

[PRELIMINARY AND INCOMPLETE]
TOWNSEND THAI MONTHLY RURAL SURVEY
HOUSEHOLD FINANCIAL ACCOUNTING
DATA SUMMARIES

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References

Townsend Thai Monthly Survey Questionnaires

Pawasutipaisit, et al. "User's Manual on Townsend Thai Monthly Survey's Household Financial Accounting.", 2011.

Preliminary Reading

Samphantharak, Krislert and Robert M. Townsend. "Households as Corporate Firms: An Analysis of Household Finance Using Integrated Household Surveys and Corporate Financial Accounting." Cambridge University Press, 2009.

Synopsis

This report summarizes interesting findings from Townsend Thai Monthly Survey's Household Financial Accounting. The data used for this purpose are from the Monthly Rural Resurvey of 800 Thai households from the 16 villages in 4 changwats (provinces) - Chachoengsao, Lopburi, Buriram, Sisaket - over 172 months, from August 1998 (Initial Baseline Survey or Month 0) to December 2012 (Month 172)¹.

The aims of this report are to exhibit some Thai household's financial behaviors at a given time and how these have changed over time. Also, standard corporate financial ratios are incorporated to analyze the financial overview of households. The outline of the data summaries is as follows:

1. Balance Sheet
 - a. Assets
 - I. Current Assets
 - 1) Cash in Hand
 - 2) Account Receivables
 - 3) Deposits at Financial Institutions
 - 4) ROSCA (Rotating Credit and Savings Association) position
 - 5) Other Lending

¹ The data from month 161 to 172 are being revised. However, the revised data will not significantly change the overall results of this report.

- 6) Inventories
- 7) Livestock Assets
- II. Non-Current Assets
 - 1) Fixed Assets (Household, Agricultural, Business Assets)
 - 2) Land
- b. Liabilities
- c. Liquidity Ratios and Working Capital
- d. Turnover Ratios and Cash Conversion Cycle
- e. Net Worth
- f. Leverage Ratios
- 2. Income Statement
 - a. Revenue
 - I. Sources of Revenue
 - b. Expenses
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 - 1) Food consumption
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 - e. Productivity: Return on Assets and Return on Household Wealth
- 3. Statement of Cash Flows
 - a. Cash Flows from Production
 - b. Cash Flows from Consumption and Investment
 - c. Cash Flows from Financing

Executive Summary

Most of the Thai households in rural areas are financially healthy, in terms of their strong liquidity, operating, and productivity ratios, though turnover ratios are worse than what they used to be. Despite gradual increases in household debt, most of the households experience much faster increases in assets - the buffer against shock on liabilities side – such that the net worth is positive. However, though it is not typical for most of the households, a small number of households should be aware of their financial situation as they suffer from negative net worth, resulting from negative monthly net income.

All findings presented in this report use the data of 800 Thai households which are located in *rural areas* across 4 changwats in two regions: the Central region – Chachoengsao and Lop Buri – and the Northeast region – Buriram and Sisaket. Therefore, the data *does not* represent financial behaviors of the households nationwide. Also, in terms of income, these samples are relatively *low-income households*, compared to the whole nation, as their median income accounts for only 37.5% of Thai gross national income per capita².

² Calculated from 2,102.01 US\$ per year (2012 household's median net income and the Bank of Thailand's US\$/THB closing spot rate of 30.61 as of Dec 28, 2012) divided by 5,610 US\$ (2012 GNI per capita, Atlas method (current US\$), World Bank national accounts data and OECD National Accounts data files)

Please note that the currency presented in this report is Thai Baht (THB), in accordance with the original survey. The authors convert some selected numbers to US\$ in the writing in case the readers would like to compare these numbers to figures from other countries.

The number of Thai households in Townsend Thai Monthly Survey's Household Financial Accounting are summarized in Table 1.

Table 1: Total number of households surveyed by changwats

Changwats	Frequency	Percentage	Cumulative Percentage
Chachoengsao	199	24.875	24.875
Lopburi	207	25.875	50.75
Buriram	216	27.00	77.75
Sisaket	178	22.25	100.00
Total	800	100	

Regarding the calculation for financial ratios, this report presents the ratios on a yearly basis. This means the authors need to convert monthly to yearly data. However, there are two approaches to do so: 1) converting monthly to yearly data, prior to calculating ratios (labeled as Approach 1) and 2) calculating ratio on each monthly data then taking average of those ratios (labeled as Approach 2). Therefore, this report presents the financial ratios by both approaches.

Balance Sheet

Similar to corporate's, each household's balance sheet has both assets, liabilities and net worth (the household wealth), which is simply the difference between the two former items. The balance sheet is a statement at a point in time, a stock. We will take a look at assets first.

a. Assets

Household Assets, by definition, are economic resources with the potential to provide future benefit to a household. According to the Monthly Rural Resurvey, from August 1998 to December 2012 as shown in Figure 1, most of the households have been gradually accumulating more assets, across the months.³ From 1st quartile and beyond, the total assets never touched zero. The median value in December 2012 is 1,215,400 THB (39,706 US\$⁴), compared to the value of 568,196 THB (15,696 US\$⁵) in August 1998. However, it is worth noting that a few number of households - lower than the 1st quartile and not depicted here - has very small amount of assets, i.e., not even reach half amount of the assets in possession of median

³ Note that 1) the median is displayed as the line inside the box 2) the ends of the boxes represent the 1st and 3rd quartile. This means the box plots do not include values lower than 1st quartile or values higher than 3rd quartile, including outside values which reflect some households accumulating much higher value of assets

⁴ Converted by the Bank of Thailand's US\$THB closing spot rate of 30.61 THB/US\$ as of Dec 28, 2012. For the rest of the report, this exchange rate is used to convert the US\$ to THB for the 2012 figures

⁵ Converted by the Bank of Thailand's US\$THB closing spot rate of 36.20 THB/US\$ as of Jan 4, 1999 (No data on exchange rate available in 1998). For the rest of the report, this exchange rate is used to convert the US\$ to THB for the August 1998 figures

household in December 2012. On the other hand, there is a few number of households – higher than the 3rd quartile - which accumulated high value of assets as well.

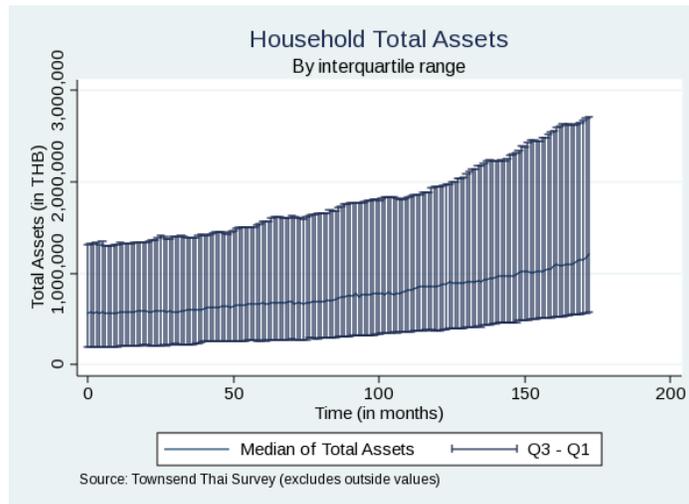


Figure 1: Household Total Assets

Considering the annualized rate of change from month to month, Figure 2 shows that the growth rates are volatile. Nevertheless, taking the geometric average and separating households into quartiles by initial wealth distribution, the median of average annualized monthly growth rates from August 1998 to December 2012 for the households in 2nd quartile is still positive at 5.32% per year, whereas the households in 1st and 3rd quartile grow at 13.29% and 3.05% per year, respectively. This implies that most of the households experience positive growth of their assets.

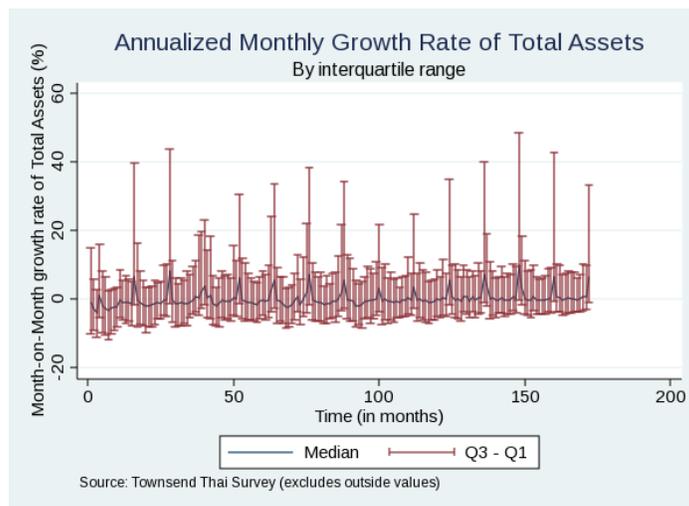


Figure 2: Annualized Monthly Growth Rates of Total Assets

Across the 4 changwats, it is clear that, in 2012, total assets have increased in size from the year 1999. Table 2 shows that, in 1999, households in Sisaket possess the least assets both in terms of mean and median (around 9,015 and 16,793 US\$, respectively), while households in Chachoengsao do the most (107,572.7 US\$ for the mean and 26,175 US\$ for the median). However, this is not true anymore in 2012, as shown in

Table 3, when households in Buriram possess the least assets in terms of mean (36,155 US\$⁶) and median (22,308 US\$) instead. In 2012, Chachoengsao and Lopburi possess the most assets in terms of mean (170,974 US\$) and median (64,669 US\$), respectively.

Table 2: Distribution of Assets in 1999 (By Changwats)*

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	20,370.94	1.42e+08	4,019,990	1.22e+07	309,885.7	978,151.3	2,733,197
Lopburi	0	1.28e+07	1,468,092	2,031,960	202,907.5	773,416.1	2,015,295
Buriram	0	7,716,925	807,742	1,109,883	226,085.8	533,327.8	889,958.8
Sisaket	0	8,006,977	627,555.3	922,887.2	116,419.8	336,878.2	845,717.8
All	0	1.42e+08	1,708,286	6,217,970	202,907.5	582,130	1,334,391

* We convert all the monthly to yearly data in 1999.

Table 3: Distribution of Assets in 2012 (By Changwats)*

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	34,273.23	1.46e+08	5,233,527	1.38e+07	871,694.1	1,979,521	4,488,942
Lopburi	0	1.97e+07	3,190,097	3,556,268	730,952.6	2,018,824	4,471,440
Buriram	570	6,726,111	1,106,705	1,207,256	341,846.3	682,847.8	1,322,748
Sisaket	0	8,006,490	1,159,219	1,136,648	443,812.4	830,149.5	1,493,590
All	0	1.46e+08	2,688,282	7,405,596	557,085.4	1,124,609	2,642,949

* We convert all the monthly to yearly data in 2012.

Considering growth rates of assets in each changwat by separating households into quartiles by initial wealth distribution, according to Table 4, we see that Chachoengsao yields the fastest growth in less wealthy groups (1st and 2nd quartile), while Lopburi does in wealthier groups (3rd and 4th quartile). To the other extreme, Buriram has the slowest growth across the groups.

⁶ Converted by the Bank of Thailand's US\$THB closing spot rate of 37.37 THB/US\$ as of Dec 30, 1999. For the rest of the report, this exchange rate is used to convert the US\$ to THB for the 1999 figures

Table 4: Geometric Average of Annualized Monthly Percentage Increase in Total Assets from Aug 1998 to Dec 2012 by Initial Wealth Distribution (By Changwats) (%)*

(in %)	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Chachoengsao	23.32	7.70	5.97	3.27
Lopburi	17.84	7.08	6.78	5.80
Buriram	1.69	3.26	0.25	1.26
Sisaket	12.16	5.41	3.37	2.88
All	13.29	5.32	3.05	3.83

* This table represents percentage of growth rates of median value in each quartile.

Now we take a closer look into two types of assets: current assets and non-current assets. Current assets, by its nature, are economic resources that are liquid (cash in hands, account receivables, deposits at financial institution, net ROSCA (Rotating Credit and Savings Association) position, other lending, inventories, prepaid insurance and livestock assets), whereas non-current assets are illiquid (fixed assets, land and other fixed assets).

Picking the median household from the 2nd quartile, the major proportion, as shown in Chart 1 and 2, lies with inventories in both 1999 and 2012 (and it grows from 44% in 1999 to 70% in 2012). Fixed assets – household, agricultural and business assets – decrease proportionally, while cash and deposits have higher percentages.

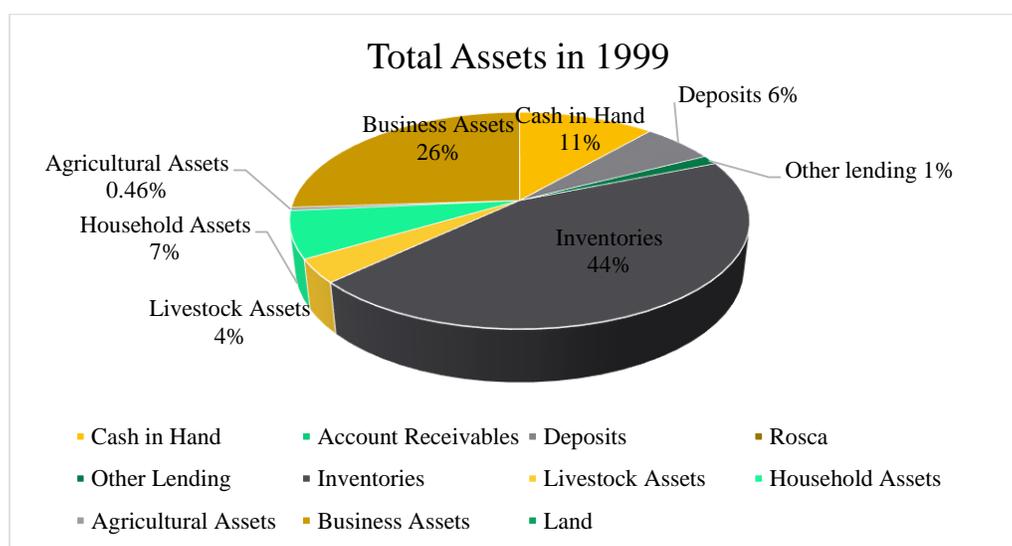


Chart 1: Distribution of Assets in 1999 (By Types of Assets) for median household in 2nd Quartile

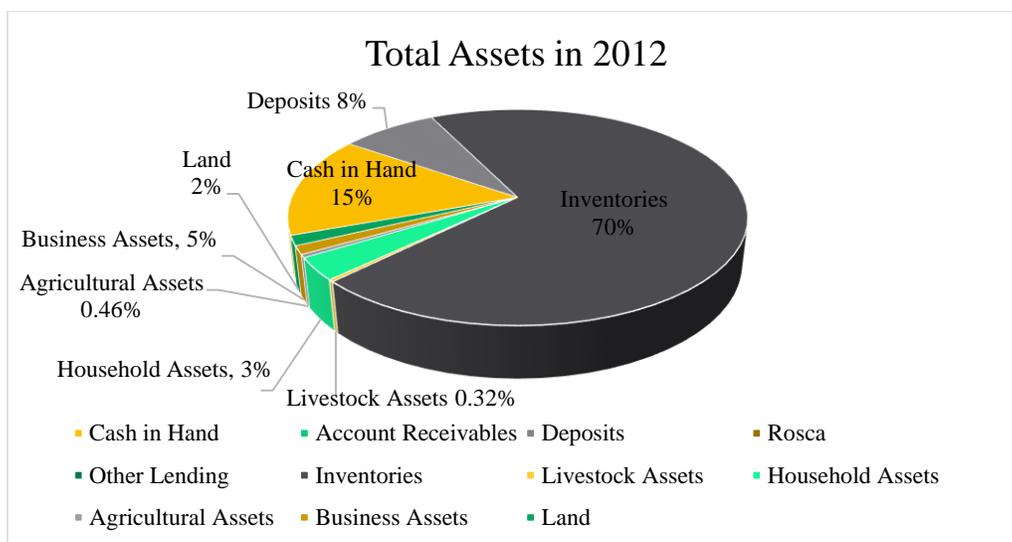


Chart 2: Distribution of Assets in 2012 (By Types of Assets) for median household in 2nd Quartile

I. Current Assets

From August 1998 to December 2012, current assets have been gradually increasing throughout times, as shown in Figure 3. The median has almost 410% growth of current assets in December 2012 (633,922 THB or 20,710 US\$), compared to August 1998 (124,304 THB or 3,434 US\$). This increase in current assets mainly contribute to the aforementioned increase in total assets, as the non-current assets are relatively stable (as will be shown in Figure 11).

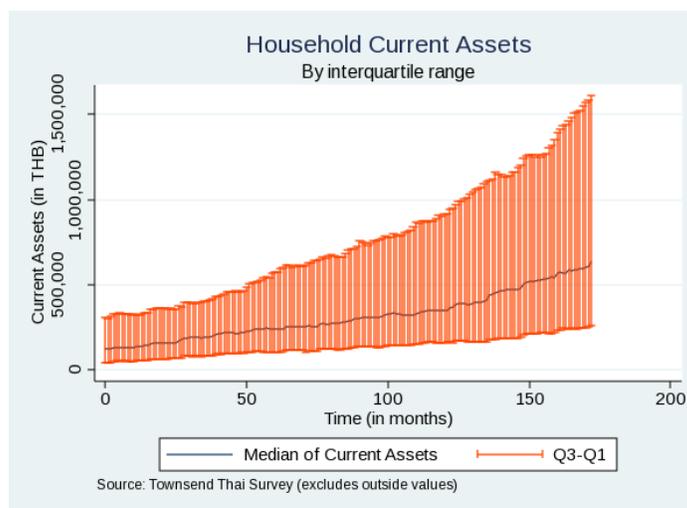


Figure 3: Household Current Assets

*Table 5: Geometric Average of Annualized Monthly Percentage Increase in Current Assets from Aug 1998 to Dec 2012 by Initial Wealth Distribution (%)**

Growth of	Initial Wealth Distribution			
	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Cash in Hand	14.32	4.42	9.88	14.44
Account Receivables	-0.16	-16.79	-2.72	-20.33
Deposits in Financial Institutions	19.61	18.40	20.82	21.44
ROSCA	0	16.29	12.20	6.07
Other lending	0	0	0	0
Inventories	26.82	23.38	24.61	28.27
Livestock Assets	-28.07	-13.46	-23.16	-15.44

* This table represents percentage of growth rates of median value in each quartile.

Among the other current assets, inventories are fastest growing, as well as its largest proportion in total assets shown in Chart 1 and 2. The geometric average monthly growth rate of median household in 2nd quartile, as shown in Table 5, for inventories is 23.38% following by deposits at financial institutions – the household’s formal lending, ROSCA and cash in hand, whereas the current assets that experience decreasing growth rates are account receivables and livestock assets.

1) Cash in Hand

Cash in hand, by its nature, is the most liquid assets that any household possesses. Figure 4 shows that households have been gradually increasing their cash holdings across the months beginning in August 1998 (50,000 THB or 1,381 US\$ in August 1998 to 400,000 THB or 13,068 US\$ in December 2012). The median household in 2nd quartile has average MoM growth of 4.42% (with 14.32% and 9.88% for 1st and 3rd quartiles, respectively), as shown in Table 5.

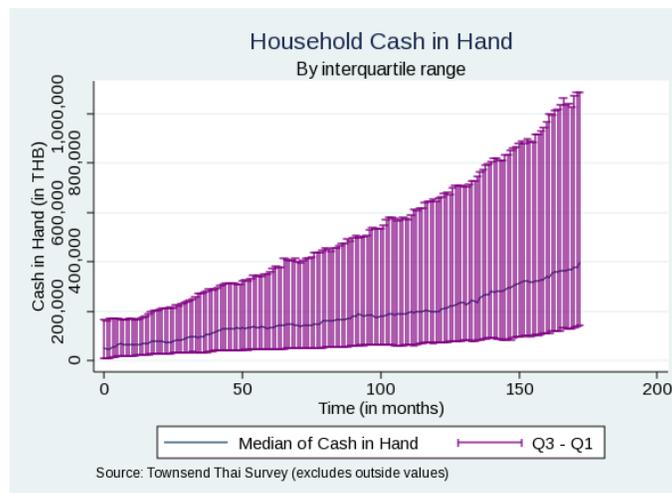


Figure 4: Cash in Hand

2) Account Receivables

Account receivables account for trade credits when households sell their products to customers, i.e., trades do not involve with cash at the time it's being executed. The values of account receivables in interquartile range are zero across the observed months (the graph is not shown here.)

However, according to Figure 5, where the arithmetic mean of account receivables is presented, its movement is volatile and tends to be affected by seasonal factor. This follows the pattern in revenues, especially revenues from cultivation and fish/shrimp, which will be elaborated in detail later.

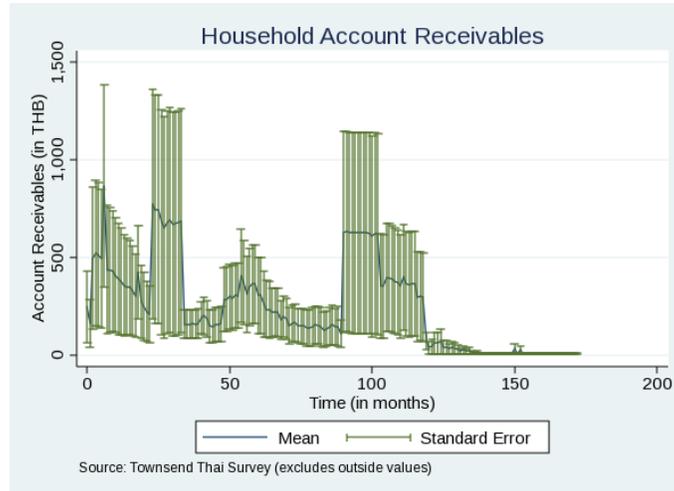


Figure 5: Account Receivables (Arithmetic Mean)

3) Deposits at Financial Institutions (Formal lending)

As mentioned above, deposits at financial institutions are the second fastest growing through times among the current assets. However, regarding the value from Figure 6, in December 2012, the median household has only 18,000 THB (588 US\$) outstanding in deposits, compared to 400,000 THB (13,068 US\$) in cash, which contributes the larger proportion in current assets (the largest is still inventories). Also, most of the households possess no deposits in several months out of the entire sample period.

However, out of 800 surveyed households, across August 1998 to December 2012 (172 months), there are only 56 households, or 7%, which have no deposits at financial institutions. Therefore, the majority of households have deposits at financial institutions regardless of its amount deposited.

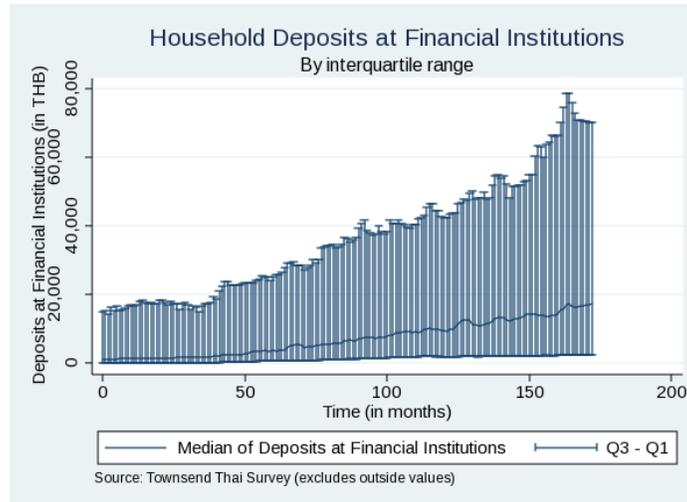


Figure 6: Deposits at Financial Institutions

4) ROSCA (Rotating Credit and Savings Association) position (Informal lending)

ROSCA is a group of individuals who agree to meet for a defined period in order to save and borrow together. It is categorized as an informal lending. According to Townsend Thai Survey Household Financial Accounting, this account is a position which is netted from both savings and borrowings. Therefore, positive position means that households lend more money than they borrow. On the other hand, negative position means that households borrow more money than they lend. The values in interquartile range are zero across times, which reflects much smaller proportion than formal lending to the total lending (the graph is not shown here.)

However, on average, households have a slightly negative net ROSCA position in December 2012, as shown in Figure 7. This means households are the net borrowers for ROSCA.

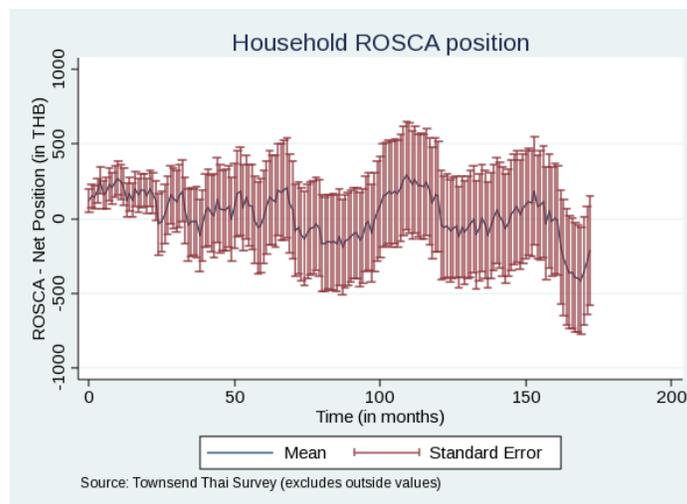


Figure 7: ROSCA position (Arithmetic mean)

5) Other Lending (Informal lending)

From the 1st to 3rd quartile, the households have almost zero level of other lending. According to Figure 8, the values in interquartile range of other lending position hardly moves out of zero level across the months (the graph is not shown here.) However, on average, as shown in Figure 8, the other lending is still positive.

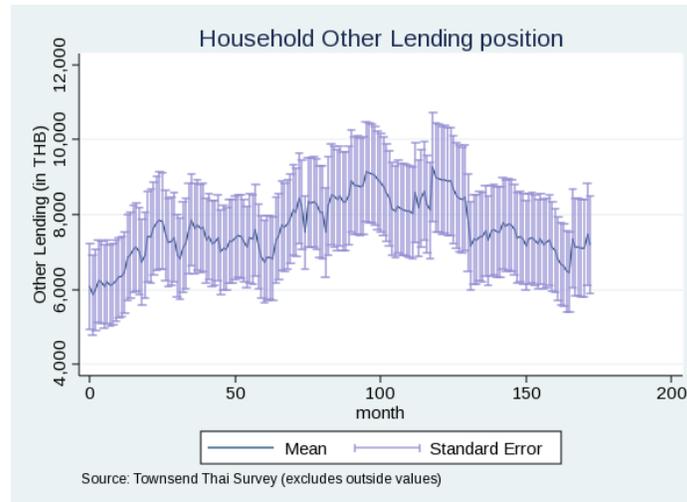


Figure 8: Other lending (Arithmetic mean)

Proportionally, according to Table 6, median households, from the least wealthy to the wealthiest group, entirely lend their money via deposits at financial institutions (100% of their total lending in both 1999 and 2012). The other two: ROSCA position and other lending take 0% of their total lending⁷.

Table 6: Distribution of Lending in 1999 and 2012
By Initial Wealth Distribution (% of Total lending)*

	1 st Quartile		2 nd Quartile		3 rd Quartile		4 th Quartile	
(in %)	1999	2012	1999	2012	1999	2012	1999	2012
Deposits at Financial Institutions	100	100	100	100	100	100	100	100
ROSCA	0	0	0	0	0	0	0	0
Other lending	0	0	0	0	0	0	0	0

* This table represents percentage of growth rates of median value in each quartile.

⁷ One may wonder why the growth rates of ROSCA are positive, while its proportion of total lending is zero. This is because the growth rates in Table 5 are median “values” of all households in each quartile, as well as the median values of all household’s proportion (percentage) of total lending in each quartile reported in Table 6. Therefore, the two Tables do not necessarily capture the exact same household in each quartile.

6) Inventories

According to Figure 9, inventories have been increasing across the months. The median value is 99,602 THB (3,254 US\$) in December 2012 from 4,080 THB (113 US\$) in August 1998. Recall from Table 5, it has the fastest growth rates among current assets.

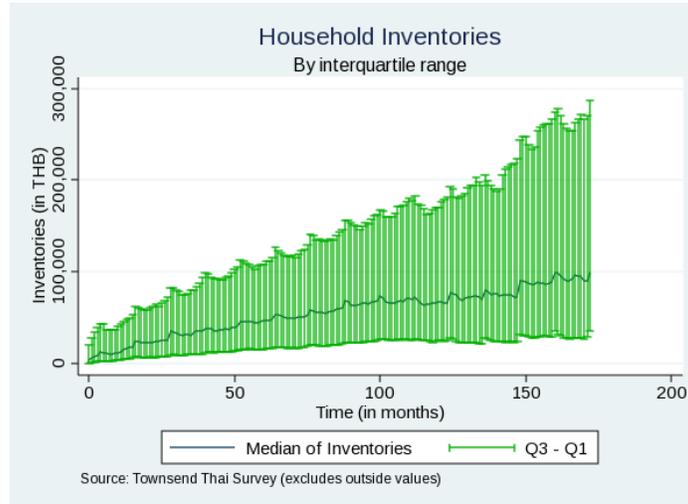


Figure 9: Inventories

7) Livestock Assets

As shown in Table 5, livestock assets, on the other way around, have the fastest decreasing growth rate among the current assets. This depicts in Figure 10, where livestock assets across the 1st to 3rd quartile households have been decreasing throughout times.

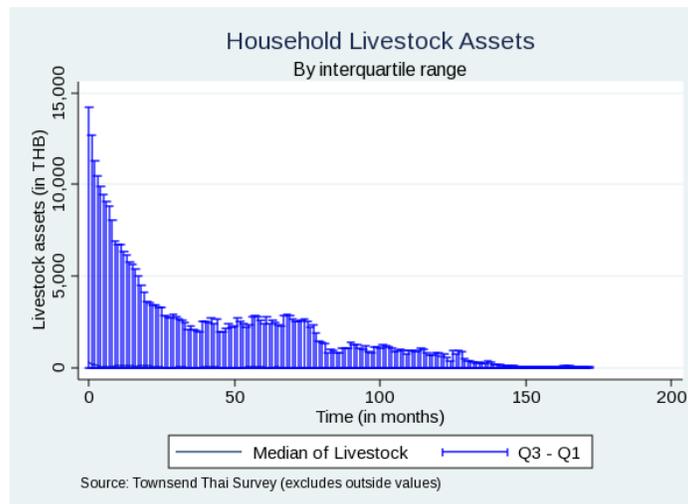


Figure 10: Livestock Assets

II. Non-current Assets

Unlike current assets, in Figure 11, non-current assets remain stable over time, in line with the nature of non-current assets. Therefore, as earlier mentioned, the increase in current assets mainly contributes to the increase in total assets as a whole.

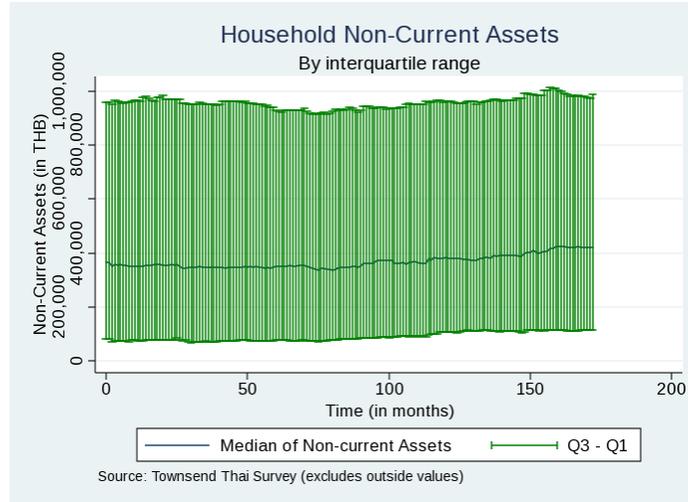


Figure 11: Household Non-Current Assets

However, it is worth to take a look inside the non-current assets, which are fixed assets and land.

1) Fixed Assets

Figure 12 shows the gradual increase of fixed assets, though relatively stable from Month 100 (December 2006) and on. Fixed assets are categorized into 3 types: Household Assets, Agricultural Assets and Business Assets. From Table 7, where geometric average is shown, the fastest growth is with household assets, where agricultural and business assets experience diminishing growth rates.

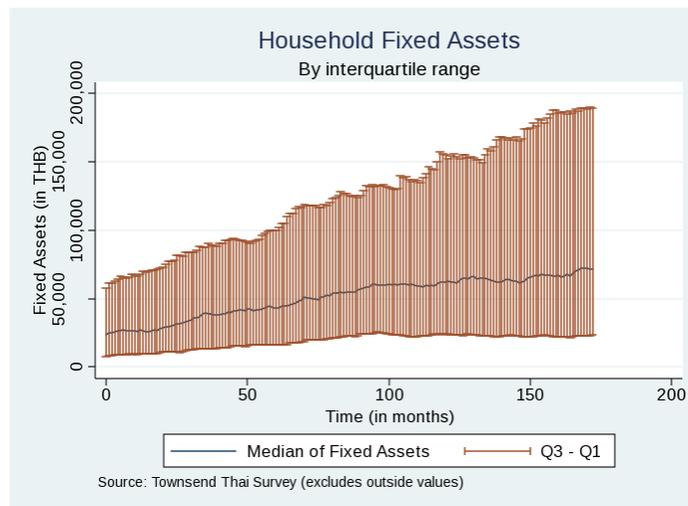


Figure 12: Fixed Assets

*Table 7: Geometric Average of Annualized Monthly Percentage Increase in Non-Current Assets from Aug 1998 to Dec 2012 by Initial Wealth Distribution (%)**

Growth of	Initial Wealth			
	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Household Assets	9.59	8.83	9.77	10.53
Agricultural Assets	-14.01	-8.77	-7.45	-9.49
Business Assets	-19.44	-17.05	-12.95	-14.97
Land	1.19	0.25	0.18	0.12

* This table represents percentage of growth rates of median value in each quartile.

2) Land

Regarding Figure 13, the value of land is very steady across the months⁸. The median is approximately 300,000 THB (9,800 US\$) of value, while the 1st and 3rd quartile are around 20,000 and 850,000 THB (653 and 27,769 US\$), respectively.

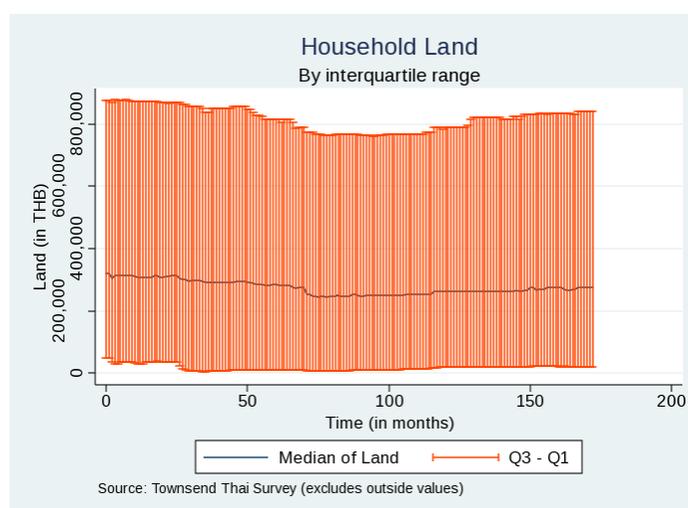


Figure 13: Land

Overall, the growth rates of current and non-current assets are summarized in Table 8. The households in 1st quartile, the least wealthiest group, enjoy the fastest growth in both current and non-current assets.

⁸ Please note that the Townsend Thai Survey books value of land as “book value”, not the “market value” that can be volatile throughout times.

Table 8: Geometric Average of Annualized Monthly Growth of Assets
by the Initial Wealth Distribution (%)*

Growth of	Initial Wealth			
	1 st quartile	2 nd quartile (Median)	3 rd quartile	4 th quartile
Current Assets	19.30	10.85	9.48	11.87
Non-current Assets	4.30	1.18	0.72	0.55
Total Assets	13.29	5.32	3.05	3.83

*This table shows median value of each quartile

b. Liabilities

According to the monthly rural resurvey, as shown in Figure 14, it clearly shows that household debt remains relatively constant, though it has been increasing gradually before Month 100 (December 2006). The median value hovers around 50,000 THB (1,633 US\$). Reiterated by Figure 15, most of the households have very limited growth rates of debt.

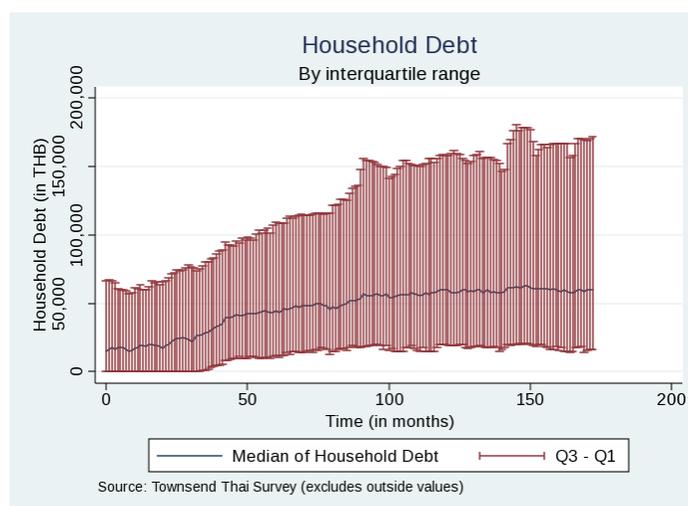


Figure 14: Household Debt

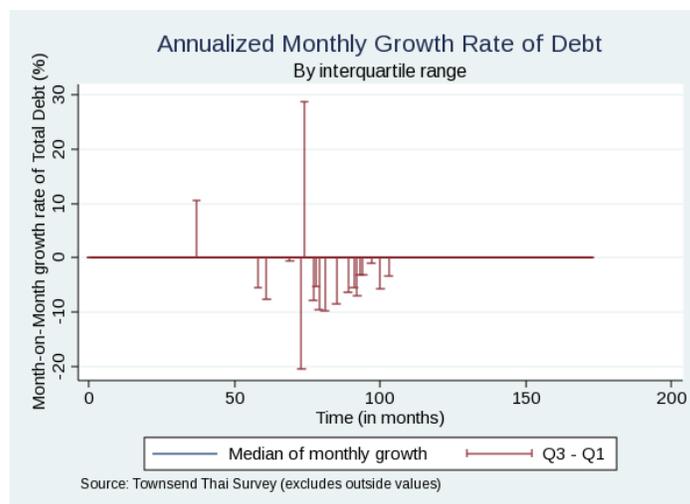


Figure 15: Annualized Monthly Growth Rate of Debt

Across the 4 changwats, it is Lopburi which has the most household debt, in 1999 and 2012, both in terms of mean (3,578 US\$ in 1999 and 8,522 US\$ in 2012) and median (1,292 US\$ in 1999 and 3,973 US\$ in 2012), whereas Sisaket and Chachoengsao have the least in terms of mean (1,496 US\$ in 1999 and 2,331 US\$ in 2012) and median (0 US\$ in 1999 and 1,233 US\$ in 2012), respectively.

Table 9: Distribution of Debt in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	0	3,702,333	72,891.94	303,861.6	0	0	29,066.67
Lopburi	0	1,890,000	133,709.5	230,610.2	600	39,560.58	168,322
Buriram	0	2,164,752	89,383.54	237,841.7	6,266.67	31,120.33	57,400
Sisaket	0	1,538,175	55,905.87	191,296.2	5,005.83	13,292.08	39,491.67
All	0	3,702,333	89,242.25	245,222.1	30	18,407.08	62,666.67

* We convert all the monthly to yearly data in 1999.

Table 10: Distribution of Debt in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-39,106	3,852,040	136,190	329,582.2	973.83	37,750	168,610.3
Lopburi	0	3,341,926	260,869.2	425,609	28,000	121,608.3	315,436
Buriram	-700	2074353	145,007.3	242,012	23,750	71,950	174,105
Sisaket	0	2,114,033	87,102.03	193,412.3	21,321.67	46,092.5	94,249.83
All	-39,106	3,852,040	158,674	317,865.8	18,333.33	60,000	169,125

* We convert all the monthly to yearly data in 2012.

Separating households into quartiles by initial wealth distribution by each changwat then considering growth rates, according to Table 11, we see that Sisaket yields the fastest growth across the group, though its size is relatively small. To the other extreme, Chachoengsao is the slowest-growing debt changwat across the groups.

*Table 11: Geometric Average of Annualized Monthly Percentage Increase in Debt from Aug 1998 to Dec 2012 by Initial Wealth Distribution (By Changwats) (%)**

(in %)	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Chachoengsao	0	0	0.43	0
Lopburi	5.24	5.42	1.30	1.35
Buriram	1.07	2.37	3.36	6.24
Sisaket	12.26	5.89	5.81	8.78
All	5.06	4.58	2.83	2.87

* This table represents percentage of growth rates of median value in each quartile.

c. Liquidity Ratios and Working Capital

As mentioned above, household assets have been increasing as well as its debt. However, in order to see how well Thai rural households can handle debt, we shall look at liquidity ratios, i.e., current ratio, quick ratio and working capital.⁹ Please note that, in calculating the ratios, we treat household debt (total liabilities) as current liabilities since most of liabilities are not long-term. Also, the resulted ratios are undervalued since current liabilities are denominator of the ratios. The ratios would have been higher – as we would prefer – if we segregated current liabilities from total liabilities.

Table 12.1: Liquidity Ratios in 1999 and 2012 (Approach 1)¹⁰

	1999				2012			
	1 st Quartile	Median	3 rd Quartile	4 th Quartile	1 st Quartile	Median	3 rd Quartile	4 th Quartile
Current Ratio	0.16	0.45	1.54	612.54	0.62	1.62	4.99	533.8
Quick Ratio	0.64	2.19	8.07	243,278.3	1.78	5.19	18.21	52,078.27
Working Capital (THB)*	26,018.72	87,971.68	238,374.3	1.06e+07	186,034.8	498,387.7	1,335,477	5.85e+07

* Note that the amount being shown here is not inflation-adjusted

⁹ Current ratio = Current Assets/Current Liabilities

Quick ratio = (Cash in Hand + Account Receivables)/Current Liabilities

Working Capital = Current Assets – Current Liabilities

¹⁰ Approach 1 is the method of ratio calculation by converting monthly to yearly data, prior to calculating ratios

Table 12.2: Liquidity Ratios in 1999 and 2012 (Approach 2)¹¹

	1999				2012			
	1 st Quartile	Median	3 rd Quartile	4 th Quartile	1 st Quartile	Median	3 rd Quartile	4 th Quartile
Current Ratio	1.71	4.68	16.69	301,427.7	3.43	8.56	27.56	72,081.62
Quick Ratio	0.63	2.35	9.49	147,879.8	1.85	5.38	19.31	52,078.27
Working Capital (THB)*	26,018.72	87,971.69	238,374.3	1.06e+07	186,034.8	498,387.7	1,335,477	5.85e+07

* Note that the amount being shown here is not inflation-adjusted

The results from both Table 12.1 and 12.2 show that most of the Thai households, from the least wealthy to the wealthiest group, have stronger liquidity ratios compared to August 1998. Also, both current and quick ratios are higher than 1 and working capital is more positive, which means current assets are enough to buffer current liabilities.

d. Turnover Ratios

Turnover ratios measure how liquid the household is to turn their other current assets/liabilities into cash in hand. The ratios are composed of Days' Receivables, Days' Inventories, Days' Payables, and Cash Conversion Cycle).¹² According to Table 13.1 and 13.2, the cash conversion cycle, which is the net result of days' receivables, days' inventory, and days' payables, increases, i.e., the days to turn other current assets and liabilities into cash in hand are longer in 2012, compared to 1999. Therefore, households should try to shorten days in transforming account receivables and inventory into cash, alongside negotiating new terms to repay its debt to account payables at a longer period.

¹¹ Approach 2 is the method of ratio calculation by calculating each ratio from each monthly data, then taking average of these ratios

¹² Days' Receivables = 365/Total Revenue * Account Receivables

Days' Inventory = 365/Total Cost of Production * Inventories

Days' Payables = 365/Total Cost of Production * Account Payables

Cash Conversion Cycle = Days' Receivables + Days' Inventory – Days' Payables

Table 13.1: Turnover Ratios in 1999 and 2012 (Approach 1)

	1999				2012			
(In Days)	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>
	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>
Days' Receivables	0	0	0	191.95	0	0	0	3.16
Days' Inventory	195.13	723.27	2,224.12	1,928,620	348.35	1,091.61	3,718.58	3.33e+07
Days' Payable	0	0	2.93	232,297.5	0	9.99	206.29	2,359,236
Cash Conversion Cycle	146.73	612.60	2,064.74	1,928,620	196.53	786.58	2,844.57	4,694,407

Table 13.2: Turnover Ratios in 1999 and 2012 (Approach 2)

	1999				2012			
(In Days)	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>
	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>
Days' Receivables	0	0	0	62,148.42	0	0	0	87.67
Days' Inventory	433.11	2,634.09	18,558.78	4.35e+11	1,033.38	12,885.96	119,487.3	2.43e+13
Days' Payable	0	0	3.65	5,105,967	0	35.67	2,299.72	1.13e+08
Cash Conversion Cycle	229.03	1,961.1	17,725.94	4.35e+11	387.51	6,058.41	80,787.56	2.43e+13

e. Net Worth (Total Wealth)

Household net worth is the difference between household assets and liabilities. The positive number of net worth implies that household assets exceeds its debt.

According to Figure 16, where the development of household's net worth (total wealth) is represented, the net worth of the households equal or greater than 1st quartile also increases and remains positive. The median value is 1,069,678 THB (34,945 US\$) in December 2012, compared to 484,353 THB (13,380 US\$) in August 1998. This means the increase in total assets is in faster pace than the debt itself so that net worth is in positive territory, as will be shown in Table 19 (Again, this does not include the outliers which are some households having much higher net worth). Nonetheless, only a few number of households under the 1st quartile experienced negative net worth, which implies that they had total liabilities in excess of total assets. However, this situation has improved over time so that in December 2012, only 1.5% of total households are left with negative net worth.

Regarding monthly growth rate, it is in very similar fashion as total asset's, i.e., the growth rates are volatile. On average, the median value of geometric average annualized monthly growth rate is 5.31% from August 1998 to December 2012, with 13.67% and 2.92% for the 1st and 3rd quartile, respectively.

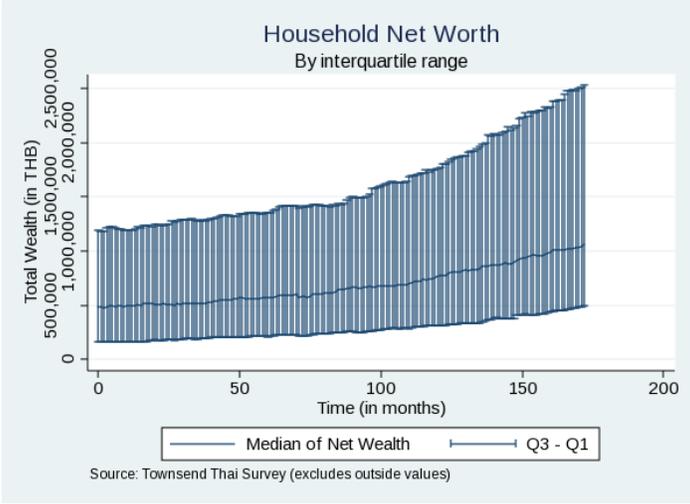


Figure 16: Household Net Worth

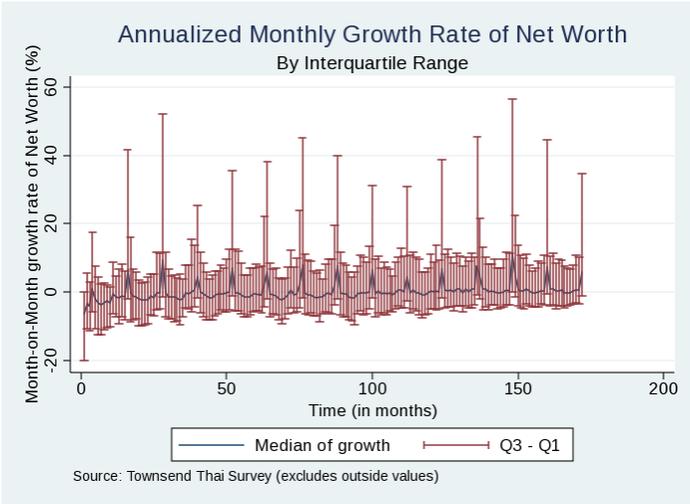


Figure 17: Annualized Monthly Growth Rate of Net Worth

Considering the wealth distribution across changwats, according to Table 14, we see that Chachoengsao is the richest in both 1999 (105,622 US\$ of mean and 23,239 US\$ of median) and 2012 (166,525 US\$ of mean and 61,985 US\$ of median), while Sisaket is the poorest both in terms of mean (15,297 US\$) and median (8,029 US\$) in 1999. Yet, in 2012, the poorest is, instead, Buriram, in terms of mean (31,418 US\$) and median (19,760 US\$).

Table 14: Distribution of Net Worth in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	19,015.39	1.42e+08	3,947,098	1.21e+07	281,246.2	868,443.6	2,628,314
Lopburi	-1,000	1.27e+07	1,334,383	1,944,532	167,225.3	601,316.5	1,826,838
Buriram	-134,898.1	6,392,742	718,358.5	1,030,823	196,339.8	462,538.7	755,547.3
Sisaket	-760,545.6	7,995,975	571,649.5	925,258.8	87,319.38	300,037.4	765,781.1
All	-760,545.6	1.42e+08	1,619,044	6,187,219	165,585.7	492,574.1	1,200,932

* We convert all the monthly to yearly data in 1999.

Table 15: Distribution of Net Worth in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	3,813.14	1.45e+08	5,097,337	1.38e+07	820,422.4	1,897,375	4,395,437
Lopburi	0	1.94e+07	2,929,228	3,400,885	653,477.1	1,838,453	4,016,268
Buriram	-176,521.6	6,536,105	961,697.4	1,115,015	271,810.1	604,844.5	1,171,012
Sisaket	-5,562.68	7,890,380	1,072,117	1,061,233	399,796.7	784,677.6	1,387,461
All	-176,521.6	1.45e+08	2,529,608	7,351,011	463,408.8	1,013,343	2,435,665

* We convert all the monthly to yearly data in 2012.

Separating households into quartiles by initial wealth distribution and by changwat, according to Table 16, we see that the results are mixed for the fastest growing changwat. Yet, they are only lie with 2 Changwats: Chachoengsao and Lopburi. However, the result is clear that Buriram, on average, suffers the slowest-growing net worth across the groups.

Table 16: Geometric Average of Annualized Monthly Percentage Increase in Net Worth from Aug 1998 to Dec 2012 by Initial Wealth Distribution (By Changwats) (%)*

(in %)	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Chachoengsao	25.10	6.84	6.92	3.01
Lopburi	17.98	8.82	7.68	5.61
Buriram	3.44	2.82	0.01	1.10
Sisaket	12.91	5.51	3.18	2.25
All	13.67	5.31	2.92	3.86

* This table represents percentage of growth rates of median value in each quartile.

From the occupation perspective, the households in business occupation are the richest (except the mean in 1999 that Cultivation occupation is the richest), whereas the households in fish and shrimp are the poorest both in 1999 and 2012, according to Table 17 and 18.

Table 17: Distribution of Net Worth in 1999 (By Occupation)*

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Cultivation	-760,545.6	1.42e+08	2,500,373	1.06e+07	309,885.7	673,676.3	1,473,696
Livestock	-174,652	3.27e+07	1,384,823	3,249,403	240,345.6	511,644.2	1,122,026
Fish/Shrimp	-760,545.6	2.18e+07	1,270,565	3,149,918	106,316.2	392,629.1	764,100.2
Business	-1,000	2.18e+07	1,823,090	3,269,791	211,061.6	887,529.4	1,884,911
Labor	-760,545.6	1.42e+08	2,045,783	9,259,769	139,439.5	512,650	1,595,397

Table 18: Distribution of Net Worth in 2012 (By Occupation)*

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Cultivation	-176,521.6	1.45e+08	2,742,122	8,846,285	476,078	1,160,449	2,595,591
Livestock	-143,060.3	9.52e+07	2,538,127	8,576,446	476,078	1,095,868	2,359,818
Fish/Shrimp	-149,608.7	9.52e+07	2,337,466	9,689,186	451,521.9	752,705.1	1,513,505
Business	-176,521.6	3.23e+07	3,266,285	4,481,014	846,842	1,860,474	3,720,020
Labor	-149,608.7	1.45e+08	2,936,899	8,651,225	552,045.2	1,262,896	2,993,245

* Some households may have more than one occupation. The values shown in each category may include the proportion of net worth generated from other occupation than that category.

All in all, the balance sheet shows that, regarding the average monthly growth rate of net worth by the initial wealth distribution, as shown in Table 19, the poorest group experiences the most remarkable growth across the wealth distribution, which is 13.67% per year. In addition, on average, every group generates positive growth of assets. This reiterates that assets are growing in faster pace than debt across the groups.

Table 19: Geometric Average of Annualized Monthly Percentage Increase in Assets, Debt and Net Worth from Aug 1998 to Dec 2012 by Initial Wealth Distribution (%)

Initial Wealth	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Growth of Assets	13.29	5.32	3.05	3.83
Growth of Debt	5.06	4.58	2.83	2.87
Growth of Wealth	13.67	5.31	2.92	3.85

* This table represents percentage of growth rates of median value in each quartile.

f. Leverage Ratios

Leverage ratios¹³ look at how much capital comes in the form of debt (loans), or assess the ability of a household to meet financial obligation. Overall, leverage ratios are relatively stable in Approach 2, while they are increasing in Approach 1. However, we may focus on Approach 2 that we see the development of ratios themselves across the months. Therefore, the ratios are quite stable across the months. However, it's worth noting that the 4th quartile households should be aware of their debt as they have the debt-to-net-worth ratio already exceeding 1, according to Table 20.2.

Table 20.1: Leverage Ratios in 1999 and 2012 (Approach 1)

	1999				2012			
	1 st Quartile	Median	3 rd Quartile	4 th Quartile	1 st Quartile	Median	3 rd Quartile	4 th Quartile
Fixed Assets to Net Worth	7.36	19.46	49.38	1,887.02	10.08	23.49	52.94	4,197.26
Debt to Net Worth	0	11.86	55.50	18,441.82	3.43	20.13	57.34	18,882.06

Table 20.2: Leverage Ratios in 1999 and 2012 (Approach 2)

	1999				2012			
	1 st Quartile	Median	3 rd Quartile	4 th Quartile	1 st Quartile	Median	3 rd Quartile	4 th Quartile
Fixed Assets to Net Worth	0.02	0.05	0.14	5.85	0.03	0.06	0.15	1.62
Debt to Net Worth	0	0.03	0.15	19.35	0.01	0.05	0.15	6.51

¹³ Fixed Assets to Net Worth = Fixed Assets/Net Worth
Debt to Net Worth = Total liabilities/Net Worth

Income Statement

Household's income statement is very similar to corporate's: it has revenues, costs and net income. The income statement measures flows of revenue and expenses over a unit of time, and the disposition of net profit into consumption and savings.

a. Revenues (not including Interest Revenue)

Overall, Thai households experience choppy revenue throughout times, as depicted in Figure 18. This is largely due to seasonal pattern of household revenues, especially revenues from cultivation and fish/shrimp, which are shown in Figure 19 and 21, respectively.

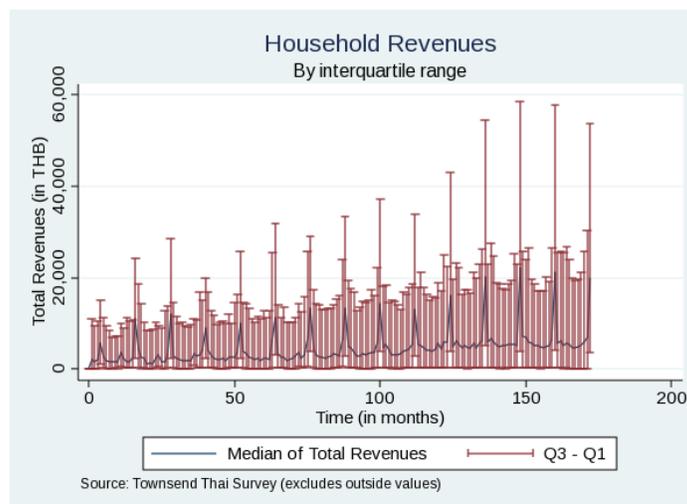


Figure 18: Household Revenues

Regarding the revenue distribution across changwats, according to Table 21 and 22, we see that, in 1999, Chachoengsao has the most revenue both in terms of mean (10,956 US\$) and median (3,295 US\$), while Sisaket and Buriram have the least, in terms of mean (1,499 US\$) and median (633 US\$), respectively. However, in 2012, the picture has changed for the most revenue changwat: Lopburi has the most revenue in terms of median (9,295 US\$), while Chachoengsao still has the most revenue in terms of mean (36,453 US\$). On the other hand, Sisaket is ranked the lowest in generating revenue.

Table 21: Distribution of Revenues in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	0	1.19e+07	409,420.3	1,148,684	8,180	123,140	346,080
Lopburi	0	2,733,688	187,607.8	290,121.9	19,397	96,039	265,635
Buriram	0	1,593,110	57,723.52	170,612	4,162.5	23,658.75	45,750
Sisaket	0	666,400	56,006.79	91,235.52	20,245	33,205	57,481
All	0	1.19e+07	178,433.7	615,585.1	11,829	41,303	143,780

* We convert all the monthly to yearly data in 1999.

Table 22: Distribution of Revenues in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	0	9.33e+07	1,115,815	6,688,662	9,600	205,446	611,800
Lopburi	0	6,578,790	571,309.8	793,463.9	42,710	284,510	851,850
Buriram	0	5,929,138	217,305.4	552,154	4,540	71,130.5	180,405
Sisaket	0	1,390,730	122,497	188,173.7	31,080	63,832.5	147,799
All	0	9.33e+07	511,313.5	3,389,359	23,915	109,685	397,345.5

* We convert all the monthly to yearly data in 2012.

I. Source of Revenues

As mentioned earlier, revenues from cultivation and from fish and shrimp are volatile, i.e., they have seasonal patterns: farmers/fishers are able to gain revenues only at harvesting period. From Figure 19 through 23, the other sources of revenues – revenues from livestock, business and labor are relatively stable.

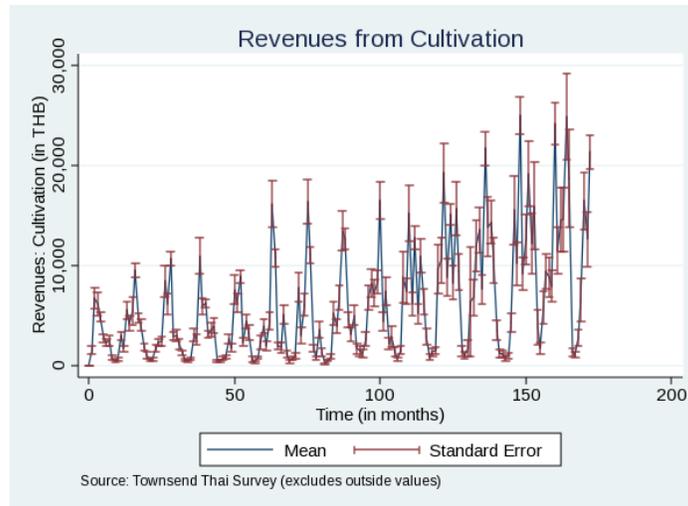


Figure 19: Revenues from Cultivation

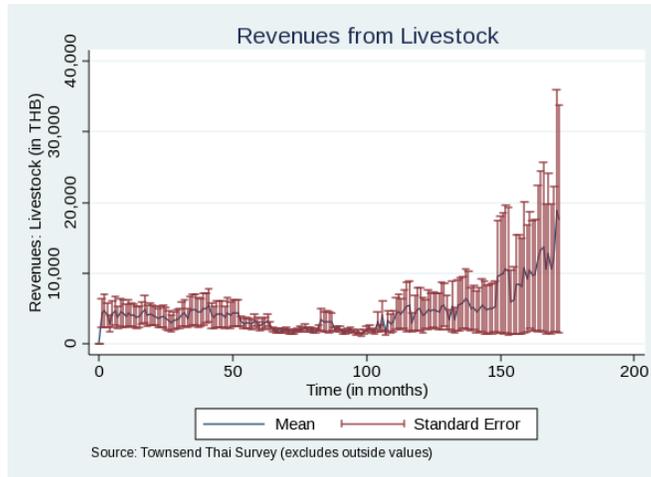


Figure 20: Revenues from Livestock

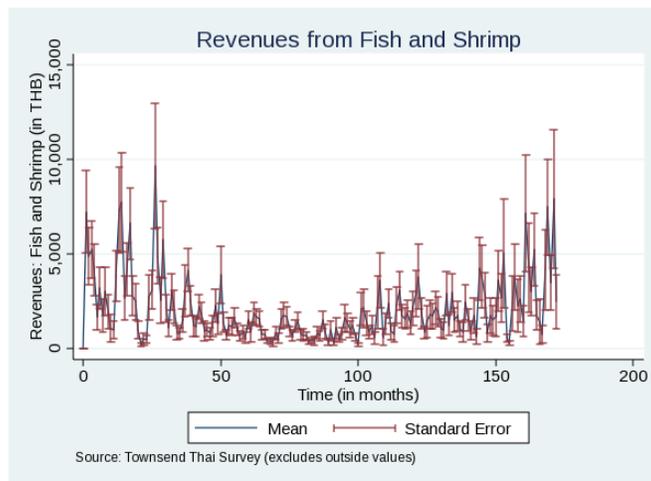


Figure 21: Revenues from Fish/Shrimp

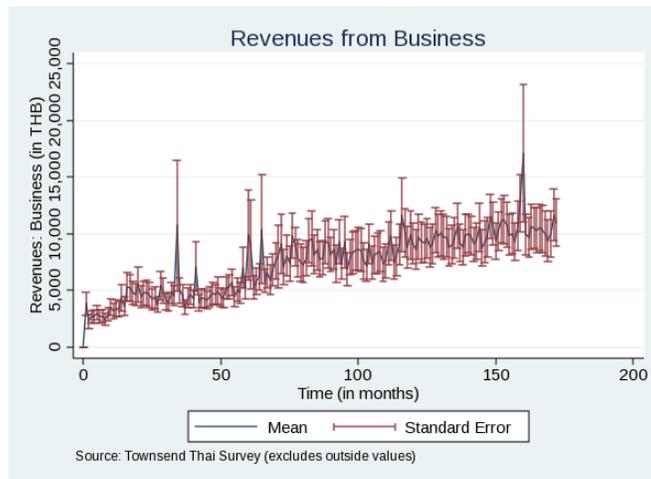


Figure 22: Revenues from Business

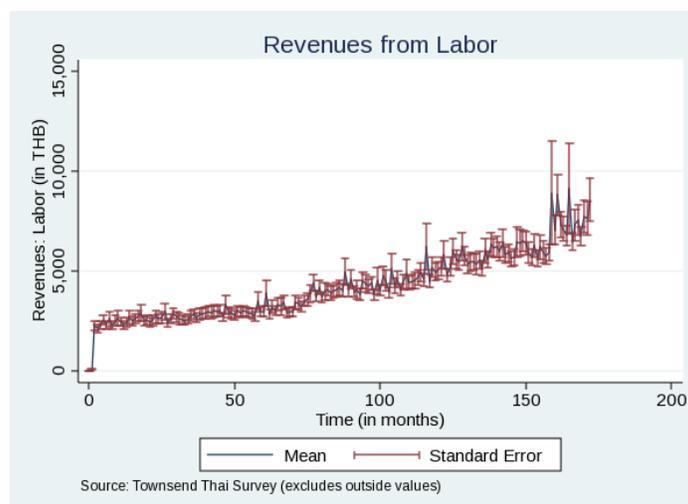


Figure 23: Revenues from Labor

From Table 23, across 4 changwats, the most popular occupation is labor, following by cultivation, livestock, business and fish/shrimp, respectively. This is why the overall revenues are quite choppy because the second popular occupation – cultivation – is very volatile. This reflects in Table 24, where the growth rates of each occupation are shown. Cultivation has the highest annualized monthly growth rate among all occupations.

Table 23: Number of Households in Each Occupation in December 2012*

Primary Occupation	Cultivation		Livestock		Fish/Shrimp		Business		Labor	
		%		%		%		%		%
Chachoengsao	52	13	21	10	27	15	51	26	144	33
Lopburi	105	27	83	39	77	42	71	37	120	28
Buriram	89	23	77	36	26	14	48	25	120	28
Sisaket	142	37	30	14	52	29	24	12	49	11
Total	388	100	211	100	182	100	194	100	433	100

* Some households may have more than one occupation. The number of households shown here may be repeated across occupations.

Table 24: Geometric Average of Annualized Monthly Growth of Sources of Revenues

From August 1998 to December 2012 by initial wealth distribution (%)*

Growth of	Initial Wealth			
	1 st quartile	2 nd quartile	3 rd quartile	4 th quartile
Cultivation	120.93	971.47	501.14	114.10
Livestock	-31.30	-16.43	-21.75	-15.46
Fish/Shrimp	9.79	2.54	3.95	1.27
Business	-19.44	-17.05	-12.95	-14.97
Labor	4.13	6.6e-07	5.63	2.43

* This table represents percentage of growth rates of median value in each quartile.

b. Expenses (not including Interest Expenses)

As well as revenues, Thai households experience fluctuations across the months, depicted in Figure 24.

According to Table 25 and 26, in terms of mean, Chachoengsao has the most expenses for both 1999 (5,310 US\$) and 2012 (19,725 US\$), in line with the revenues. On the other hand, Sisaket has the least expenses (416 US\$ in 1999 and 1,406 US\$ in 2012). In terms of median, the most expenses lie with Lopburi (422 US\$), while the least are with, surprisingly, Chachoengsao in 1999 (14 US\$) and Buriram in 2012 (272 US\$).

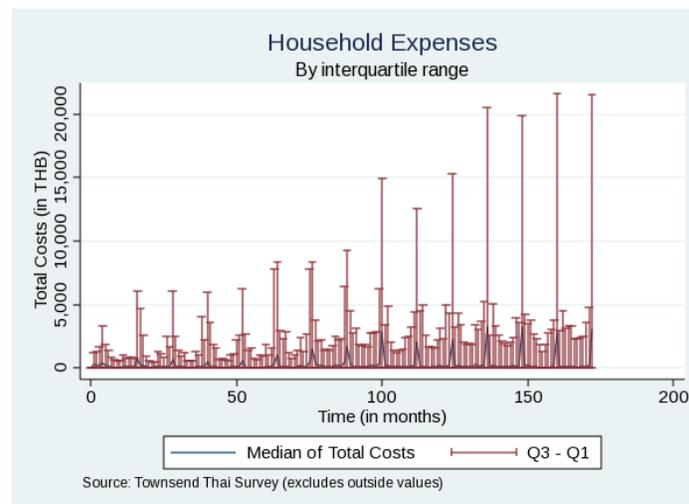


Figure 24: Household Expenses

Table 25: Distribution of Expenses in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	0	5,154,854	198,435.7	615,108.9	0	519.90	81,765.9
Lopburi	0	2,545,178	86,334.53	223,999.3	817.02	15,756.45	94,987.64
Buriram	0	2,838,995	47,862.22	256,008.6	145.39	3,082.90	10,979.83
Sisaket	0	385,855.6	15,552.53	48,274.32	2,232.38	5,688.78	10,634.86
All	0	5,154,854	88,083.17	359,851.1	106.75	4,758.93	26,351.44

* We convert all the monthly to yearly data in 1999.

Table 26: Distribution of Expenses in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	0	5.68e+07	603,794.8	4,123,744	98.19	21,323.69	154,267.9
Lopburi	0	2,545,849	242,433.9	405,496.5	580	49,083.14	333,836.5
Buriram	0	5,355,178	106,907.7	460,086.6	69.43	8,321.26	39,446.3
Sisaket	0	1,199,889	43,037.86	118,016.8	6,970	20,325.37	37,045.13
All	0	5.68e+07	251,364.7	2,088,726	478.52	18,531.13	90,468.42

* We convert all the monthly to yearly data in 2012.

I. Consumption

Household Consumption is divided into food consumption, non-food consumption and insurance premium. According to Figure 25, the level of total consumption is increasing throughout time, though it is volatile from month to month. By changwats, the obvious least consumption changwat is Sisaket, both in 1999 (870 US\$ for mean and 807 US\$ for median) and 2012 (1,819 US\$ for mean and 1,607 US\$ for median), but not in terms of percentage of net income (Sisaket has the second highest percentage of net income). To the other extreme, Chachoengsao has the highest consumption in terms of the amount (for mean, 1,872 US\$ in 1999 and 3,338 US\$ in 2012), but the lowest in terms of percentage of net income.

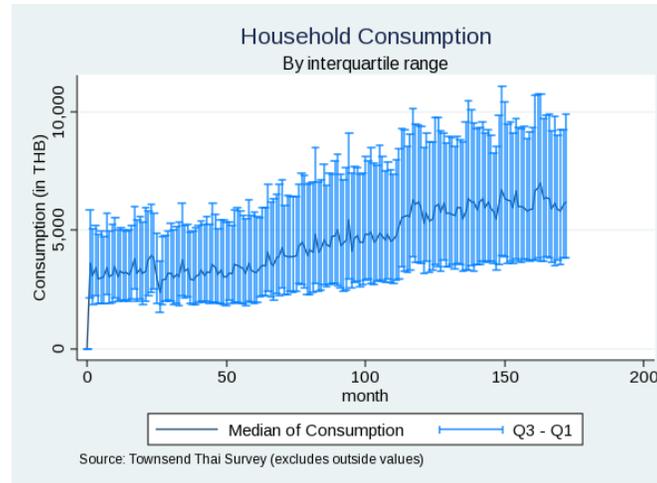


Figure 25: Household Consumption

Table 27: Distribution of Consumption and Percentage of Net Income in 1999* (By Changwats)

	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile		
(in THB)			%			%			
Chachoengsao	0	392,542.8	69,948.32	39	70,101.4	24,727.75	54,319.87	82	94,361.22
Lopburi	0	249,033.7	52,792.56	69	42,561.48	25,836.91	46,085.49	109	70,267.89
Buriram	0	554,431.6	35,781.58	-181	43,506.07	21,202.73	31,489.13	789	43,183.24
Sisaket	0	125,460.1	32,516.76	107	20,210.05	22,729.25	30,164.4	135	40,288.48
All	0	554,431.6	47,955.73	73	50,043.23	23,015.97	36,278.98	184	60,649.21

* We convert all the monthly to yearly data in 1999.

Table 28: Distribution of Consumption and Percentage of Net Income in 2012* (By Changwats)

	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile		
(in THB)			%			%			
Chachoengsao	0	758,793.2	124,750.3	26	118,455.4	47,212.63	104,480.2	65	173,015.1
Lopburi	0	700,853.4	108,391.7	39	105,612.1	45,359.83	82,104.03	52	136,854.2
Buriram	0	373,142.3	80,434.69	92	62,956.74	39,968.94	79,704.08	212	110,559
Sisaket	0	389,247	55,671.34	87	43,891.83	34,152	49,188	167	70,735
All	0	758,793.2	93,182.25	41	92,259.17	39,956.14	74,994.76	117	120,867

* We convert all the monthly to yearly data in 2012.

Proportionally, from Chart 3 and 4, food consumption is the largest segment among the three categories both in 1999 and 2012. It follows by non-food consumption and insurance premium, respectively.

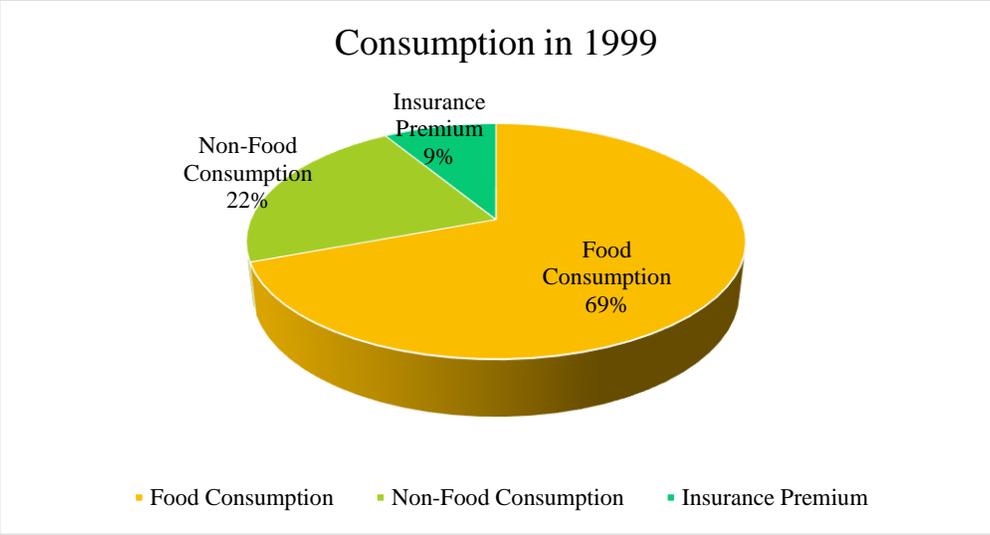


Chart 3: Distribution of Consumption in 1999 (By Types of Consumption) for median household in 2nd Quartile

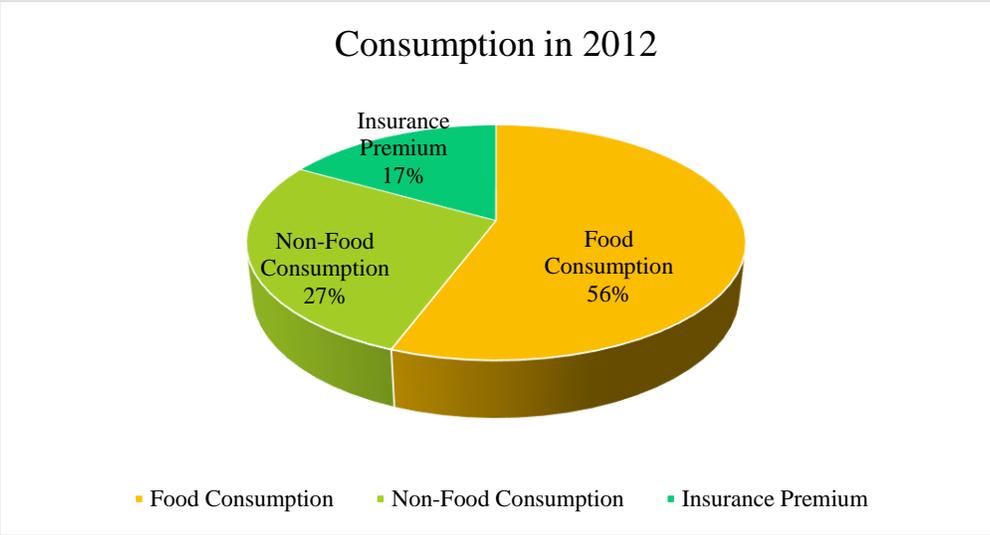


Chart 4: Distribution of Consumption in 2012 (By Types of Consumption) for median household in 2nd Quartile

II. Savings

Household Savings are calculated from the difference between net income and consumption at each month. On average, the households are relatively stable in their savings, though fluctuate month-by-month due to its volatile consumption behavior. According to Figure 26, the median goes back and forth between positive territory (more savings) and negative territory (less savings/more borrowing).

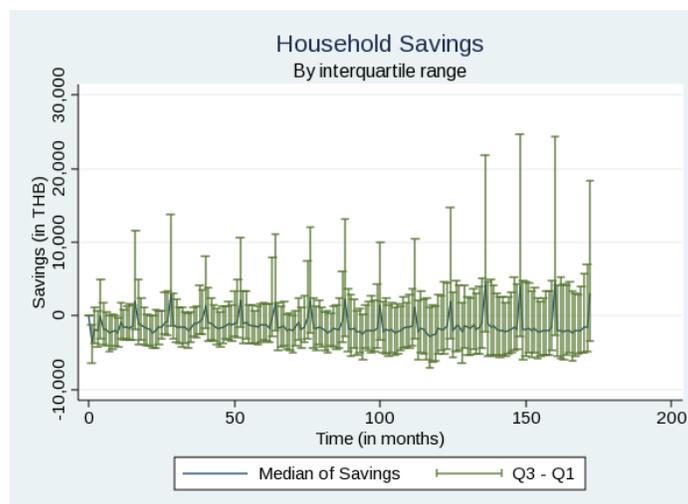


Figure 26: Household Savings

Table 29 and 30 inform that, in 1999 and 2012, Chachoengsao is the most saving changwat in terms of both amount and percentage of net income (except 2012 in terms of median that Lopburi has the highest saving rates), while Buriram and Sisaket are the largest borrowing changwats (negative signs).

Table 29: Distribution of Savings* and Percentage of Net Income in 1999** (By Changwats)

	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile		
(in THB)			%			%			
Chachoengsao	-1,702,922	9,759,634	109,516.2	61	778,055.2	-12,679.79	12,093.99	18	97,667.56
Lopburi	-294,426	389,214.8	23,620.63	31	78,326.5	-13,818.59	0	0	43,836.07
Buriram	-2,396,950	61,924.58	-55,523.38	281***	224,631	-37,635.63	-17,987.35	-451	0
Sisaket	-80,177.62	316,797.6	-2,114.33	-7	36,816.2	-15,427.59	-4,928.35	-22	1,479.53
All	-2,396,950	9,759,634	17,892.25	27	411,244.5	-22,170.1	-1,131.78	-6	16,040.66

* Savings are derived from the change in retained earnings. Some households suffer from negative net income in some months that they need to borrow so that it reflects in negative numbers.

** We convert all the monthly to yearly data in 1999.

*** Buriram's 1999 Net Income is also negative so that the percentage of savings to net income is positive.

Table 30: Distribution of Savings and Percentage of Net Income in 2012* (By Changwats)

	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile		
(in THB)			%			%			
Chachoengsao	-269,716.3	3.46e+07	348,201.1	74	2,470,318	-5,752.48	44,894.96	28	245,977.9
Lopburi	-380,570.1	3,117,265	167,390.2	61	354,237.4	0	55,308.02	35	238,878.8
Buriram	-362,859	574,356.4	6,919.9	8	124,548	-50,821.54	-6,133	-16	17,903.04
Sisaket	-347,907.6	542,810.1	8,445.56	13	98,959.26	-32,133.35	-7,518.9	-26	22,950.25
All	-380,570.1	3.46e+07	133,674.7	59	1,253,213	-28,329.71	0	0	114,819.8

* We convert all the monthly to yearly data in 2012.

c. Net Income

According to Figure 27, most of the households are positive in its net income, which is the residual amount left from netting all expenses off all revenues. Again, the net income fluctuates month-by-month due to the seasonal pattern of revenues, as mentioned earlier, but in lesser magnitude.

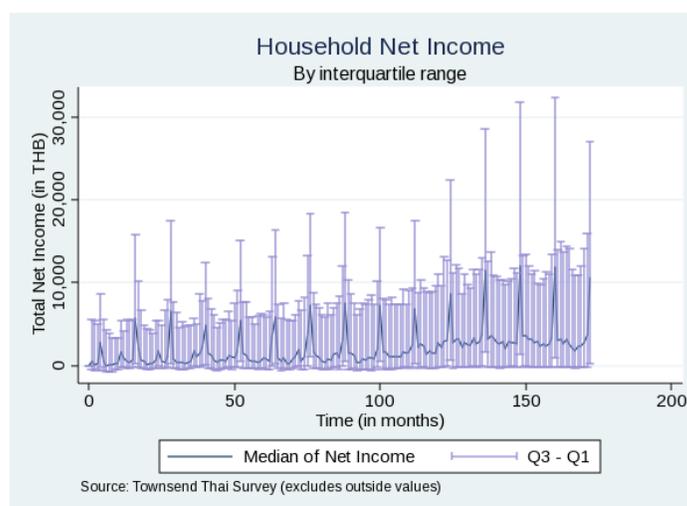


Figure 27: Household Net Income

Across changwats, according to Table 31 and 32, Chachoengsao has the highest income, both in terms of mean and median, whereas Buriram has the lowest in 1999 (even negative number in the mean). However, Sisaket has the lowest income, both in terms of mean and median, in 2012.

Table 31: Distribution of Net Income in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-1,543,605	1.02e+07	179,464.5	805,857	0	66,426.03	186,797.7
Lopburi	-266,257	638,248.4	76,413.18	100,714.1	6,865.54	42,282.98	109,800.4
Buriram	-1,842,519	196,420.2	-19,741.79	196,780.1	-640.8	3,991.19	18,654.37
Sisaket	-13,862.22	442,257.7	30,402.43	44,773.29	9,334.56	22,361.61	35,700.38
All	-1,842,519	1.02e+07	65,847.97	424,160.6	0	19,744.64	72,811.43

* We convert all the monthly to yearly data in 1999.

Table 32: Distribution of Net Income in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-44,316.8	3.52e+07	472,951.4	2,512,923	175.15	160,554.3	401,781.7
Lopburi	-35,542.29	3,651,819	275,781.9	415,914.3	23,108.42	156,784.9	366,820.8
Buriram	-306,121.1	726,883.6	87,354.58	143,242.4	0	37,508.76	117,125.7
Sisaket	-59,230.84	708,998.6	64,116.9	104,324.8	9,501.76	29,474.36	82,635.45
All	-306,121.1	3.52e+07	226,857	1,282,288	4,351.08	64,342.46	223,476.4

* We convert all the monthly to yearly data in 2012.

d. Operating Ratios

Operating ratios¹⁴ measure how efficient a household manage its income. The gross margin represents the percentage of total revenue that the household retains after incurring the direct costs associated with producing the goods and services sold by a household.

¹⁴ Gross Margin = Gross Profit/Total Revenue

All Other Expenses Ratio = All other Expenses/Total Revenue

Profit Before Taxes Ratio = Profit Before Taxes/Total Revenue

Table 33.1: Operating Ratios in 1999 and 2012 (%) (Approach 1)

	1999				2012			
%	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>
	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>
Gross Margin	61.76	81.38	94.97	100	4.08	8.18	19.49	6,510.25
All Other Expenses Ratio	5.69	13.44	30.10	3,410.08	0.04	0.08	0.19	65.10
Profit Before Taxes Ratio	29.44	59.70	78.19	116.69	38.06	60.73	76.46	6,335.53

Table 33.2: Operating Ratios in 1999 and 2012 (%) (Approach 2)

	1999				2012			
%	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>	<i>1st</i>	<i>Median</i>	<i>3rd</i>	<i>4th</i>
	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>	<i>Quartile</i>		<i>Quartile</i>	<i>Quartile</i>
Gross Margin	30.02	76.07	96.20	100	66.66	86.83	94.36	100
All Other Expenses Ratio	11.06	40.28	183.61	24,607.43	7.83	29.46	154.26	16,310.2
Profit Before Taxes Ratio	-188.37	5.77	64.30	195.33	-75.09	34.69	72.76	5,269.06

According to Table 33.1 and 33.2, the results are mixed. However, we should pay attention to Approach 1, which has smoothed out the fluctuation in income statement items before calculating the ratios. The gross margin mostly decreases in 2012, compared to 1999, but the profit before taxes ratios are relatively stable. This may imply that the household is still in good shape.

e. Productivity Ratios

Productivity ratios¹⁵ are used to measure the household's performance in using its assets and household's own wealth to generate earnings from all sources. According to Table 34.1 and 34.2, both or the ratios improve in 2012: all are positive, though the 1st quartile and median are still lower than 1 in Table 34.2.

Table 34.1: Productivity Ratios in 1999 and 2012 (%) (Approach 1)

(in %)	1999				2012			
	1 st	Median	3 rd	4 th	1 st	Median	3 rd	4 th
	Quartile		Quartile	Quartile	Quartile		Quartile	Quartile
Return on Assets (ROA)	1.50	6.29	19.37	293.1	3.08	8.50	15.67	159.19
Return on Household Wealth (ROE)	0.98	5.33	19.91	891.72	307.88	849.72	1,567.29	15,919.09

Table 34.2: Productivity Ratios in 1999 and 2012 (%) (Approach 2)

(in %)	1999				2012			
	1 st	Median	3 rd	4 th	1 st	Median	3 rd	4 th
	Quartile		Quartile	Quartile	Quartile		Quartile	Quartile
Return on Assets (ROA)	0.12	0.52	1.57	28.14	0.26	0.70	1.29	12.82
Return on Household Wealth (ROE)	0.08	0.44	1.62	55.97	0.21	0.70	1.36	23.40

Now we take a closer look at ROA and ROE.

I. Return on Assets (ROA)

Return on assets ratio fluctuates throughout the months, as seen in Figure 28, largely due to the volatility of net income. If we consider as changwat-wise, the results are mixed, according to Table 35 and 36. However, the most ROA is still with 2 changwats in Central Region, except Buriram that becomes the most ROA changwat in 2012 in terms of mean. The least is with Sisaket in 2012 both in terms of mean and median.

¹⁵ Return on Assets = (Net Income + Interest Payment)/Total Assets
Return on Household Wealth = Net Income/Net Worth

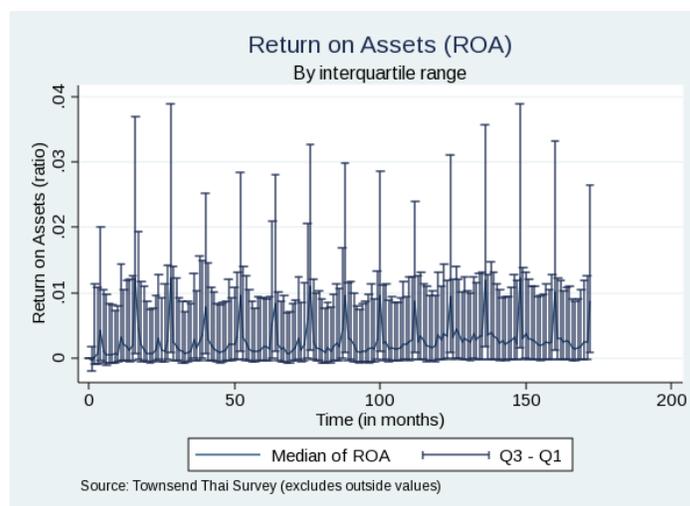


Figure 28: Household Return on Assets (Approach 2)

Table 35: Distribution of Return on Assets in 1999* (By Changwats)

(in %)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-6.66	20.49	1.91	3.76	0.09	0.74	2.58
Lopburi	-1.99	28.14	1.75	3.42	0.28	0.78	1.71
Buriram	-6.92	14.87	0.50	1.75	0.003	0.22	0.62
Sisaket	-0.49	9.28	1.25	1.73	0.19	0.60	1.72
All	-6.92	28.14	1.34	2.87	0.12	0.52	1.57

* We convert all the monthly to yearly data in 1999. The data presented is calculated from Approach 2.

Table 36: Distribution of Return on Assets in 2012* (By Changwats)

(in %)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-0.40	8.25	1.10	1.34	0.30	0.84	1.44
Lopburi	-4.35	7.83	1.07	1.22	0.47	0.88	1.35
Buriram	-0.43	12.82	1.30	1.74	0.20	0.77	1.65
Sisaket	-0.20	4.01	0.57	0.62	0.19	0.38	0.74
All	-4.35	12.82	1.02	1.33	0.26	0.70	1.29

* We convert all the monthly to yearly data in 2012. The data presented is calculated from Approach 2.

II. Return on Household Wealth (ROE)

Likewise, the return on household wealth moves in volatile fashion throughout times, according to Figure 29, as well as its mixed results by changwats.

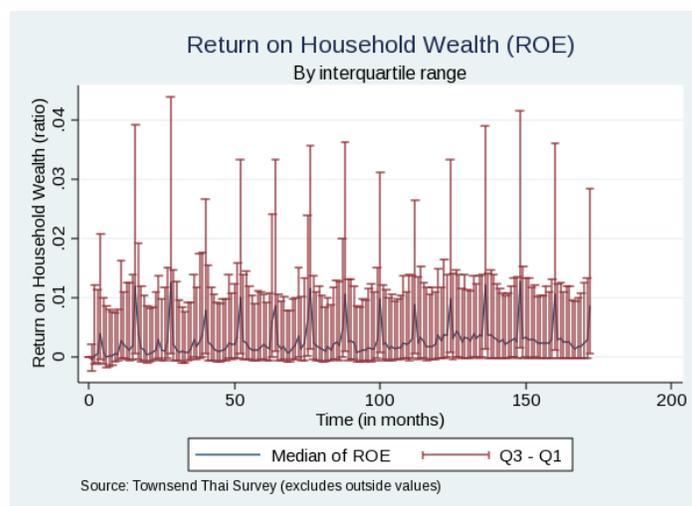


Figure 29: Household Return on Household Wealth (Approach 2)

Table 37: Distribution of Return on Household Wealth in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-6.66	55.97	2.24	5.68	0.05	0.73	2.54
Lopburi	-35.59	28.14	1.52	4.82	0.24	0.68	1.78
Buriram	-59.74	14.96	0.03	4.82	-0.05	0.16	0.57
Sisaket	-46.41	44.39	0.98	6.45	0.16	0.50	1.64
All	-59.74	55.97	1.17	5.50	0.08	0.44	1.62

* We convert all the monthly to yearly data in 1999. The data presented is calculated from Approach 2.

Table 38: Distribution of Return on Household Wealth in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-0.43	8.82	1.18	1.46	0.30	0.84	1.59
Lopburi	-78.01	10.28	0.72	6.06	0.48	0.90	1.38
Buriram	-8.63	23.40	1.25	2.69	0.12	0.76	1.61
Sisaket	-0.46	4.21	0.60	0.71	0.18	0.40	0.77
All	-78.01	23.40	0.95	3.46	0.21	0.70	1.36

* We convert all the monthly to yearly data in 2012. The data presented is calculated from Approach 2.

Statement of Cash Flows

Household's statement of cash flows are generated from the indirect method, i.e., it is derived from the change in balance sheet and income statement, according to Townsend Thai Survey Household Financial Accounting. Like the corporate's, it is divided into 3 parts: Cash Flows from Production, Cash Flows from Consumption and Investment, and Cash Flows from Financing. The statement of cash flows measures money, cash or other liquid objects, flowing into and out of the household as part of the payments system.

a. Cash Flows from Production

As shown in Figure 30, over the long run, cash flows from production (CFP) are stable and positive. Nevertheless, its movement across the months fluctuates. Considering changwats, from Table 39 and 40, Chachoengsao has the largest CFP in terms of mean, both in 1999 and 2012, while, in 2012, Buriram and Lopburi have the lowest amount in terms of mean and median, respectively. Note that in 1999, Buriram has negative number of CFP, which also shows the negative number in net income in Table 29 above.

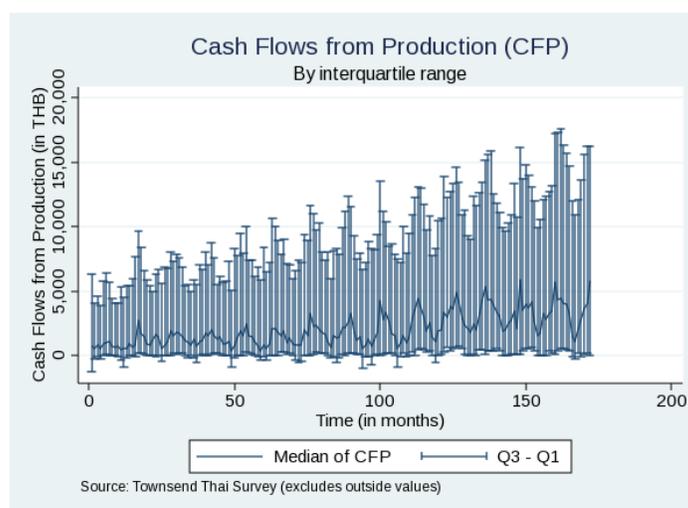


Figure 30: Household Cash Flows from Production¹⁶

Table 39: Distribution of Cash Flows from Production in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-152,708.1	953,700.8	13,394.43	79,595.63	62.55	4,661.12	10,496.27
Lopburi	-128,173	112,294.80	3,282.27	21,438.76	-673.01	1,428.16	6,628.93
Buriram	-237,628.60	33,387.18	-2,899.91	22,564	-1,451.52	-239.00	699.73
Sisaket	-21,963.15	85,379.91	2,831.99	8,741.83	-272.94	219.74	2,707.71
All	-237,628.6	953,700.8	3,977.38	42,640.02	-600.02	470.09	5,552

* We convert all the monthly to yearly data in 1999.

¹⁶ Excludes Month 0 (August 1998) since there's no recorded cash flows yet

Table 40: Distribution of Cash Flows from Production in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-31,428.99	5,176,274	44,009.71	385,992.8	-73.77	9,239.45	19,662.67
Lopburi	-116,353.7	503,767.5	22,327.05	65,796.85	-204.59	5,889.38	16,021.16
Buriram	-25,513.05	123,369.5	17,813.58	23,885.44	493.25	11,219.09	25,513.97
Sisaket	-149,102	579,765.2	37,188.53	57,790.24	6,261.26	22,475.45	54,995.85
All	-149,102	5,176,274	30,109.73	198,727.7	256.88	10,660.89	27,025.14

* We convert all the monthly to yearly data in 2012.

b. Cash Flows from Consumption and Investment

The negative number of cash flows from consumption and investment (CFCI) means that households are spending their cash flows out for consumption and investment. The trend, according to Figure 31, shows that CFCI is becoming more negative throughout times.

Table 41 and 42 show that Chachoengsao has the most cash outflows for consumption and investment whereas Sisaket has the least, both in 1999 and 2012, in terms of both mean and median.

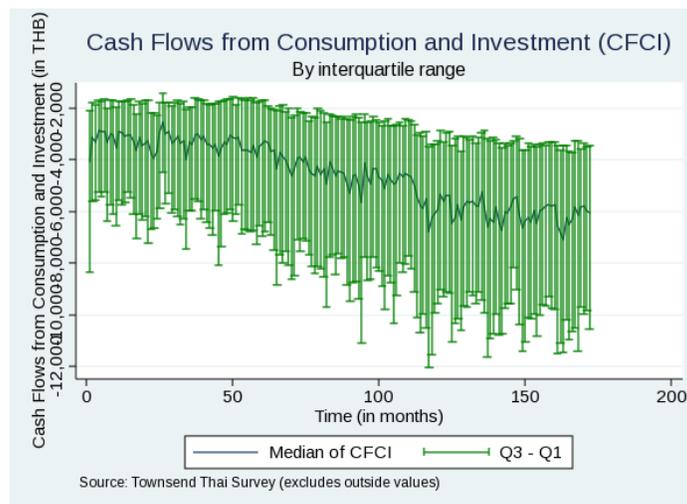


Figure 31: Household Cash Flows from Consumption and Investment¹⁷

¹⁷ Excludes Month 0 (August 1998) since there's no recorded cash flows yet

Table 41: Distribution of Cash Flows from Consumption and Investment in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-304,085	968	-15,533	35,661.39	-10,754	-5,294.36	-2,970.39
Lopburi	-64,358.28	130,040.7	-4,581.13	12,278.06	-6,753.37	-3,835.64	-2,321.61
Buriram	-48,686	7,397.64	-3,371.73	5,559.61	-3,312.58	-2,226.33	-1,553.5
Sisaket	-61,386.37	9,516.61	-2,920.64	6,693.04	-3,275.00	-2,134.96	-1,314.40
All	-304,085	130,040.7	-6,497.90	19,690.7	-5,417.29	-2,892.77	-1,724.05

* We convert all the monthly to yearly data in 1999.

Table 42: Distribution of Cash Flows from Consumption and Investment in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-1,211,347	0.01	-22,564.39	98,439.44	-16,504	-9,581.84	-5,877.34
Lopburi	-585,749.9	57,908.29	-20,656.77	64,120.26	-12,680	-7,044.32	-4,029.33
Buriram	-867,552.6	19,060.34	-12,151.95	63,707.15	-8,464.65	-5,913.46	-4,245.08
Sisaket	-79,393	15,607.26	-5,239.84	9,863.42	-5,226.24	-3,519.50	-2,427.50
All	-1,211,347	57,908.29	-15,314.02	67,729.48	-10,544.67	-6,044.25	-3,415.00

* We convert all the monthly to yearly data in 2012.

c. Cash Flows from Financing

The cash flows from financing (CFF) is relatively stable throughout times, as seen in Figure 32.

According to Table 43 and 44, in terms of mean, the highest CFF lies with Chachoengsao in 1999, and Lopburi in 2012, respectively. In terms of median, Sisaket, on the other hand, has the lowest CFF in 1999 and Buriram hits the lowest in 2012.

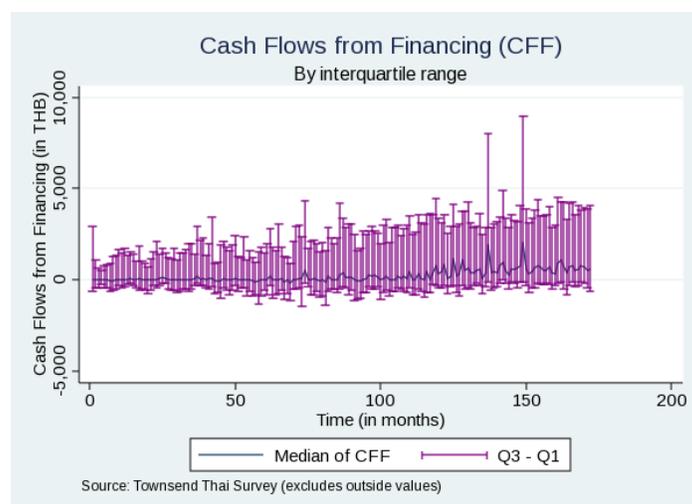


Figure 32: Household Cash Flows from Financing¹⁸

Table 43: Distribution of Cash Flows from Financing in 1999* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-139,488	330,000	5,185.72	35,933.79	-445	0	1,830
Lopburi	-172,060	88,005	-3,249.95	23,289.62	-845	0	290
Buriram	-23,300	30,000	233.33	5,167.13	-300	0	502
Sisaket	-18,560	86,289.06	853.92	8,171.53	-250	-39	622
All	-172,060	330,000	663.42	21,923.88	-400	0	750

* We convert all the monthly to yearly data in 1999.

Table 44: Distribution of Cash Flows from Financing in 2012* (By Changwats)

(in THB)	Min	Max	Mean	Std. dev.	1 st Quartile	Median	3 rd Quartile
Chachoengsao	-100,200	454,307.8	5,875.41	46,928.22	-705	407.75	3,950
Lopburi	-436,395	671,652	8,635.04	86,777.91	-1,380	557.5	3,800
Buriram	-71,434	681,290	3,654.27	51,325.54	-775	320	4,400
Sisaket	-136,520	149,660	2,441.43	20,532.71	0	800	3,755
All	-436,395	681,290	5,196.29	56,956.87	-600	580	4,070

* We convert all the monthly to yearly data in 2012.

¹⁸ Excludes Month 0 since there's no recorded cash flows yet.