cycle hypothesis (LCH) model. The LCH model is used to describe spending and saving throughout a person's lifetime. The LCH model assumes that an individual is likely to accumulate debt in their earlier years. As time passes and they approach middle age, their need to borrow decreases, so they begin to pay off their debts. In other words, there is a leveraging–deleveraging dynamic that occurs over an individual's life cycle, implying an inverted-U pattern between age and indebtedness. (Chantarat et al. (2020))

2.2 Empirical evidence

Different socioeconomic and demographic characteristics have varying influences on household' debt decision and demand. Some characteristics have a positive and significant impact while others are negatively related. The first factor that is usually associated with household debt is employment whether it be on the individual or household level. Kim (2017) analyzed the determinants of household debt among middle and old Koreans and found that an individual's employment status can significantly affect household debt levels. The study highlighted that when compared to those who are employed, unemployed individuals have a higher likelihood of having high household debt. On the other hand, Crook (2006) reported that households with household heads in employment were the most likely to be in debt followed by self-employed household heads. Similarly, Giordana and Ziegelmeyer (2017) discovered that indebted households were more likely to be self-employed and more than half of indebted households have outstanding mortgage debt. While looking at employment in the terms of employment-to-population ratio, Catherine et al. (2016) found that the unemployment rate has a positive and significant relationship with household debt since households are willing to take on debt to maintain their current living standards. However, Meng et al. (2013) and Abd Samad et al. (2020) reported the opposite with the unemployment rate being negatively associated with household debt. Moreover, for

household debt in the form of mortgages, Naoi et al. (2019) noted that factors such as demography and economic conditions play an important role in determining mortgage and housing demand.

In this connection, the second factor associated with household debt is income. According to Magri (2002), income plays an important role in Italian households when considering debt with the factor having a positive correlation with the probability of debt. These findings are similar to Crook (2001) which found that current income is positively related to household debt demand in the USA, while income-squared is negatively correlated. In addition, Johansson and Persson (2006) and Beer and Schürz (2007) highlighted that wealthier households are more likely to have higher amounts of debt than poorer households. As for household mortgage, Follain and Dunsky (1996) discovered that demographic and economic factors play an essential part in household's mortgage demand. Chambers et al. (2009) found that a household's mortgage choice is dependent on income and age while Ling and McGill (1998) highlighted that income and mortgage debt burden are positively related. However, Yilmazer and DeVaney (2005) suggested that income had a negative impact on the likelihood of the household holding any type of debt including mortgages. For Thailand, Chichaibelu and Waibel (2018) reported that household income was significantly related to household indebtedness in both Thailand and Vietnam. Similarly, Lerskullawat (2020) suggested that social and economic factors, including household income and household consumption expenditure play an important role in the total household debt. In addition, Muthitacharoen et al. (2015) and Lerskullawat (2020) found that household income has a negative relationship with household debt.

Another financial factor influencing household debt is household assets. Household asset value are significant determinants of household debt burden as well as affect household debt demand (Amornlerdphanich (2008); Fasianos et al. (2014); Yilmazer and DeVaney (2005)). Haq et al. (2018) analyzed the relationships between different socioeconomic and demographic characteristics and households' debt decision and demand. The study found that households with high financial assets, income and large household sizes tend to have a higher percentage of debt. In terms of mortgage debt, Yilmazer and DeVaney (2005) suggested that financial assets have a negative impact on the likelihood of holding any type of debt including mortgage debt.

Apart from income and assets, other socio-economic factors also play a role in household debt demand. Household location has an impact on the probability of household debt. Collins (2008) reported that for rural areas, high levels of household debt were found in households at all income levels while in urban areas, high indebtedness occurred more in medium to high-income households. On the other hand, Magri (2002) found that due to high entry costs in the loan market, households in small municipalities were less likely to demand loans. Furthermore, household size has also been found to have a positive effect on household debt levels with larger households demanding more debt (Giordana and Ziegelmeyer (2017); Haq et al. (2018); Togba (2012)). For Thailand, Chounlakorn and Kittichotipanit (2016) and Intarapak and Supapakorn (2020) highlighted that multiple factors including number of family members affect the indebtedness level of the household. In addition, for household debt in the form of household mortgage, Xiao and Yao (2011) reported that married couples and families with children were more likely to have mortgages, car loans or credit card debt.

Education attainment level is another factor that influences household debt burdens. According to Turinetti and Zhuang (2011) and Chichaibelu and Waibel (2018), educational attainment is negatively related to household debt. These findings align with Rangsipaht et al. (2013), which found that personal factors, especially education level, had a significant impact on household debt demand in Thailand. Thai Households with high levels of education have low household debt. However, Chawla and Uppal (2012) and Haq et al. (2018) reported that households with higher education levels were more likely to larger amount of debt. In terms of mortgage, Chen et al. (2018) suggested that higher-educated individuals were more likely to use a mortgage as well as set aside a larger portion of their monthly income to pay it off. Whilst, Baeck and DeVaney (2003) discovered for federally guaranteed mortgage, younger and less-educated household heads had a higher likelihood of obtaining the loan.

The study then reviewed the influence of government loan schemes on household debt. Thailand has multiple government funds with the most prominent being the Village Fund Scheme. Started in 2001, the scheme aimed at improving access to financial access to those in the rural area by providing a million baht to every village. However, having easier access to funds might encourage borrowers to take on loans

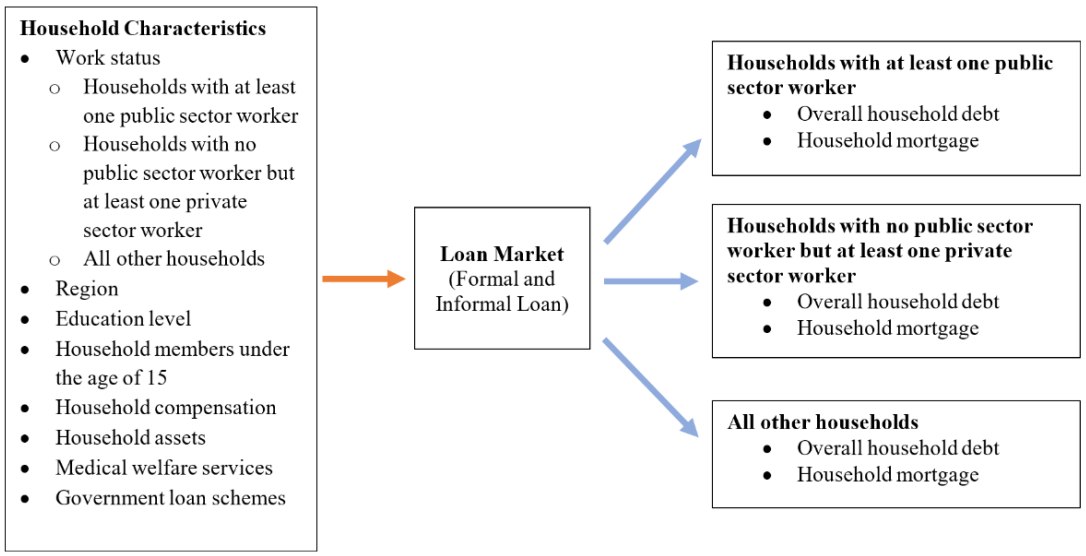
and influenced a bad attitude among the poor toward indebtedness (Siripanyawat et al. (2010)). Thavornthon et al. (2009) reported that some individuals felt that being indebted was perfectly normal while Siripanyawat et al. (2007) found that as the scheme was sponsored by the government, some individuals felt that they did not have to repay their loans on time (as cited in Siripanyawat, 2010, p. 181).

Apart from the Village Fund Scheme, the government also provides government loans for education as a result of the rapid expansion of Thailand's higher education sector. However, Tangkitvanich and Manasboonphempool (2010) highlighted that despite the good intention, the fund did not promote enrollment in higher education, except for students from poor households.

Finally, the study looks at the impact of medical welfare services on household debt. According to Comelli (2021), welfare is positively related to household debt when welfare is not linked to an occupational status. While in terms of medical welfare services, Leclaire (2023) looked at the role of household debt regarding economic growth from the post-Keynesian perspective. The study found that that by providing households with access to Medicare, childcare, and eldercare would remove the need for households to take on unsustainable debt. In the case of Thailand, the Universal Health Coverage (UHC) scheme was implemented by Thaksin Shinawatra's administration in 2002. The initiative aimed at improving the health of Thai people by providing greater access to healthcare services. Thaweesatidsatean (2021) highlighted that the scheme was intended to help Thai households with the financial burden from medical expenses and give the household an opportunity to save more.

3. Methodology

3.1 Conceptual framework



To examine the differences in probability of households with at least one public sector worker, households with no public sector worker but at least one private sector worker, or all other households having household debt including mortgage, this research started by looking at the main household characteristics. The conceptual framework consisted of a main set of household factors that influence loan demand including mortgage demand. The variables on the household level include work status, region, education level, members under the age of 15, compensation, assets, medical welfare services, and government loan schemes. All other households which are households with no public sector workers and private sector workers was the based category for the comparisons between the different types of households regarding their probability of household debt demand.

3.2 Data collection

This research used Thailand's Household Socio-Economic Survey (SES) cross-sectional data for 2019 and 2021 collected by the National Statistical Office of Thailand. The survey contained a range of information, including income, expenses, consumption, assets, and liabilities of every member in the household. For the research, data on the household level was used with the focus on households with at least one public sector worker, households with no public sector worker but at least one private

sector worker, and all other households. Public sector workers were those who reported being government employees while private sector workers were those reported as private company employees. Apart from work status, other key variables include:

Table 1 Table of the key variables used in the analysis

Variable	Description	Unit
Work status	Overall work status of the household	1 = Households with at least one public sector employee 2 = No public employees but at least one private sector employee 3 = All other households
Region	The region of Thailand where the households are located	1 = Bangkok Metropolis 2 = Central region (Excluding Bangkok) 3 = North region 4 = Northeast region 5 = South region
Education level	The household's highest education attainment level	0 = Upper secondary and lower 1 = Post-secondary and above
Household members under the age of 15	The number of members in the household aged 15 and below	Number of children
Household compensation	Average compensation received from the main occupations of household members	Thousand Baht
Household asset 1	Value of dwelling for living and temporary dwelling owned by household members	Thousand Baht
Household asset 2	Value of land/business building/others owned by household members	Thousand Baht
Household asset 3	Value of vehicles owned by household members	Thousand Baht
Household asset 4	Value of financial assets in baht	Thousand Baht
Medical welfare services	Number of medical welfare services received by the household	Number of services
Government loan schemes	Number of government loan schemes accessed by the household	Number of services
Household debt dummy	Whether the household has debt currently or not	0 = No household debt 1 = Have household debt
Mortgage dummy	Whether the household has a mortgage or not	0 = No mortgage debt 1 = Have mortgage debt
Mortgage	Average size of the formal and/or informal loan for the purchased or hire-purchased house and/or land	Thousand Baht

3.3 Data analysis

The method used was based on La Cava and Simon (2005), who examined the relationship between the probability of being financially constrained and the economic and demographic characteristics of households in Australia. The paper used a logit model to explore how changes in household characteristics might have led to constraints on cash flow to Australian households. The estimated logit equation is stated below.

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \sum_{k=1}^{N} \beta_k X_{ki} + \varepsilon_i \qquad (1)$$

In the equation, P_i is the probability of household i having household debt. X_{ki} is the set of N independent variables for household i and the independent variables include both demographic and economic factors including work status, education level, and household compensation etc. After equation (1) was ran using the data from both 2019 and 2021, comparisons have been made.

Next, as the research also focuses on whether household's characteristics influences households' decision to acquire debt in the form of loans for the purchased or hire-purchased house and/or land or not, equation (2) was constructed.

$$\ln\left(\frac{A_i}{1-A_i}\right) = \beta_0 + \sum_{k=1}^{N} \beta_k X_{ki} + \varepsilon_i \qquad (2)$$

In the second equation, A_i is the probability of household i having a mortgage with X_{ki} being the set of N independent demographic and economic variables for household i. Similar to equation (1), equation (2) was ran using data from 2019 and 2021 and differences between households were later analyzed.

4. Data Summary

4.1 Overall household characteristics

For 2019, the SES dataset consisted of 45,586 households which increased to 46,840 households in 2021. Households consisted of workers who are either employed or economically inactive in Thailand. Workers who were categorized as employed included those who were employers, own-account workers, contributing family workers, government employees, state enterprise employees, private company employees, and members of producers' cooperative.

Table 2 Households by year and work status

Households	Households in 2019	%	Households in 2021	%
Households with at least one public sector worker	5,881	12.90	6,068	12.95
Households with no public sector worker but at least one private sector worker	15,654	34.34	16,132	34.44
All other households	24,051	52.76	24,640	52.60
Total number of households	**45,586**	**100.00**	**46,840**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

In Table 2, households were separated into three categories which are 1) Households with at least one public sector worker, 2) Households with no public sector worker but at least one private sector worker, and 3) All other households. In the datasets of both years, all other households had the largest share of households at 24,051 households (52.76 percent) in 2019 and 24,640 households (52.60 percent) in 2021 followed by households with no public sector worker but at least one private sector worker and households with at least one public sector worker in both years.

Table 3 Households by year and region

Regions	Households in 2019	%	Households in 2021	%
Bangkok	2,582	5.66	2,606	5.56
Central (excluding Bangkok)	13,013	28.55	13,699	29.18
North	10,772	23.63	10,817	23.09
Northeast	12,037	26.41	12,408	26.49
South	7,182	15.75	7,340	15.67
Total number of households	**45,586**	**100.00**	**46,840**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

In both years, most households were in Thailand's central region, with over 28 percent of households followed by the northeastern and northern regions, respectively. However, the distribution differs when looking at the household location by work status. For households with at least one public sector worker, most households were in the northeastern region in 2019 and the central region in 2021. Whist, for households with no public sector worker but at least one private sector worker, the majority of households were in the central region in both 2019 and 2021. Finally, for all other households, most households were in the northeastern region in both years. (Table A1.1 in Annex)

Table 4 Households by year and highest education attainment level

Education level	Households in 2019	%	Households in 2021	%
Upper secondary and lower	31,873	71.61	31,813	69.20
Post-secondary and above	12,636	28.39	14,162	30.80
Total number of households	**44,509**	**100.00**	**45,975**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

The highest education attainment level of most households was upper secondary and lower. A total of 31,873 households (71.61 percent) in 2019 and 31,813 households (69.20 percent) in 2021 had the highest education attainment level of upper secondary and lower. Interestingly, when examining households by work status, the research found that most households with at least one public sector worker had the highest education

attainment level of post-secondary and above. On the contrary, most households with no public sector worker but at least one private sector worker and most all other households had the highest education attainment level of post-secondary and above. (Table A1.2 in Annex) In addition, the research found that overall, the majority of households did not have any members under the age of 15 years old. (Table A1.3 in Annex)

Table 5 Households by year, average household compensation and average household assets

Household compensation and asset (Per month)	Households in 2019		Households in 2021	
	Amount (THB)	Number of observations	Amount (THB)	Number of observations
Average household compensation	20,433.95	22,840	20,455.39	23,212
Average value of dwelling for living and temporary dwelling owned by household members	771,765.80	45,586	815,188.50	46,840
Average value of land/business building/others owned by household members	1,566,723	14,337	1,616,258	15,508
Average value of vehicles owned by household members	277,277.20	39,491	299,215.60	41,040
Average value of financial assets	158,450.30	45,586	170,609.20	46,840

Note: The summary statistics were calculated only from households with household assets in a certain category. Therefore, households who don't hold assets in a particular category were not included.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Table 5 illustrates the average household compensation and average household assets per month for 2019 and 2021. Despite a change in context due to the COVID-19 pandemic, the average household compensation and household asset differs from 2019 and 2021 increases at maximum less than 10 percent. However, the change in the average household compensation and household assets by household work status varied. For households with at least one public sector worker, the average household compensation and household assets increased in the range of 1-11 percent. At the same time, households with no public sector worker but at least one private sector worker and all other households experienced a decrease in the average household compensation

of 1-3 percent. However, for the other types of household assets, both work statuses had an increase of over 7 percent for each asset. (Table A1.4 in Annex)

Furthermore, when looking at benefits received by the households in the form of different medical welfare services (e.g., Government/state enterprise's welfare, Universal health coverage card, Social security medical card, Private health insurance, Employer provided welfare, and Others), it was found that most households received only one type of service. This was the same finding as when the households were divided by work status. (Table A1.5 in Annex)

Moreover, the research also looked at the number of government loan schemes (e.g., Government loan for education, People's bank, Village fund scheme, Other Government funds) accessed by households. The research discovered that most households didn't use any government loan schemes. Like the overall dataset, when households were divided by work status, the majority of households also didn't use any government loan schemes. (Table A1.6 in Annex)

4.2 Debt characteristics

Table 6 Number and percentage of household loans by loan type and year

Loan Type	Households in 2019		Households in 2021	
	Number of households	%	Number of households	%
Formal loan	19,660	92.27	22,545	91.98
Informal loan	968	4.54	1,109	4.52
Both formal and informal loans	680	3.19	857	3.50
Total	**21,308**	**100.00**	**24,511**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

In terms of household debt, using SES data from 2019 and 2021, indebted households were disaggregated according to the type of loan they acquired (e.g., formal loan, informal loan, or both formal and informal loans). The number of households with loans in 2019 was 21,308 and increased to 24,511 households in 2021. In both years, over 90 percent of indebted households had formal loans followed by informal loans and both formal and informal loans.

Table 7 Number and percentage of household loans by loan type, loan purpose, and year

Loan Type	Households in 2019		Households in 2021	
	Number of households	**%**	**Number of households**	**%**
Formal loan				
• For purchased or hire-purchased of house and/or land	1,178	5.53	1,292	5.27
• For education	306	1.44	351	1.43
• For household consumption	9,265	43.48	10,027	40.91
• For business	1,119	5.25	1,193	4.87
• For farm business	2,968	13.93	3,655	14.91
• For others	79	0.37	61	0.25
• Multiple formal loans with different purposes	4,746	22.27	5,966	24.34
Informal loan				
• For purchased or hire-purchased of house and/or land	24	0.11	37	0.15
• For education	4	0.02	12	0.05
• For household consumption	763	3.58	812	3.31
• For business	92	0.43	134	0.55
• For farm business	42	0.20	62	0.25
• For others	13	0.06	18	0.07
• Multiple informal loans with different purposes	30	0.14	34	0.14
Household has both formal and informal loans	679	3.19	857	3.50
Total number of households with loans	**21,308**	**100.00**	**24,511**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

The SES collects in-depth information regarding household debt including the purpose for the household to take on the loan. In Table 7, indebted households are disaggregated according to their objective in obtaining a loan. The households are separated by the type of loan that was acquired (e.g., formal, informal or both) and later, the households are categorized into seven sub-categories including one category that accounts for households with multiple loans of varying purposes. For 2019 and 2021, the disaggregation of households by loan objective are similar. The main objective for

households to obtain a loan was for household consumption with 9,265 households (43.48 percent) in 2019 and 10,027 households (40.91 percent) in 2021 acquiring a formal loan while 763 households (3.58 percent) in 2019 and 812 households (3.31 percent) in 2021 acquired an informal loan. Interestingly in both years, households that have multiple formal loans accounted for over 20 percent of indebted households while households that have multiple informal loans accounted for less than one percent. In addition, households that had both formal and informal loans accounted for around 3 percent of households with loans.

Table 8 Number and percentage of household loans for the purchased or hire-purchased of house and/or land by loan type and year

Households and type of loans	**Households in 2019**		**Households in 2021**	
	Number of households	**%**	**Number of households**	**%**
Households that have only **formal loans** to purchased or hire-purchased of house and/or land	2,482	98.53	3,033	97.78
Households that have only **informal loans** to purchased or hire-purchased of house and/or land	35	1.39	65	2.10
Households that have both **formal and informal loans** to purchased or hire-purchased of house and/or land	2	0.08	4	0.13
Total number of households	**2,519**	**100.00**	**3,102**	**100.00**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

As this research also focused on housing loans, further analysis of loans specific to the purchased or hire-purchased of house and/or land was conducted. In 2019, there were 2,519 households with loans to purchased or hire-purchased of house and/or land, while in 2021, the number increased to 3,102 households. For both years, over 97 percent of households acquired formal loans while only around 2 percent of households had informal loans. In addition, households that had both formal and informal loans to purchased or hire-purchased of house and/or land accounted for less than one percent.

Table 9 Number and size of household loans for the purchased or hire-purchased of house and/or land by loan type and year

Loan	Households in 2019		Households in 2021	
	Average loan size (THB)	**Number of observations**	**Average loan size (THB)**	**Number of observations**
Formal loan for the purchased or hire-purchased of house and/or land	925,518.4	2,482	1,006,409	3,033
Informal loan for the purchased or hire-purchased of house and/or land	461,800	35	295,153.8	65
Overall loan for the purchased or hire-purchased of house and/or land (e.g., Formal and Informal)	315,000	2	1,100,750	4
Total	**918,590.6**	**2,519**	**991,626.9**	**3,102**

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

When further examining loans for the purchased or hire-purchased house and/or land, it was found that the average loan size for formal loans was more than twice the size of informal loans or loans that include both formal and informal. In 2019, the average loan size for formal loans was THB 925,518.4 while in 2021, the average loan size increased to THB 1,006,409. At the same time, the average loan size for informal loans was THB 461,800 in 2019 and THB 295,153.8 in 2021.

5. Econometric Results and Analysis

5.1 Households that have debt in 2019 and 2021

This section focuses on the main objective of the report which is to examine whether households' characteristics influenced the probability of households having debt, specifically loans for the purchased or hire-purchased of a house and/or land. A logit model was used to examine the probability with all other households which are households with no public sector workers and private sector workers used as the based category. The results in the following tables show the marginal effects of the different households' characteristics on the probability of households having debt.

Table 10 Households that have debt in 2019 and 2021 by work status

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	0.987***	1.083***
	(0.031)	(0.031)
Households with no public sector workers but at least one private sector worker	0.143***	0.250***
	(0.021)	(0.020)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

The study began by examining whether the household's work status affected the probability of households having debt in 2019 and 2021. Despite work status, the probability of households having debt didn't change from 2019 to 2021. Compared to all other households, households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker had a higher probability of having debt in 2019 and 2021. In addition, the work status significantly impacted the probability of household debt demand for households of both work statuses when compared to the base category.

Table 11 Households that have debt in 2019 and 2021 by work status and geographic factors

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	1.070***	1.148***
	(0.031)	(0.032)
Households with no public sector workers but at least one private sector worker	0.356***	0.431***
	(0.022)	(0.022)
Central (exclude Bangkok)	0.501***	0.633***
	(0.047)	(0.045)
North	0.918***	0.932***
	(0.049)	(0.047)
Northeast	1.380***	1.335***
	(0.048)	(0.047)
South	0.537***	0.630***
	(0.050)	(0.048)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

When taking both the work status of the household and geographic factors into consideration, the study found that for households in Bangkok regardless of the household's work status**,** the probability of having debt did not change from 2019 and 2021. Using all other households in Bangkok as the base category, both households with at least one public sector worker and households with no public sector workers but at least one private sector worker were more likely to have debt when compared to the base category. In addition, the household work status significantly impacted the household debt demand for households of both work statuses in Bangkok in 2019 and 2021.

Moreover, Table 11 showed that for all other households in other regions (e.g., central (excluding Bangkok), northern, northeastern, or southern), location had a positive and significant impact on the probability of households having debt. Hence, all other households in other regions were more likely to have household debt than their counterparts in Bangkok.

Table 12 Households that have debt in 2019 and 2021 by work status and highest education attainment level

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	0.873***	0.952***
	(0.033)	(0.033)
Households with no public sector workers but at least one private sector worker	0.133***	0.232***
	(0.021)	(0.021)
Upper secondary and lower	-0.139***	-0.191***
	(0.023)	(0.022)
Observations	44,509	45,975

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Table 12 described the influence of household work status and educational factors on the probability of households having debt. The base category was all other households that had the highest household education attainment level of post-secondary or above. For households with at least one public sector worker, households that had the highest household education attainment level of post-secondary or above were more likely to have debt when compared to the base category in both 2019 and 2021. Similarly, households with no public sector workers but at least one private sector worker with the highest household education attainment level of post-secondary or above also have a higher probability of having debt when compared to the base category for both years. In addition, household work status significantly impacted the probability of household debt demand for both household work statuses where the highest household education attainment level was post-secondary or above. Moreover, when examining all other households that had the highest household education attainment level of upper secondary or lower, the possibility of having debt is less than their counterparts with post-secondary or above education. The household education attainment level also significantly impacted the household debt demand.

Table 13 Households that have debt in 2019 and 2021 by work status and household members under the age of 15

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	0.966***	1.040***
	(0.031)	(0.032)
Households with no public sector workers but at least one private sector worker	0.090***	0.183***
	(0.021)	(0.021)
Number of members aged less than 15 years	0.557***	0.563***
	(0.015)	(0.015)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

For Table 13, the research investigated the influence of work status and children (household members under the age of 15). Like the influence of previous factors, both households with at least one public sector worker and households with no public sector workers but at least one private sector worker were more likely to have household debt when compared to all other households. In addition, the household work status significantly affected the probability of household debt demand for households of both work statuses that had children. Moreover, all other households with children faced a higher probability of having debt when compared to their counterparts without children. For all other households, the presence of children in the household also significantly impacted the household debt demand.

Table 14 Households that have debt in 2019 and 2021 by work status and average household compensation

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	-0.203***	-0.059
	(0.068)	(0.076)
Households with no public sector workers but at least one private sector worker	-0.959***	-0.794***
	(0.062)	(0.070)
Average Household Compensation per month	0.007***	0.008***
	(0.001)	(0.001)
Observations	22,840	23,212

Note 1: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Note 2: The unit for average household compensation per month is thousand baht.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Table 14 reports the influence of the monthly average household compensation on the probability of households having debt. When comparing households with the same level of average household compensation, it was found that both households with at least one public sector worker and households with no public sector workers but at least one private sector worker had the less likelihood of having debt when compared to all other households. The work status of the household also significantly impacted the probability of household debt demand for household of both work statuses with the same level of average household compensation. In addition, all other households have a higher probability of having debt as the amount of average household compensation increases.

Table 15 Households that have debt in 2019 and 2021 by work status and household asset factors

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	0.853***	0.726***
	(0.068)	(0.072)
Households with no public sector workers but at least one private sector worker	0.396***	0.397***
	(0.048)	(0.049)
Value of dwelling for living and temporary dwelling owned by household members	-0.000***	-0.000***
	(0.000)	(0.000)
Value of financial assets in baht	-0.000***	0.000
	(0.000)	(0.000)
Value of vehicles owned by household	0.001***	0.000***
	(0.000)	(0.000)
Value of land/business building/others owned by household members	0.000**	-0.000
	(0.000)	(0.000)
Observations	13,653	14,806

Note 1: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Note 2: The unit for average household compensation per month is thousand baht.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

In Table 15, the influence of different household assets on the possibility of household debt is analyzed. For households with the same amount of household assets, households with at least one public sector worker were more likely to have debt in both 2019 and 2021 when compared to all other households. Likewise, households with no public sector workers but at least one private sector worker the likelihood of having debt increased when compared to the base category in both years. In addition, household assets had a significant impact on household debt demand for both household work statuses. However, the impact varies by household asset.

Table 16 Households that have debt in 2019 and 2021 by work status and number of government loan schemes used

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	1.438***	1.415***
	(0.034)	(0.034)
Households with no public sector workers but at least one private sector worker	0.495***	0.529***
	(0.025)	(0.023)
Number of government loan schemes used	0.000	0.000
Observations	36,083	23,212

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

For Table 16, the study looks at the influence of work status and government loan schemes on household debt demand. When the number of government loan schemes used by the household are the same, households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker were more likely to have debt when compared to all other households in both years. Household work status significantly impacted the household debt demand for both household work statuses that are accessing the same number of government loan schemes.

Table 17 Households that have debt in 2019 and 2021 by work status and number of medical welfare services received

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Household debt	
Households with at least one public sector worker	0.804***	0.905***
	(0.032)	(0.033)
Households with no public sector workers but at least one private sector worker	0.029	0.128***
	(0.021)	(0.021)
Number of medical welfare services received	0.446***	0.433***
	(0.020)	(0.019)
Observations	45,504	46,557

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Finally, the study investigated the impact of household work status and medical welfare services on the possibility of household debt. When the number of medical welfare services used by the households are the same, households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker had a higher likelihood of having household debt when compared to the base category in both years. Table 17 also showed that all other households have a higher probability of having debt as the number of medical welfare services received by the household increases.

5.2 Households that have mortgages in 2019 and 2021

This section explored household debt in the form of loans for the purchased or hire-purchased house and/or land by examining whether households' characteristics influences the possibility of households acquiring loans for the purchased or hire-purchased of a house and/or land. Like the previous section, a logit model was used to analyze the probability of households having mortgage debt in 2019 and 2021 with all other households which are households with no public sector workers and private sector workers serving as the base category. As previously mentioned, the results in the following tables display the marginal effects of the different households' characteristics on the probability of household mortgage demand.

Table 18 Households that have mortgage in 2019 and 2021 by work status

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.679***	1.619***
	(0.052)	(0.047)
Households with no public sector workers but at least one private sector worker	0.556***	0.533***
	(0.051)	(0.045)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

The study started by examining whether the work status of the household affected the possibility of households having mortgage debt. When compared to all other households, both households with at least one public sector worker and households with no public sector workers but at least one private sector worker were

more likely to have a mortgage. In addition, the work status significantly impacted the probability of household mortgage demand for households of both work statuses when compared to the base category.

Table 19 Households that have mortgage in 2019 and 2021 by work status and geographic factors

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.671***	1.605***
	(0.052)	(0.047)
Households with no public sector workers but at least one private sector worker	0.483***	0.443***
	(0.052)	(0.046)
Central (exclude Bangkok)	-0.498***	-0.257***
	(0.081)	(0.077)
North	-0.718***	-0.504***
	(0.086)	(0.081)
Northeast	-0.556***	-0.587***
	(0.083)	(0.080)
South	-0.546***	-0.363***
	(0.088)	(0.083)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Later, the influence of geographic factors was considered when analyzing the possibility of households having mortgage debt. For households in Bangkok, households with at least one public sector worker were more likely to have a mortgage when compared to all other households in 2019 and 2021. Similarly, households with no public sector workers but at least one private sector worker also had a higher likelihood of having mortgage when compared to the base category in both years. In addition, for households of both work statuses in Bangkok, the work status had significantly impacted the possibility of household mortgage in both years. Furthermore, Table 19 reported that for all other households located in other regions (e.g., central (excluding Bangkok), northern, northeastern, or southern), geography had a negative and significant influence on the probability of household mortgage demand.

Thus, all other households situated in other regions in Thailand were less likely to have a mortgage when compared to their counterparts in Bangkok.

Table 20 Households that have mortgage in 2019 and 2021 by work status and highest education attainment level

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.000***	0.979***
	(0.057)	(0.052)
Households with no public sector workers but at least one private sector worker	0.416***	0.395***
	(0.052)	(0.046)
Upper secondary and lower	-1.280***	-1.256***
	(0.047)	(0.043)
Observations	44,509	45,975

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Afterwards, the effect of work status and educational factors on the probability of household mortgage was explored. In both years, households with at least one public sector worker that had the highest household education attainment level of post-secondary or above had a higher probability of having a mortgage when compared to the base category with the same education level. Likewise, households with no public sector workers but at least one private sector worker that had the highest household education attainment level of post-secondary or above were more likely to have a mortgage. For households of both work statuses where the highest household education attainment level was post-secondary or above statuses, household work status significantly impacted the probability of household mortgage demand.

Moreover, for all other households that had the highest household education attainment level of upper secondary or lower, household education attainment level had a negative and significant impact on household mortgage demand. Thus, all other households that had the highest household education attainment level of upper secondary or lower were less likely to have a mortgage when compared to their counterparts with post-secondary or above education.

Table 21 Households that have mortgage in 2019 and 2021 by work status and household members under the age of 15

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.662***	1.594***
	(0.052)	(0.047)
Households with no public sector workers but at least one private sector worker	0.535***	0.507***
	(0.051)	(0.046)
Number of members aged less than 15 years	0.189***	0.173***
	(0.023)	(0.021)
Observations	45,586	46,840

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

The study also examined the impact of work status and children (household members under the age of 15) on the probability of mortgage debt in households. From Table 21, the research found that households with at least one public sector worker that have children faced a higher possibility of having a mortgage when compared to all other households who also had children. Similarly, for households with no public sector workers but at least one private sector worker with children, the probability of households having a mortgage was higher when compared to the base category who also had children. In addition, the household work status significantly affected the probability of household mortgage demand for households of both work statuses that had children.

At the same time, for all other households, children had a positive and significant impact on the probability of having a household mortgage. All other households with children were more likely to have a mortgage when compared to their counterparts who did not have children.

Table 22 Households that have mortgage in 2019 and 2021 by work status and average household compensation

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	0.475***	0.555***
	(0.125)	(0.132)
Households with no public sector workers but at least one private sector worker	-0.277**	-0.148
	(0.123)	(0.129)
Average Household Compensation per month	0.027***	0.026***
	(0.001)	(0.001)
Observations	22,840	23,212

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Table 22 illustrates the influence of the monthly average household compensation on the probability of households having a mortgage. When considering households with the same level of average household compensation, the study found that households with at least one public sector worker had a higher likelihood of having mortgage debt when compared to all other households. On the contrary, households with no public sector workers but at least one private sector worker, the possibility of having mortgage was lower with the work status having a negative impact on the possibility. Despite the different probabilities, the household work status significantly impacted the likelihood of household mortgage for households of both work statuses at the same level of average household compensation. Furthermore, for all other households, the probability of having a mortgage increased as the amount of household compensation increased.

Table 23 Households that have mortgage in 2019 and 2021 by work status and household asset factors

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.468***	1.390***
	(0.094)	(0.081)
Households with no public sector workers but at least one private sector worker	0.321***	0.396***
	(0.111)	(0.095)
Value of dwelling for living and temporary dwelling owned by household members	0.000	0.000***
	(0.000)	(0.000)
Value of financial assets in baht	0.000	-0.000***
	(0.000)	(0.000)
Value of vehicles owned by household	0.000**	0.000***
	(0.000)	(0.000)
Value of land/business building/others owned by household members	0.000	0.000
	(0.000)	(0.000)
Observations	13,653	14,806

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

In Table 23, the study analyzed the effect of different household assets on the probability of households having a mortgage. When looking at households with the same amount of household assets, households with at least one public sector worker have a higher probability of having a mortgage when compared to all other households. Likewise, households with no public sector workers but at least one private sector worker are more likely to have a mortgage when compared to the base category. Also, the household work status has a significant impact on the probability of household mortgage for household of both work statuses with the same holding of household assets.

Table 24 Households that have mortgage in 2019 and 2021 by work status and number of government loan schemes used

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.677***	1.617***
	(0.051)	(0.047)
Households with no public sector workers but at least one private sector worker	0.550***	0.524***
	(0.051)	(0.045)
Number of government loan schemes used	-0.090*	-0.165***
	(0.052)	(0.048)
Observations	45,584	46,837

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

For Table 24, the study looks at the influence of work status and government loan schemes on household mortgage demand. When the number of government loan schemes used by the household are the same, households with at least one public sector worker and households with no public sector workers but at least one private sector worker have a higher probability or having a household mortgage when compared to all other households in both years. In addition, the household work status had a positive and significant impact on household mortgage demand for households of both work statuses that have used the same number of government loan schemes. Furthermore, for all other households, the likelihood of households having a mortgage decrease as the number of government loan schemes accessed by the household increases.

Table 25 Households that have mortgage in 2019 and 2021 by work status and number of medical welfare services received

Variable	**Year 1** 2019	**Year 2** 2021
	Dependent variable: Mortgage	
Households with at least one public sector worker	1.414***	1.378***
	(0.058)	(0.053)
Households with no public sector workers but at least one private sector worker	0.390***	0.372***
	(0.051)	(0.047)
Number of medical welfare services received	0.540***	0.477***
	(0.035)	(0.030)
Observations	45,504	46,557

Note: *** p<0.01 ** p<0.05 * p<0.1; robust standard errors in parentheses.

Source: 2019 and 2021 Household Socio-Economic Survey, National Statistical Office of Thailand

Finally, Table 25 illustrates the impact of household work status and medical welfare services on the probability of household mortgage. When the number of medical welfare services used by the household are the same, households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker were more likely to have a mortgage when compared to the base category in both years. Furthermore, when focusing on all other households, as the number of medical welfare services received by the household increases, the probability of household mortgage demand also increases.

5.3 Discussion

Different household characteristics such as household's work status, location, education attainment, and other factors etc., influence a household's decision to take on household debt specifically household mortgage, differently. Therefore, to understand the impact of these influences, the study began by examining SES data from 2019 and 2021. Using 2020 as the baseline, the 2019 dataset represented the period before the COVID-19 pandemic while the 2021 dataset represented the time during the pandemic. Analyzing data from two different periods with different social and economic context allowed the study to analyze key factors that influenced the household debt demand. However, Lhakard (2022) reported that the Thai government implemented multiple policies to control the impact of COVID-19 on the country's economy. In the terms of

fiscal measures, the government carried out an increase in the tax-deductible limits, tax deferrals, lowering the rate of social security contribution, and discounts to electricity and water bills. Therefore, the changes in household debt demand as a result of the pandemic might be minimal.

Starting with the household's work status, for both households with at least one public sector worker and households with no public sector workers but at least one private sector worker, the work status significantly and positively impacted the probability of the household having debt. Although studies on the impact of household work status by sector on household debt are limited, there is vast research at the individual level. Kim (2017) found that employment at the individual level significantly affected the levels of household debt with the unemployed being more likely to have high household debt levels. Crook (2006) reported that households whose household head was employed were the most likely to be in debt while households with retired household heads had a lower probability of requesting loans. The study also investigated the impact of work status on the likelihood of households obtaining loans for the purchased or hire-purchased of a house and/or land.

Similarly for mortgage debt, the research found that the household work status had a positive and significant impact on the probability of households having a mortgage. This holds true for both households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker. This finding is inconsistent with Chen et al. (2018) who reported that because of access to subsidies, government employees in China borrowed less to purchase a residence. However, Chen et al. (2018) also discovered that workers in government-controlled nonprofit institutions were more likely to obtain a mortgage to fund the purchase of a house since banks treated them more favorably.

Apart from the household's work status, the impact of geography was explored. For all other households in other regions (e.g., central (excluding Bangkok), northern, northeastern, or southern), the location significantly and positively impacted the likelihood of having debt when compared to households with the same work status in Bangkok. Regarding the significance of location on household debt, Magri (2002) reported that area of residence was an important factor that affected loan demand. The paper found that Italian households located in small municipalities were less likely to

obtain loans due to higher entry costs into the debt market. While Collins (2008) suggested a link between debt and household geography. He stated that for urban areas, high indebtedness was more extensive among middle to high-income households, but in rural areas, high indebtedness was found in households at all income levels. In terms of mortgage debt, the study discovered that geography also had a significant influence on the likelihood of having a mortgage. However, the influence of location on the likelihood of household mortgage was negative. Therefore, all other households situated in other regions in Thailand were less likely to have a mortgage when compared to their counterparts in Bangkok.

The study then focused on the impact of educational factors. The highest household education attainment level significantly and negatively impacted the household debt demand. All other households that had the highest household education attainment level of upper secondary or lower were less likely to have household debt when compared to their counterparts where the highest household education attainment level was post-secondary or above education. This contrasts the findings from Giordana and Ziegelmeyer (2017) who reported that indebted households in Luxembourg were more likely to be younger and have high educational attainment. Despite limited research on the impact of the household's work status and education level on loan demand, there are multiple studies focusing on the link between individual education attainment and household debt. According to Amornlerdphanich (2008), the education attainment of the household head was positively related to household debt burdens in northern Thailand with college-educated household heads having the largest debt burdens. On the contrary, Rangsipaht et al. (2013) and Turinetti and Zhuang (2011) discovered that individuals with high education levels were less likely to have household debt.

Afterwards, the study examined the effect of educational factors on the probability of household mortgage. Like the household loan demand findings, the highest household education attainment level had a significant and negative impact on household mortgage demand. Hence, all other households that had the highest household education attainment level being upper secondary or lower education backgrounds were less likely to have a mortgage when compared to their counterparts with post-secondary or above education level. The findings are similar to Chen et al.

(2018), who found that individuals with higher education attainment had a higher likelihood of using a mortgage and put a larger share of their monthly compensation towards the repayment. Whilst, Baeck and DeVaney (2003) reported that young household heads who were less-educated and whose household was low income were more likely to acquire a federally guaranteed mortgage. Interestingly, Dhillon et al. (1987) discovered that the level of education did not influence the borrower's choice of mortgage contract.

Later, the study investigated the influence of children (household members under the age of 15) on household debt. The presence of children in the household had a positive and significant influence on the likelihood of household debt. Therefore, all other households with children had a higher probability of having debt compared to their counterparts who did not have children. This aligned with findings from Giordana and Ziegelmeyer (2017) who found that indebted households tended to be relatively young and have more dependent children. Similarly, Lenton and Mosley (2008) stated that having a larger number of children had a significant and positive influence on the probability of household debt. In Thailand, Chounlakorn and Kittichotipanit (2016) reported that for civil servants specifically general officials, three common factors including number of family members, capability of making installed payments, and the cost of living affected household debt. Likewise, Intarapak and Supapakorn (2020) highlighted that for households in Bangkok and the surrounding metropolitan area, variables such as household size, number of people who get wages, remittance receiving, and loan for emergency influenced household debt.

The study then explored the impact of children on the likelihood of household mortgage. Similar to loan demand, children significantly and positively impacted household mortgage demand. Hence, all other households with children experienced a higher likelihood of having a household mortgage than their counterparts without children. The findings are similar to Worthington (2009), who found that in Australia, couples with children and those who are middle-aged have a higher probability of an owner-occupied mortgage compared to an investor mortgage. While Xiao and Yao (2011), who examined American households from 1989-2007 to understand patterns and trends of debts, discovered that married couples with children were more inclined to hold mortgages, credit cards, and vehicle loans. Interestingly, Yilmazer and DeVaney

(2005) reported that the number of children in the household is positively related to the possibility of household mortgage but negatively related to credit card balances.

Next, the study focuses on average household compensation per month and found that the likelihood of having debt was positively and significantly related to average household compensation. Therefore, as the amount of average household compensation increases, all other households were more likely to have household debt. Chichaibelu and Waibel (2018) suggested that household characteristics including poverty, household size, education, and income were significantly related to the household indebtedness of rural household borrowers in Thailand and Vietnam. Whist, Lerskullawat (2020) reported that economic factors, including household income were key factors that impacted household debt with household income having a negative relationship with household debt.

Similar to household loan demand, the probability of household mortgage demand increased as the amount of household compensation rose. This aligns with the findings by Ling and McGill (1998) which reported that income was positively related to household mortgage demand while Worthington (2009) reported that income had a positive impact on the probability of both owner-occupied and investor mortgage participation. However, Yilmazer and DeVaney (2005) discovered that income had a negative impact on the likelihood of the household holding any type of debt including mortgages.

Afterwards, the study explored the influence of household assets on household debt demand. When comparing all other households with household assets to those without, the likelihood of having debt noticeably varied according to the type of household asset. For both years, the value of dwelling for living and temporary dwelling is negatively related to household debt demand, while the value of vehicles has a positive relationship with the likelihood of household debt demand. On the other hand, the relationship between the demand for household debt and the value of financial assets or the value of land/business building/others changes from 2019 to 2021. Nonetheless, most household assets significantly influenced the probability of household debt. This is similar to Amornlerdphanich (2008) who reported that average monthly household income and asset values were positively related to debt at a significant level. While

Fasianos et al. (2014) suggested that household financial assets were one of the most significant factors in determinants of household debt.

On the contrary to household debt, the effect of household assets on mortgage was mostly positive and sometimes significant. In both years, the value of dwelling for living and temporary dwelling, value of vehicles and value of land/business building/others is positively related to household mortgage. At the same time, the impact of financial assets on the demand for household mortgage changes from being positive in 2019 to negative in 2021. This aligns with findings from Yilmazer and DeVaney (2005) which found that non-financial assets have a positive effect on the likelihood of having mortgage debt. At the same time, the study found that financial assets negatively impacted mortgage debt demand with the impact becoming more serious as the financial assets accumulated.

Later, the study then looked at the influence of work status and government loan schemes on the possibility of household debt. The number of government loan schemes had a positive impact on the probability of household debt in both years. During the COVID-19 pandemic, the governments of Thailand and Vietnam provided financial support in the form of cash transfer to qualifying households for a period of up to three months to reduce the economic impact on households (as cited in (Bui et al., 2022). The study also reported that government cash transfers eased household concerns regarding health, job security, financial situation, and the general economic situation. On the contrary to household debt, government loan schemes have a negative and significant effect on mortgage demand. Therefore, all other households are less likely to have a mortgage as the number of government loan schemes used by the household increases.

Finally, the study explored the impact of household work status and medical welfare services on household debt demand. The number of medical welfare services was positively and significantly related to the probability of household debt. Hence, the likelihood of all other households having household debt increases as the number of medical welfare services received by the household increases. The study then explored the impact of work status and medical welfare services on the likelihood of household mortgage. Like household loan demand, the number of medical welfare services were found to be positively and significantly related to average household mortgage demand. Accordingly Comelli (2021), when individuals have universal welfare coverage that is

linked to their work status, they are empowered to plan their futures more effectively and take on long-term commitments such as mortgage loans.

6. Conclusion

This research analyzed the impact of different household characteristics on household debt including debt in the form of loans for the purchased or hire-purchased of a house and/or land. Using the Thailand's Household Socio-Economic Survey for 2019 and 2021, the author focused on identifying key household characteristics that determined the likelihood of households having debt. The research divided households into three categories according to the households' work status. The categories include households with at least one public sector worker, households with no public sector workers but at least one private sector worker, and all other households. A logit model was then used to analyze the probability of household debt as well as household mortgage with all other households as the models' base category.

Beginning with household work status, the study found that for both households with at least one public sector worker and households with no public sector workers but at least one private sector worker, the factor of work status had a positive and significant impact on the households' decision to obtain a loan in both 2019 and 2021. Similar to household debt demand, household work status also positively and significantly impacted the probability of both households with at least one public sector worker as well as households with no public sector workers but at least one private sector worker in having a mortgage in both years. Later, the study found that households' location, number of children, average household compensation, government loan schemes, and medical welfare services significantly increased the probability of household debt in both 2019 and 2021. On the contrary, the highest household education attainment level significantly decreased the probability of household debt in both years. Moreover, the study highlighted that in 2019 and 2021, the number of children, average household compensation, and medical welfare services had a significant and positive impact on household mortgage demand while households' location, highest household education attainment level, and government loan schemes significantly decreased the likelihood of household mortgage. Finally, household assets had a significant influence on the likelihood of household debt and household mortgage, but impact differs by factor and year.

For further research, households should be separated into more specific categories that correspond with the SES survey. This is so that a clear picture of the impact of household characteristics on all households can be achieved. Also, the influence of households' age (young/middle-aged/senior) and marital status (married/single/widowed) should be further investigated as most research papers focus on the age and marital status of the household head but not the household itself.

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Annex

Table A1.1 Households by year, work status and region

Regions	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)
Bangkok	5.66	5.56	3.77	3.23	10.04	9.97	3.28	3.25
Central (excluding Bangkok)	28.55	29.18	27.09	27.87	38.23	38.58	22.60	23.35
North	23.63	23.09	24.50	25.12	16.35	15.21	28.15	27.76
Northeast	26.41	26.49	28.41	27.50	17.56	18.34	31.67	31.58
South	15.75	15.67	16.22	16.28	17.82	17.91	14.29	14.05
Total number households	**45,586 (100 %)**	**46,840 (100 %)**	**5,881 (100 %)**	**6,068 (100 %)**	**15,654 (100 %)**	**16,132 (100 %)**	**24,051 (100 %)**	**24,640 (100 %)**

Table A1.2 Households by year, work status and highest education attainment level

Education attainment	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)
Upper secondary and lower	71.61	69.20	28.15	26.60	72.41	69.94	82.01	79.44
Post-secondary and above	28.39	30.80	71.85	73.40	27.59	30.06	17.99	20.56
Total number households	**44,509 (100 %)**	**45,975 (100 %)**	**5,880 (100 %)**	**6,065 (100 %)**	**15,233 (100 %)**	**15,839 (100 %)**	**23,396 (100 %)**	**24,071 (100 %)**

Table A1.3 Households by year, work status, and the number of members below 15 years old

Number of members aged below 15	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)
No members under 15 years	68.70	69.30	64.65	63.43	65.63	64.98	71.69	73.57
Have members under 15 years	31.30	30.70	35.35	36.57	34.37	35.02	28.31	26.43
Total number households	**45,586 (100 %)**	**46,840 (100 %)**	**5,881 (100 %)**	**6,068 (100 %)**	**15,654 (100 %)**	**16,132 (100 %)**	**24,051 (100 %)**	**24,640 (100 %)**

Table A1.4 Households by year, work status, average household compensation per month, and household assets

Household assets	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (THB)	2021 (THB)	2019 (THB)	2021 (THB)	2019 (THB)	2021 (THB)	2019 (THB)	2021 (THB)
Average household compensation	20,434	20,455	30,294	30,571	17,335	17,136.68	13,332	12,990
Average value of dwelling for living and temporary dwelling owned by household members	771,766	815,189	1,089,984	1,153,681	610,785	654,487	798,732	837,042
Average value of land/ business building/ others owned by household members	1,566,723	1,616,258	1,812,926	2,019,959	1,217,530	1,216,351	1,614,931	1,649,022
Average value of vehicles owned by household members	277,277	299,216	478,601	514,489	214,752	237,859.7	262,126	279,769
Average value of financial assets	158,450	170,609	323,893	328,092	96,070	112,906	158,597	169,605

Note: The summary statistics were calculated only from households with household assets in a certain category. Therefore, households who don't hold assets in a particular category were not included.

Table A1.5 Households by year, work status, and the number of medical welfare services received

Number of medical welfare services received	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)
No services	0.78	0.57	0.07	0.03	1.66	1.22	0.37	0.28
One service	74.40	72.40	50.94	49.18	62.89	60.56	87.58	85.77
Two services	22.14	23.10	41.44	41.44	31.68	32.03	11.24	12.82
Three services	2.51	3.63	6.95	8.41	3.51	5.75	0.78	1.09
Four services	0.17	0.28	0.53	0.87	0.24	0.44	0.03	0.04
Five services	0.01	0.01	0.07	0.07	0.01	NA	NA	0.00
Six services	NA	0.00	NA	NA	NA	0.01	NA	NA
Total number households	**45,504 (100 %)**	**46,557 (100 %)**	**5,844 (100 %)**	**5,984 (100 %)**	**15,623 (100 %)**	**16,006 (100 %)**	**24,037 (100 %)**	**24,567 (100 %)**

Table A1.6 Households by year, work status, and the number of government-funded schemes used

Number of government -funded schemes	Overall		Households with at least one public sector worker		Households with no public sector worker but at least one private sector worker		All other households	
	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)	2019 (%)	2021 (%)
No borrowing from government-funded schemes	79.16	79.20	79.90	79.00	83.09	82.63	76.41	76.99
One source	20.06	20.11	19.03	20.02	16.29	16.78	22.76	22.31
Two sources	0.76	0.69	1.04	0.94	0.60	0.58	0.79	0.69
Three sources	0.02	0.01	0.03	0.02	0.01	0.01	0.02	0.00
Four sources	0.01	0.00	NA	0.02	0.01	NA	0.01	NA
Total number households	**45,584 (100 %)**	**46,837 (100 %)**	**5,881 (100 %)**	**6,068 (100 %)**	**15,654 (100 %)**	**16,130 (100 %)**	**24,049 (100 %)**	**24,639 (100 %)**

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