

# Long-term Saving in Thailand

Are we saving enough and what are the risks?\*

## Abstract

This paper seeks to gain a better understanding of the saving process in Thailand, given its important implications on the future path of the current account, capital stock accumulation, and growth. As the current account may continue to register a deficit in the next couple of years, there will be more and more questions from policymakers on how to lessen the pressure on the current account by increasing the level of domestic saving.

This paper will seek to understand the dynamics of savings at both the macro and micro levels. Using current cross-sectional data, we find pockets of under-savers at the household level, particularly households with low income and low education. We find that the fall in household savings to GDP has been due to the rise in household consumption propensity across all cohorts. We also analyze the implications of demographic trends on household savings in the medium-term. At the macro level, we find that the household savings rate partly depends on the real interest rate. Furthermore, we find that the present saving rate is not adequate for maintaining both growth and current account stability.

We conclude with a discussion of the policy implications. Given the increased need for saving at the macroeconomic level and the potential for households to save more, policymakers should design savings schemes focusing on households. In particular, we address how government agencies may promote more long-term saving? Among which groups? And what are the appropriate policy tools? Given the multifaceted nature of savings, an enlightened savings policy should serve to promote both macroeconomic stability and household sector welfare. Indeed, as the pressure on the current account increases in the coming years, policymakers will find that the two goals are not necessarily contradictory. Aggregate saving can be increased through targeting household saving without impinging on household welfare.

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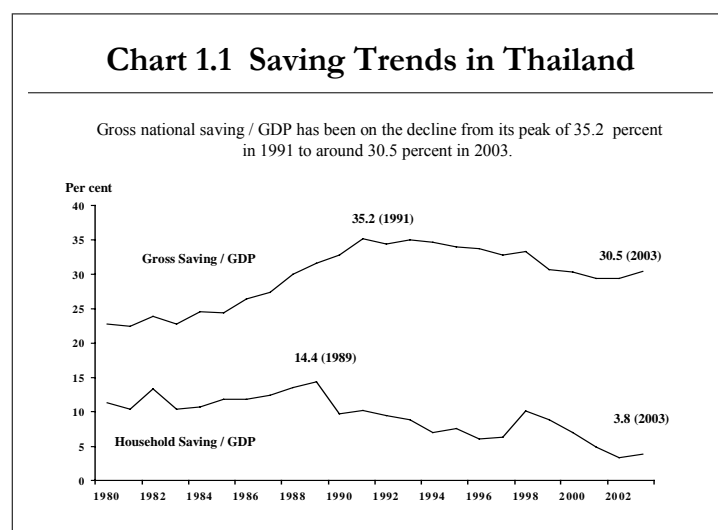
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# Long-term Saving in Thailand

Are we saving enough and what are the risks?

During the past couple of years, one critical question facing policymakers in Thailand is what should be done to reverse the recent decline in our national saving? At its peak, gross national saving stood at 35.2 percent of GDP in 1991 before its persistent fall to 30.5 percent in 2003, thirteen years later. Similarly, household saving – formerly the main component of our national saving – has also dropped sharply from its peak of around 14.4 percent in 1989 to an alarmingly low level of 3.8 percent in 2003.

Recent experiences from other countries around the world indicate that Thailand's experience has not been an isolated one. Several countries have also been confronted with this particular question for some time. For instance, the Japanese today save only 5 percent of their household income, compared with 15 percent in the early 1990s. Similarly, Americans, on average, save less than 1 percent of their after-tax income today compared with 7 percent at the beginning of the 1990s. In Australia and New Zealand, personal saving rates are negative as people borrow to consume in excess of their earnings.<sup>1</sup>



Sources: NESDB

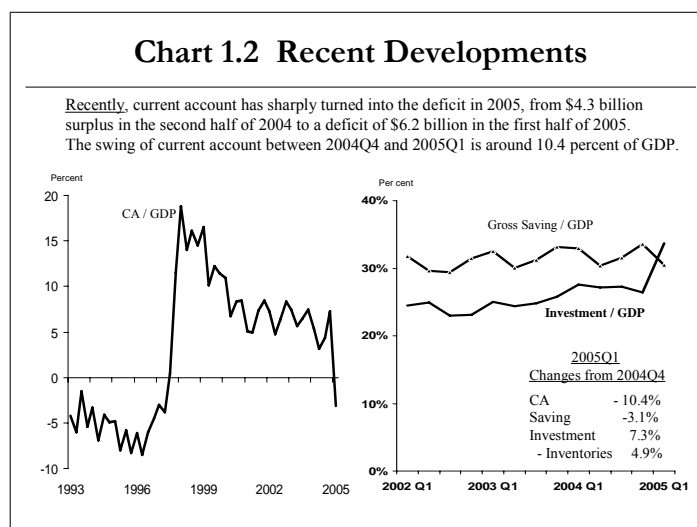
<sup>1</sup> The Economist, "Economics of saving: The shift away from thrift," 7 April 2005.

Given the importance of saving in the capital accumulation and growth process, this question deserves an in-depth analysis. Our paper therefore looks closely at recent developments in Thailand's national saving and its main components, especially the saving of households based on both macro and micro-data. It consists of five parts. **First**, we discuss the motivation behind the questions posed by this paper. **Second**, we analyze the causes of the drop in our aggregate saving rates using national income data which is currently available up until 2003. **Third**, we compare and cross-check our findings on aggregate household saving behavior with micro-analyses of households using the Socio-economic Survey – a detailed micro dataset from the National Statistical Office. This helps us gain further insights into the household saving process beyond what we already know at the aggregate level. **Fourth**, we ask whether Thailand is currently saving enough for its own need with regards to intensifying domestic investment over the medium-term as well as enough to finance the retirement of our ageing population in the long-term. **Finally**, we conclude the paper with a discussion of the policy responses, in particular the design of saving mobilization programs appropriate for Thailand, drawing from the experiences of other countries around the world.

## I. Introduction

After the 1997 crisis, the adequacy of our domestic saving in the capital accumulation and development process became much less of a concern for policymakers. This was because the sharp 60 percent drop in the level of gross national capital formation had subsequently left the Thai economy with ample liquidity and large current account surpluses.

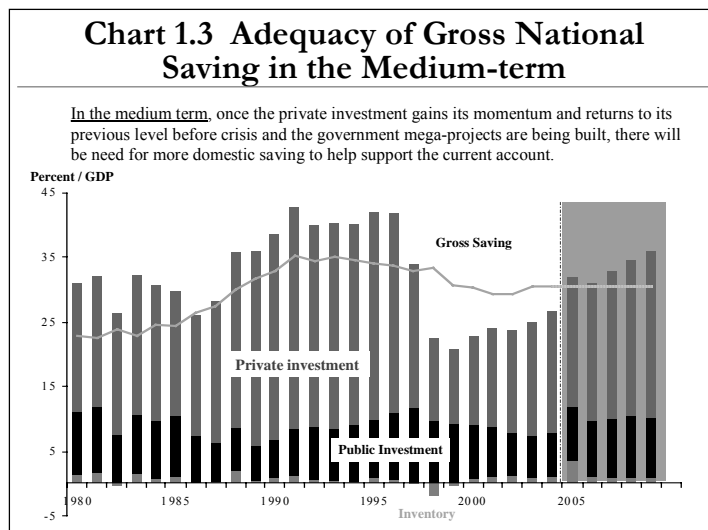
Our motivations for revisiting the issue of long-term savings come from three sources of concerns. First, the external situation in which we comfortably found ourselves for the last seven years changed swiftly in early 2005 with the current account sharply turning from a surplus in the second half of 2004 to a deficit in the first half of 2005. Examination of the most recent released of quarterly GDP data from the NESDB shows that the current account deterioration between 2004Q4 and 2005Q1 was around 10.4 percent of GDP of which 4.9 percent was an increase in inventory investment,



Sources: NESDB

2.4 percent an increase in domestic investment (excluding inventories), and 3.1 percent a decline in gross national saving. Although a large portion of the swing came from the unexpected rise in inventory investment, which is likely to be temporary, it is the sudden decline in national saving that is cause for concern. We therefore ask whether this deterioration is indicative of a more permanent and longer-term trend. The decline in saving, together with the deteriorating current account deficit, has lent a renewed sense of urgency for a more in-depth study on Thailand's saving.

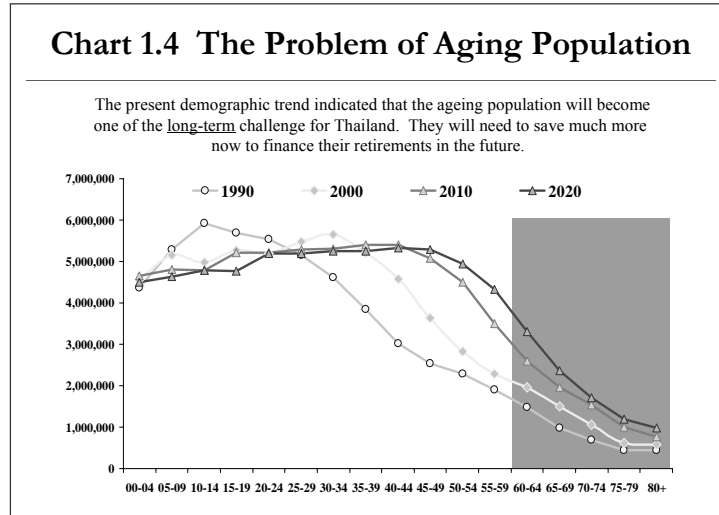
Second, over the medium-term, once private investment regains its momentum and returns to its pre-crisis level during the construction of government mega-projects, the strain on domestic resources, especially domestic saving, will increase. Hence, should the gross national saving remain at 30.5 percent as in 2003 for the next five years, the issue of domestic saving adequacy in financing domestic investment will become a cause for concern. As shown in Chart 1.3, it is expected that the planned mega-projects spending of 1.7 trillion baht will push up the share of public investment in the GDP higher from the present level of 8.4 percent in 2005. It is also expected that private investment will retain its momentum, resulting in its share steadily increasing from the present level of 20 percent of GDP. Consequently, our domestic saving will need to increase further; otherwise, the rise in domestic investment will result in a sustained and widening current account deficit over the medium-term with adverse implications for our external stability.



Sources: NESDB and BOT's estimates.

Third, our changing demographic structure also raises another related concern. According to NESDB's estimate, the number of people with age greater than 60 will increase from 5.7 million or 9.4 percent of the total population in 2000 to 9.5 million people or 13.9 percent of the total population in 2020. These cohorts need to start saving now in order to finance their retirement 20-30 years later; otherwise, they will become a burden to others. This is why the question of how to adequately finance the retirement of this aging population over the long-term will become one of the key policy issues over the next decades. And interestingly, this adds an additional policy dimension to the present challenge that the authorities have to also consider in designing

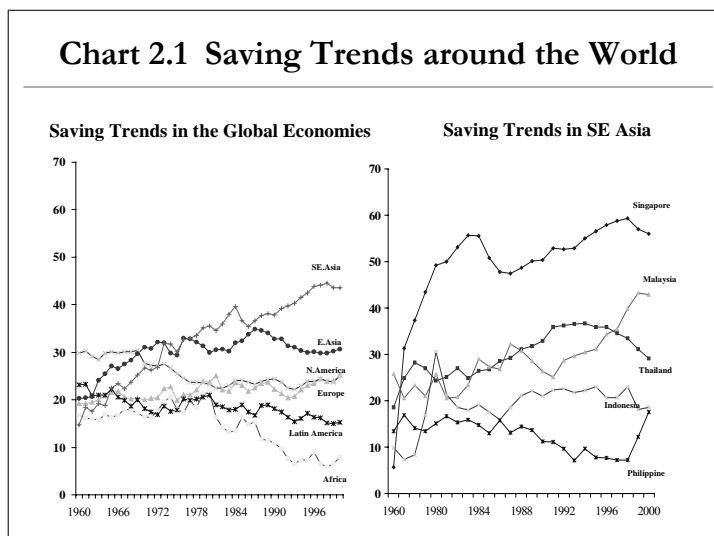
its saving promotion programs. We would like to point out here that providing adequate saving for each person is not the same as mobilizing adequate saving for the whole economy. In particular, successfully solving the latter problem may not imply that people will have more for their retirement. This is so since aggregate saving can come from other sources such as from corporate savings or from public sector savings that have no bearing on the problem of retirement saving. (On the other hand, an increase in retirement saving at the individual level will surely help increase the overall level of aggregate saving.)



Sources: NSO and NESDB's estimates.

## II. Analyses of Saving Trends from Macro-data

Compared with other regions around the world in 2000, Southeast Asia had the highest level of average gross saving rate of 43 percent of GDP, following by East Asia at around 30 percent of GDP. Countries in North America and Europe saved at roughly the same levels around 25 percent of GDP. On the other hand, Latin America and Africa



Source: Penn World Table (2002)

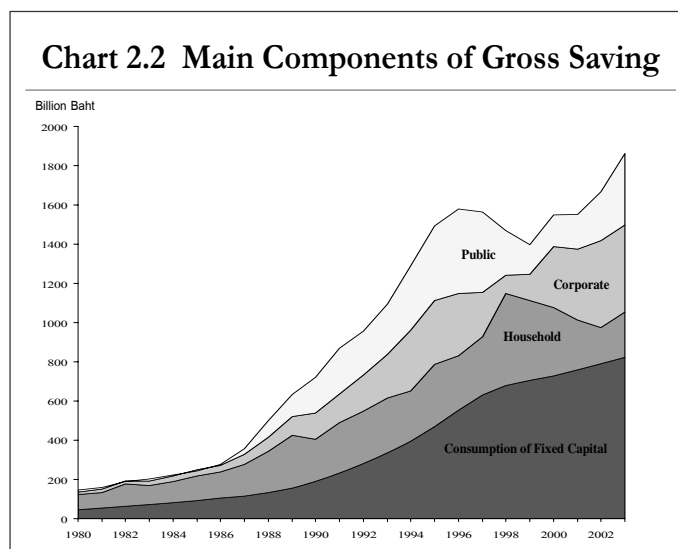
saved much less than other regions at 15 percent and 8 percent of their GDP, respectively. Closer inspection reveals that there were also divergences in saving trends among regions in the world, with fast growing emerging countries in Asia experiencing steady increase in their average saving rate over time, while countries in Latin America and Africa faced declining national saving rates over the same period.<sup>2</sup>

But among countries in the Southeast Asia region, Thailand's current level of gross saving rate at 30.5 percent – high by international standard – was still much lower than those of Singapore which has a strong and successful compulsory saving programs, and slightly lower than those of Malaysia, particularly after the 1997 crisis. As in the global economy, there were also divergences in the saving trends in the region, with Thailand saving rates on a declining trend since 1991 onward, while those of Singapore and Malaysia tended to rise.

### 2.1 The Decline of the Gross Saving Rate

So, what are the causes for the declining in the Thailand's gross saving rate after 1991? To answer this, we have to look at the break down of gross saving into its main components: (1) net general government saving, (2) net corporation and government enterprises saving, (3) net household saving as well as (4) provision for consumption of fixed capital.

As of the early 1980s, net household saving accounted for 50 percent of the gross saving. However, its share has been steadily dwindling to roughly 12 percent in 2002-2003. The provision for consumption of fixed capital used to account for 30 percent of the gross saving in early 1980s while at the present, its share stands at roughly 47 percent of the gross saving, the largest portion of gross saving. This is because the accumulation of capital that occurred during 1980-2003 has resulted in an ever larger stock of existing capital which subsequently demands ever-increasing level of replacement for capital depreciation.



Sources: NESDB

<sup>2</sup> Penn-World Tables (v.6). The regional saving rate is calculated based on simple average method.

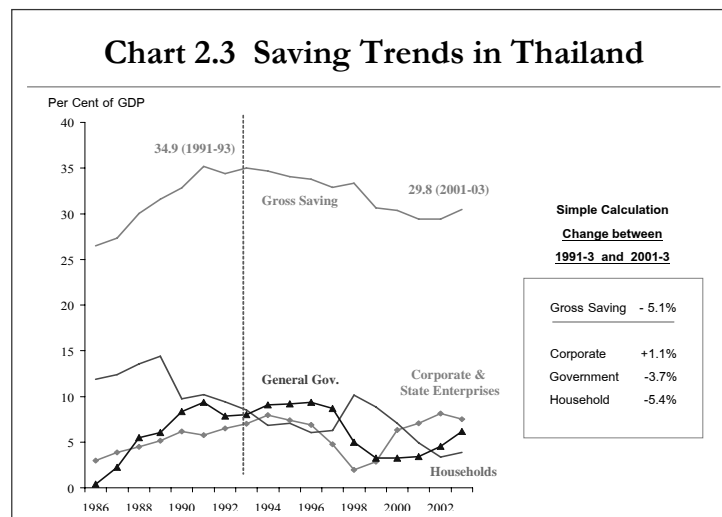
It is interesting to note that net corporate and net public savings are pro-cyclical. The share of net public saving in the gross saving rose from low single digits in the early 1980s to roughly 25-28 percent during the pre-crisis period of economic boom before dropping to 10 percent right after the crisis. It amounted to 18 percent of gross national saving in 2002-03. As for net corporate saving, its share rose steadily from 9 percent of gross national saving in early 1980s to 25 percent right before the crisis, reflecting the growth of corporate sector income relative to other sectors in the economy during the time period. After the crisis, its share however plummeted temporarily to 6 percent, as in the case of net public saving, and subsequently rose to a new high of around 26 percent in 2002-2003.

Household saving, on the contrary, is counter-cyclical. Right after the eruption of the crisis, household saving as a share of GDP and gross saving increased sharply in 1998. The increased uncertainties in the economy given the wide-spread firm closures and layoffs which rose right after the crisis, induced household to save more of their income as part of their precaution against the possibility of job loss and income reduction.

## 2.2 Movements of the Major Components of Gross Saving

To partially eliminate the year-to-year variation observed with in the time series, we compare the change the occurred between 1991-1993 and 2001-2003. Gross national saving share in GDP fell by a total of 5.1 percent. Analysis of its major components indicates that net corporate saving and provision for consumption of fixed capital share in GDP continued to rise during the time period by 1.1 percent and 4.4 percent, respectively. (The rise in corporate saving was to be expected given favorable economic conditions and rising corporate profits after the crisis.) Thus, the observed fall in gross national saving came mainly from the decline in government and household saving whose share in GDP drop by 3.7 percent and 5.1 percent, respectively.

Let us discuss each of the two components in turn. Data inspection reveals that while the recent net public saving share in GDP is still lower than the 1991-1993 periods, it was already on the rise during 2001 and 2003 given favorable government revenue collection in an expanding economy. So, it is likely that net public sector



Sources: NESDB

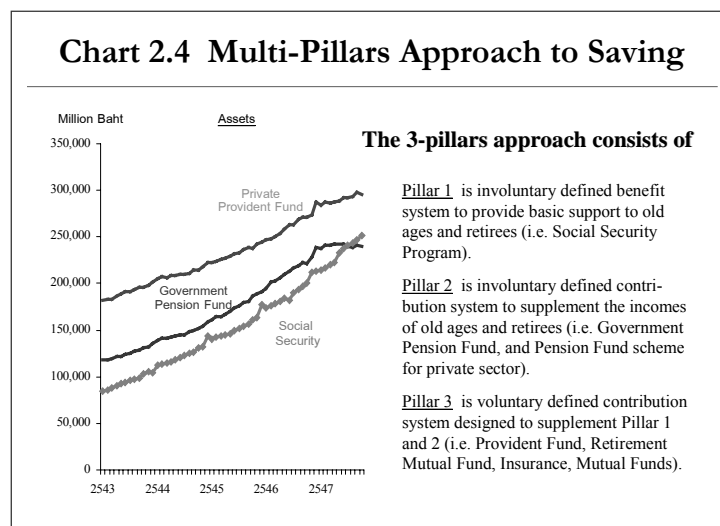
saving will recover and positively contribute to the rise in gross national savings in the near future. Thus, the most worrisome of all is the behavior of net household savings whose share now is at an alarming low level of 3.8 percent and has yet to show any clear sign of recovery. In fact, the observed sharp decline of gross savings in 2004Q1 mentioned earlier also raises further concerns about the trend of net household savings.<sup>3</sup>

### 2.3 Why Did We Observe a Continued Decline in Household Saving Rate?

There are at least three leading contenders for the causes of the decline in household saving that we should take a closer look at: the rise of social security program, the boom in consumption, and the shift between corporate and household saving.

#### The Rise of Social Security Program

Since the early 1990s, the government, in its efforts to mobilize savings, instituted a multi-pillar approach to social safety net program to ensure appropriate welfare for old ages and retirees as well as promote domestic saving. **The First Pillar** is an involuntary defined benefit system to provide basic support to old ages and retirees with programs such as Social Security. **The Second Pillar** is an involuntary defined contribution system to supplement the incomes of old ages and retirees through pension funds such as the Government Pension Fund. **The Third Pillar** is a voluntary defined contribution system designed to supplement Pillar 1 and Pillar 2 such as provident fund, retirement mutual fund, insurance, etc.<sup>4</sup>



Sources: Fiscal Policy Office, Ministry of Finance

<sup>3</sup> This is why we will devote most of the analysis in this paper trying to understand the behavior of household saving both from the aggregate level and micro level. Hopefully, this will lead to appropriate policy prescriptions that will help remedy the current situation and allow household saving to rise back to its previous level and resume its role as a main contributor to gross national saving once again.

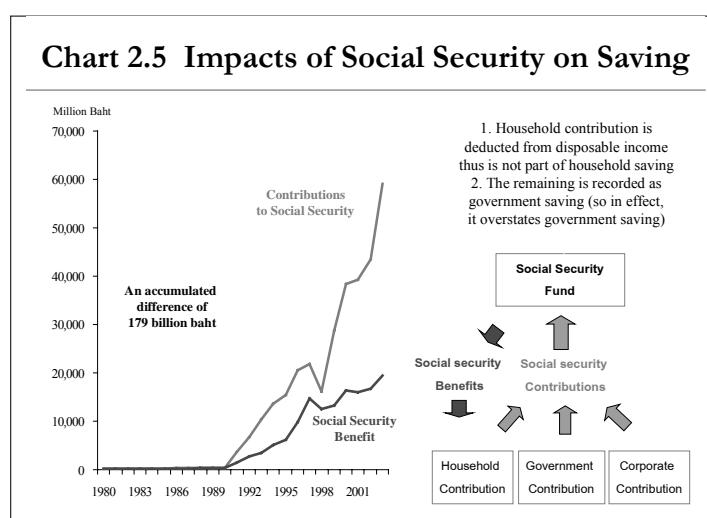
<sup>4</sup> Ministry of Finance, "Improving the Allocation of Domestic Savings for Economic Development: Case Study for Thailand", 9th APEC Finance Ministers' Process, p. 285-292.



Thus far, each of the three pillars has continually accumulated increasing amounts of saving and assets and grown into important components of our financial system. By June 2005, the Social Security Program had enrolled 7.8 million employees (up from 5.7 million employees) and has assets amounting to 270.8 billion Baht, roughly three times its asset in January 2000. The Government Pension Fund also enrolled roughly 1.14 million civil servants with assets of 234 billion baht which has doubled over the same time period. And the private provident funds together now cover roughly 1.6 million employees with contribution from more than 6300 employers, with assets of 319 billion baht which grew 1.7 times since early 2000. Together these funds now account for roughly 824 billion baht of assets or roughly 14 percent of our deposit base.

But it is the impact of social security savings on household savings that we would like to discuss here since it is a common practice of National Income Account data compilation to exclude social security contribution from household disposable income (and thus from household saving) and count them as part of the public sector saving. Concerning this particular point, it is well documented that from experiences around the world, social security contribution will reduce the amount of private saving.<sup>5</sup> This is expected since from the point of view of households, the benefits that will later provided by their savings and participation in the Social Security Program will reduce their incentives to save privately. In other words, they view their contributions to the Social Security Program as part of their savings.

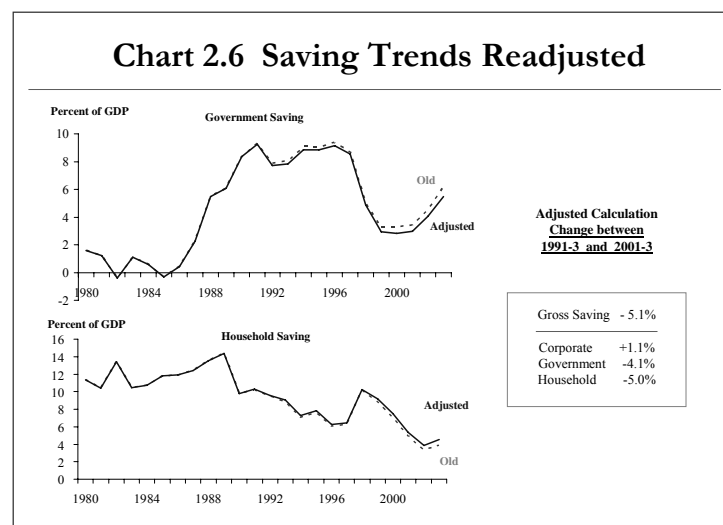
It is interesting to note that the study of Patric Hendershott and Joe Peek (1987) on private saving in the United States found that the US National Income data appeared to suggest that household savings in the US has been on a decline and is currently at an alarming low level as in the case of Thailand. But once one does the accounting properly by redistributing the social security savings back as part of the household savings, the latter appears quite acceptable with the saving rate during 1983-85 being slightly below their average since 1950, not as reported as at all time low and 20% below their post-1950 averages. So, there was no household saving decline in the US.



Sources: NESDB

<sup>5</sup> Feldstein, 1991

If we conduct the same analysis for the case of Thailand, we will find that since the pick-up in social security contributions in early 1990s, the accumulated difference between social security contributions and social security benefits amounts to roughly 179 billion baht (not including accrued interest earning). In effect, this has overstated the level of government savings and understated the level of household savings by the same amount. Unfortunately, for the case of Thailand, once we redistribute back the social security savings as part of household savings, although we found that the decline in the household savings between 1991-93 and 2001-03 was smaller and public sector savings did experience larger decline than originally reported, the effects, however, was quite small given that the social security net saving averages around 14 billion baht a year for the last 13 years. The total decline in household savings during that period is now 5.0 percent, a slight improvement from 5.4 percent before the correction.



Sources: NESDB and authors' calculation

So, we must admit from the analysis of the data that the rise of social security program since early 1990s was too small and cannot provide an adequate explanation for the observed decline in the household saving rate.<sup>6</sup>

### The Boom in Consumption

Another explanation which has often been put forward for the declined thriftiness of the households is the boom in consumption. This is especially so in the recent years with commercial banks shifting their attentions away from corporate banking toward consumer finance, thereby increasing financial access for households. Intense competition among commercial banks and non-bank players in various market segments such as credit cards, personal loans, hire purchase as well as ready credit, have been observed. In fact, the number of credit card issued by commercial banks rose from 1.8 million cards in 1999Q1 to 4.1 million cards in 2004Q4 with the outstanding balance rose from 41.7 billion baht to 67.8 billion baht during the same period.

<sup>6</sup> Nevertheless, toward the end of the period the size of the corrections is getting larger, roughly 0.7 percent of GDP and should increase further in the future. So, in the future we have to take this issue more seriously than now.

In effect, these developments have resulted in the substantial relaxation of financial constraints that households and consumers used to face in the past; reduced the necessity of each individual having to save for precautionary purposes; and shifted our thriftiness culture away from “save now, consume later” to “consume now, save later.”

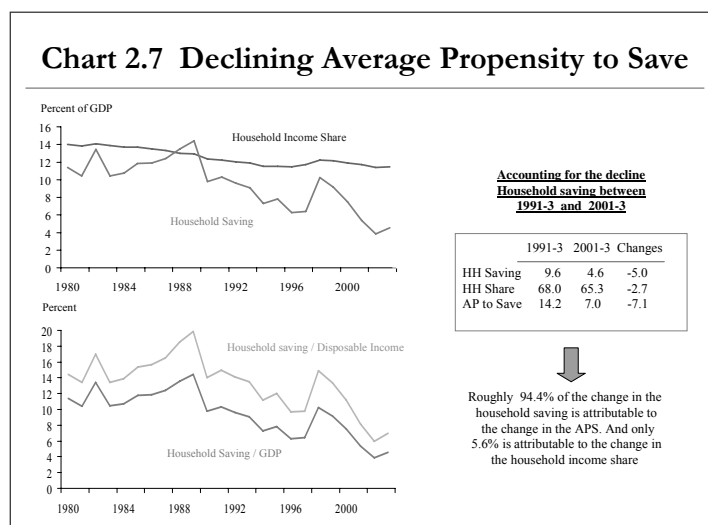
Our analysis of the national income account data confirms the consumption boom hypothesis. **First**, between 1991-1993 and 2001-2003, our adjusted net household savings to GDP declined from 9.6 percent to 4.6 percent for a total fall of 5.0 percent. At that time period, households average propensity to save from their disposable income drop from 14.2 percent to 7.0 percent while household income share in our national income declined from 68.0 percent to 65.3 percent.

Given the relationship between household saving rates, household average propensity to save from their disposable income and household share of national income as shown in equation (1), we can then proceed to calculate the contribution of the latter two variables to the decline in the household saving rate.

$$\frac{\text{Net Household Saving}}{\text{GDP}} = \frac{\text{Net Household Saving}}{\text{Disposable income}} * \frac{\text{Disposable Income}}{\text{GDP}} \quad \text{Eq. (1)}$$

$$= \text{Average Propensity to Save} * \text{Household Income Share}$$

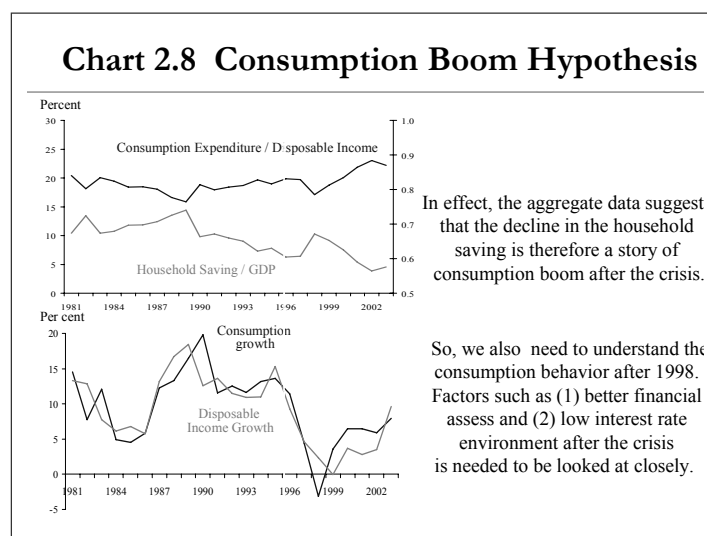
From our calculation, we find that roughly 94 percent of the decline in household saving rates can be contributed to the decline in average propensity to save. Only 6 percent was attributable to the decline in the household share of national income. A closer examination of Chart 2.7 attests to our calculation, with household average propensity to save shared very similar movement with and tracking closely the household saving rate throughout the period, whereas the relationship between household income share and household saving rate was not as tight or as apparent. In sum, it is the changing consumer behavior over this period that drive and explains the variations and observed decline in household thriftiness.



Sources: NESDB and authors' calculation

This particular finding has important implications on our strategy in analyzing household saving behavior. As in the case of the United States, Jonathan Parker (1999) argues that the decline in the US saving rate was also driven by the boom in the consumption. Therefore, if we understand the drivers of consumption behavior in detail then we will be in a better position to unveil the forces behind changing household saving behavior as well as address its decline.

**Second**, further examination of the consumer expenditures data (Chart 2.8) suggests that at the point of sharp swings in the level of household saving, there were corresponding sharp swings in consumption behavior. For instance, each of the sudden rises of household saving in the early 1980s, the late 1980s, and 1998 was accompanied by a marked drop in the consumers' expenditure share of their disposable income. Similarly, the declining household saving trends between 1990 and 1996 as well as from 1999 onward was driven by the persistent increase of consumption expenditure growth in excess of the growth of disposable income. During 1991-1996, the average growth of consumption expenditure and disposable income was 13.8 percent and 12.0 percent, respectively. And during 1999-2003, the average growth of consumption expenditure and disposable income was 6.06 percent and 3.92 percent, respectively. The main question then is what drives households to persistently spend much more than the rise in their disposable income during these two periods?



Sources: NESDB and authors' calculation

**Third**, although part of our answers will have to come from a more detailed analysis of micro-data in the next section, let us first provide you with some evidence available from the macro dataset. Examination of national income accounts between 1999 and 2003 – during the recent consumption boom – indicates that household consumption expenditures are driven mostly by the purchase of durable goods such as transports (vehicles), communication equipment, as well as equipments for recreation purposes such as audio-visual, photographic and information processing equipment. In addition, expenditure on financial services was rising rapidly, as well. As shown in Table 2.1, while overall consumption expenditure growth averaged around 6.06 percent, expenditure on *durable goods* growth averaged at 16.1 percent. The purchase of non-durable goods such as foods and semi-durable goods such as clothes and footwear grew only 5.2 percent and 2.7 percent, respectively.

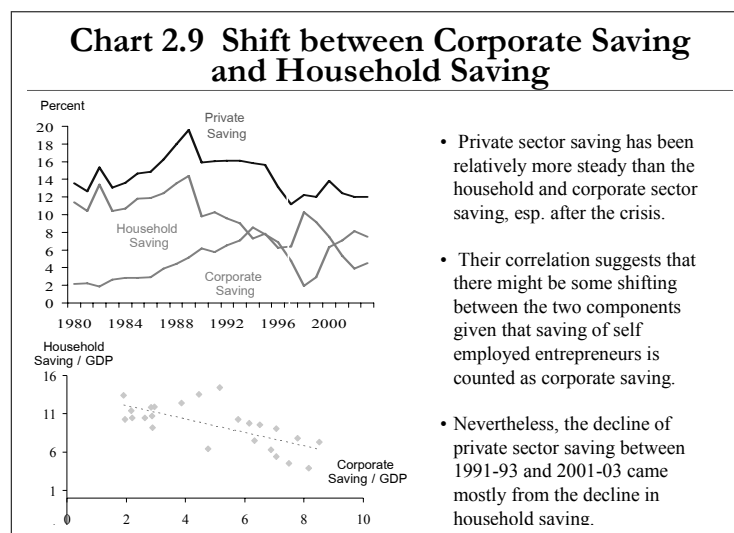
**Table 2.1 Detail of the Household Consumption Expenditure Growth**

(% Change)	Share 2003	1999	2000	2001	2002	2003	Average 1999-2003
Consumption Expenditure	100.0	3.6	6.5	6.5	5.9	7.9	6.06
Durable Goods	10.6	11.6	17.6	8.8	21.7	20.8	16.1
Semi-Durable Goods	16.2	4.1	4.9	0.4	2.8	1.2	2.7
Non-Durable Goods	47.2	-0.2	5.3	6.8	4.9	9.2	5.2
Services	30.0	8.5	6.6	9.4	4.8	5.5	6.9
<b>Memorandum of expenditure items with high growth rate</b>							
- Purchases of Vehicles	5.4	37.0	24.2	21.5	33.7	40.1	31.3
- Financial Services	3.4	29.3	33.9	28.6	28.1	16.9	27.4
- Communications	1.9	-1.5	8.2	22.3	11.6	18.2	11.8
- Operation of Personal Transport Equipment	5.6	6.2	22.0	7.2	7.5	12.1	11.0
- Audio-visual, Photographic, Info. Processing	2.4	-1.3	25.1	5.3	15.2	-0.5	8.8

Sources: NESDB and authors' calculation

### Possible Shift between Corporate Savings and Household Savings

The final explanation is the shift between corporate and household savings. Inspection of the data indicates that net private savings, i.e. the sum between net household savings and net corporate savings are much less volatile than its two components, holding steady around 11-13 percent of GDP since 1996. This is attributable to the negative correlation between them. As shown in Chart 2.9, periods with high household savings to GDP is often associated with periods with low corporate savings to GDP and vice versa.



Sources: NESDB and authors' calculation

One explanation that is often put forward is that this observed relationship is due to the way in which the NESDB compiles the national income data with saving of some households who are self-employed entrepreneurs could be counted either as corporate savings or household savings. For some, it is the shifting dividing line between these two categories that is the main factor which drives the negative correlation between

them. Nevertheless, it is our view that this is not the case. The observed negative correlation between corporate and household savings was partly due to (1) the shifting share of households and corporate in the national income. During 1980s, as the corporate share of total national income rose taking away the share of the household sector, corporate savings as a percentage of GDP was rising and at the same time inevitably reducing the share of household savings. In addition, it is also contributable to (2) the relationship of the two savings to a common factor – the business cycle – with corporate savings being pro-cyclical while household savings being counter-cyclical. Finally, if we look over longer horizon, we find that private savings, even though being less volatile than its components, was also on a declining trend. It dropped from 18.7 percent of GDP during 1988-1989, to 11.6 percent in 2003, driven mainly by the persistent fall in household savings.

In sum, of the three leading explanations discussed above, the consumption boom hypothesis is probably the most likely one. The decline in the household savings is driven from the changing behavior of consumers who prefer to consume now and save less given a more relaxed financial constraint. It is this hypothesis that we will use the micro data to shed a further light on in the next section following our macro-econometric evidence on the decline of household savings.

### Macro-econometric Evidence on the Decline of Household Savings

In recent years, there have been many panel empirical works on the determinants of saving motivated by the widespread concern over the fall in saving rates especially household saving rate in the developed and developing world. In addition, the analysis of the determinants of aggregate saving across time in Thailand has been the subject of several studies in the last 30 years (Table 2.2). In this paper, we provide an empirical analysis of Thailand saving behavior during the long period of 1971 – 2003 with data obtained from the National Income of Thailand and adopted the ECM (Error

**Table 2.2 Selected Empirical Studies on Saving Rate in Thailand**

Authors	Sample	Method	Interest
Nualtaranee (1992)	1970 -1989	Co-integration Tests, Causality Tests	Household consumption and saving; random walk hypothesis
Poshyananda (1995)	1971 – 1994	Instrumental variables techniques	Private saving in Thailand. Determinants of private saving, household saving, and corporate saving.
Mukmanee (1995)	1989 - 1993	Vector Autoregressive Model	Foreign capital inflow and domestic saving (both private and government saving)
Vanitchatchavan (1997)	1975 - 1994	OLS estimates	Saving Behaviour in Thailand; government saving, private saving, household saving, and corporate saving.
Sawahdirunkit (2001)	1962 -1997	Granger's Causality Test	Saving and Growth
Fiscal Policy Office, Ministry of Finance (2004)	1997 Q1 – 2002 Q4	Ordinary least squares (OLS) estimates	What are the determinants of household saving, business saving, foreign saving, and saving of financial sector?

Correction Model) approach to reexamine the saving behavior over the long run with special emphasis on the decline in the ratio of household saving to GDP.<sup>7</sup>

The aggregate savings data set derived from the National Income of Thailand. The aggregate saving data are broken down into private (corporate and household sectors) and public saving. The estimated function for each type of saving behavior is given in Appendix II which illustrates the detail of ECM model we apply in this paper. We also follow previous literature in testing a wide number of possible explanatory variables, but for simplicity only those factors yielding the best long run specification will be reported in Appendix I-II.

### Why did the household saving rate decline?

To answer this question, we use our estimated equation for the household savings to provide a quick back-of-an-envelope calculation of why we observe the decline in household saving rates during 1989-2003 and the period between 1991-1993 and 2003. Using the coefficients on each of the determinants as well as their changing levels, we can attribute their contributions to the decline of household saving as follows.

**Table 2.3 Contribution to the decline in household saving**

Variables	Coefficient Value	Level of determinants			Impacts on the household savings	
		1989	1991-93	2001-03	1989-2003	1991-93 / 2003
Growth (Trend)	0.00520	8.7	7.8	3.6	-4.9	-4.3
Growth (Cyclical)	0.00234	3.3	0.4	3.1	-0.8	+0.4
Real deposit rate	0.00089	0.4	0.5	0.6	-0.8	-0.8
Wealth/GDP	-0.03264	4.5	4.3	0.5	-0.5	-0.5
<b>Total impacts</b>					<b>-6.9</b>	<b>-4.3</b>

Here, to understand the behavior of the household savings as the economy moving along its cycles, we decide to break GDP growth into 2 parts: its trend and its cyclical component. Interestingly, we find that household savings responds to both components positively with a larger response to the GDP trend movement. This positive coefficient to the cyclical components indicates that as in the permanent income hypothesis, households will save more in the good years with better but temporary growth and vice versa. If we proceed to calculate the contribution to the decline in the household savings, we will find that between the years 1991-1993 and 2003 the equation predicts a decline in household savings of 5.0 percent, which is quite close to the actual figure. Most of the predicted decline comes from the fall in the trend growth from 7.8 percent to 3.3 percent between the two periods. Others came from the fall in the real deposit rate and the fall in the wealth level to GDP. But the cyclical component of GDP growth contributes positively since 2003 was on the upswing.

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<sup>7</sup> The dataset provided by the Office of the National Economic and Social Development Board (NESDB). The aggregate saving classified as private saving plus public saving. While private saving consists of household and corporate saving and public saving consists of government and state enterprise saving. The main advantage for using this data set is a theoretically correct measure of each category such as measuring household savings which not include corporate and government savings.

### III. Micro-evidence on Household Saving

The seemingly inexorable downwards trend in Thai household savings since 1990 has been a contentious topic of debate among policymakers. In order to better understand the fall in household saving, we ask the following key questions: Which households are saving? What are the microeconomic determinants of household saving? And what do they tell us about the decline in household saving over the past decade? Next, with an eye towards policy implications we ask the following: Are households saving enough? Are households constrained from saving?

We find that the fall in household saving has occurred from a rise in the propensity to consume across all age groups. Econometric analysis of cross-section data indicates that household saving depends on financial access to saving and credit, government medical insurance schemes, uncertainty associated with certain occupations, housing tenure, and educational attainment. These findings suggests that structural developments in the Thai economy during the past decade, such as financial liberalization, the shift away from an agrarian economy, the fall in the share of occupation associated with greater uncertainty, rural-urban migration, and government social protection programs have all contributed to the fall in savings. Households save less because they have less precautionary motives and less financial constraints. We note that our findings are consistent with Poshyananda<sup>8</sup> (1995) which found that the decline in household saving was attributable to the fall in the household income share of GDP, the reduction in the average consumption tax rate, and financial and trade liberalization in 1990.

Nevertheless, we find that many households, especially those with low income, low financial literacy, or low education, tend to report not saving enough for retirement or emergencies. Saving inadequacy can arise due to saving constraints, temptation, or subsistence level of incomes. We find that many households are indeed saving constrained and that increasing financial access to saving may mobilize new savings.

#### 3.1. Description of Survey Data

An in-depth study of the household sector requires household data at the microeconomic level. As such, this section relies on three household surveys: the National Statistical Office's Socioeconomic Survey (SES), the Bank of Thailand Survey on Household Attitudes towards Debt and Savings (HADS) and the Bank of Thailand Survey on Financial Access. Details of the surveys follow.

##### **Socio-economic survey (SES), National Statistical Office**

The survey, conducted by the National Statistical Office (NSO), collects information on household income, expenditures, debt, and household characteristics, covering countrywide samples of private, non-institutional households both in municipal and non-municipal areas. The survey is usually conducted every other year,

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<sup>8</sup>Roong Poshyananda (1995) "Private Saving in Thailand," *Papers on Policy Analysis and Assessment*, Bank of Thailand.



except after the 1997 crisis to 2002 where it was conducted on annual basis but with a substantially smaller household samples during odd years. Under the NSO sampling design, all sample households were divided into twelve equally representative sub-samples, each of which was interviewed during the period of one month. In this paper, we will utilize the survey from 1996 and 2004. The 2004 survey includes approximately 35,000 households while the 1996 survey includes approximately 25,000 households.

### **Survey on Household Attitudes toward Debt and Saving (HADS), Bank of Thailand**

In order to improve our understanding and sharpen the analysis of household debt situation, the Bank of Thailand carried out a survey on Household Attitudes toward Debt and Saving (HADS). The survey was conducted during June 2004 with the cooperation of the northern, northeastern, and southern branch offices of the Bank of Thailand. The survey covered 2,800 households in all five regions of Thailand.

The aim was to gather a national database with a more qualitative nature to complement quantitative data from the SES. The questionnaire is divided into five parts: (1) respondent and household characteristics, (2) household financial position with emphasis on debt holdings and perceived debt burden, (3) attitudes toward borrowing and default, (4) attitudes toward savings, and (5) financial literacy.

The survey sample was generated from a stratified three-stage sample design in which regions are selected first, provinces second, and clusters of households last. Households at the cluster level are then randomly picked during fieldwork. Given the standard stratified design, sampling weights are calculated for use in obtaining estimates of population parameters. Main findings from the survey are reported in Thaicharoen, Ariyapruchya, and Chucherd (2004).<sup>9</sup>

### **Survey of Financial Access, Bank of Thailand**

The Survey of Financial Access (2003) was commissioned by the Bank of Thailand to further our understanding of the financial needs of households and firms. Survey findings used in the design of the Financial Master Plan. The survey is composed of two parts: the household section, which comprises 4,800 households and the firm section, which comprises 1,196 firms.

## **3.2 Stylized Facts on Household Saving**

### **The Life Cycle Hypothesis and Household Saving**

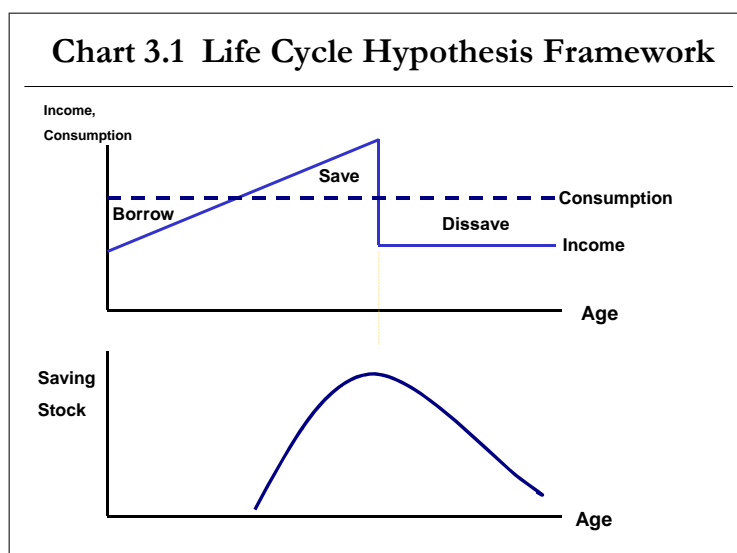
Household savings are the resources household put aside today for consumption tomorrow. Household saving is therefore best understood within the intertemporal choice frameworks of the life-cycle model and the permanent income theory. The life-

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<sup>9</sup>Thaicharoen, Ariyapruchya, and Chucherd (2004). "Rising Thai Household Debt: Assessing the Risks and Implications," Bank of Thailand Symposium Paper, [www.bot.or.th](http://www.bot.or.th).

cycle model tells us that households will seek to smooth consumption over their lifetimes. To do so, households will have to save when their incomes are high, in order to accumulate wealth from which to dissave when they retire. The effect of interest rates changes is ambiguous in this model. For example, a rise in the interest rate may render future consumption relatively cheaper and encourage households to substitute toward future consumption by saving. However, the same rise in the interest rate also raises household wealth by increasing the return on assets. As a result, households may consume even more today. The net effect is indeterminate.

The permanent income theory states that households consume at their permanent-income levels by saving most of their transitory income. Household saving will therefore be pro-cyclical, rising during good times and falling during bad. This predication stands in stark contrast to Thailand's aggregate household saving which tends to rise during economic downturns. Nevertheless, the theory could possibly be reconciled with Thailand's experience by accounting for income expectations, *ex ante*.



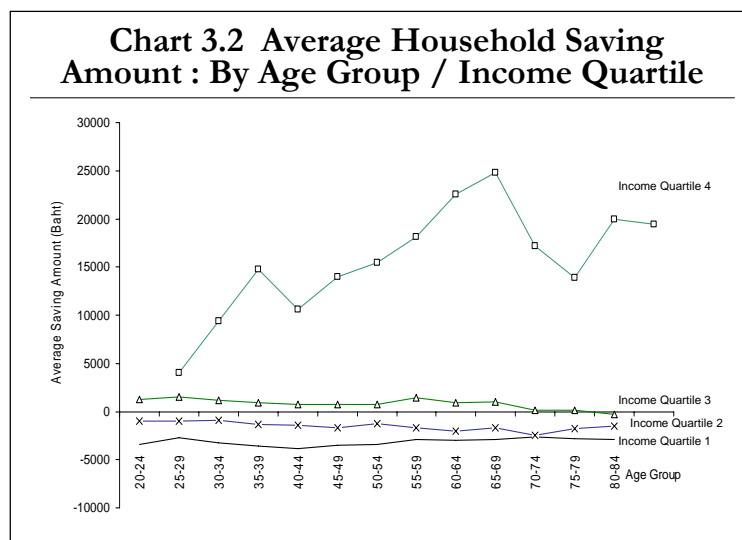
It is important to note that household saving is the accumulation of wealth. Properly viewed in this manner, it becomes obvious that saving can occur in the form of both financial and non-financial assets. For example, housing, or rather, mortgage payments less imputed rent, should be counted as an important form of saving as housing provides a stream of services. A measure of household saving that fails to include all types of household asset accumulation will therefore under-measure the true level of household saving. In the case of Thailand, the measurement of household saving already accounts for saving in the form of housing since imputed rent, and not actual payments on housing, is counted in household consumption. Passenger cars, however, are counted as household consumption although passenger cars are, in fact, assets. Purchases of passenger cars will therefore reduce household saving.

In Thailand, an analysis of household saving is further complicated by what it means to be a household. Conventional economic theory bifurcates consumers, or households, and producers, or firms. In OECD member countries, the demarcation between firms and households are clear. In the Thai case however, households are both consumers and producers. Farmers are a prominent example. Many households also

engage in entrepreneurial activities. It is therefore not appropriate to view the Thai economy as consisting of households and firms. Rather, households and firms exist on the same continuum consisting of the neoclassical household on the extreme left and the modern corporation on the extreme right. Inbetween we find a variety of hybrid households-cum-firms such as farming households, mom-and-pop shops, informal lenders, entrepreneurs, and so forth.

The observation that households and firms can be characterized on the same consumer-producer continuum has important implications for our understanding of the dynamics of household and corporate saving data in a developing economy. Consider an agrarian society of farmers financing their own investment with their own saving. In such an economy, the corporate sector will tend to be small. Aggregate household saving will therefore include household saving for business purposes. Now consider the same society after twenty years of growth. The manufacturing sector would have grown while the agricultural sector would have shrunk. Furthermore, the share of households saving for business purposes would have fallen simply due to the flow of labor from the farming sector into the non-farm sector, *ceteris paribus*. We would also observe the rise in corporate saving as formal business activity expands and firms become incorporated. The fall in household saving and the concomitant rise in corporate saving can therefore be partly attributed to the structural shift of the Thai economy from an agrarian to a manufacturing-based economy with a large formal sector. In fact, a cursory examination of the somewhat inverse relationship between corporate and household saving might lead one to conclude that much of the fall in household saving can be attributed to the rise of the formal corporate sector. However, this is unlikely given that the fall in the household income share of approximately 3% from 1991-1993 to 2001-2003 has been minimal and accounts for only a small part of the decline in household saving. The substitution of household saving by corporate saving is therefore not the chief cause of the decline in household saving. ADD

We take a look at the age profile of household saving level using cross-section data from the socioeconomic survey of 2004, bearing in mind the above caveats. We find that the age profile of the highest, or fourth, income quartile is consistent with the life-cycle model. The third income quartile is also consistent with the model to a lesser degree. It is noteworthy that household saving peaks during early and middle age reflecting the need to save for down payment on real estate and durables and retirement.



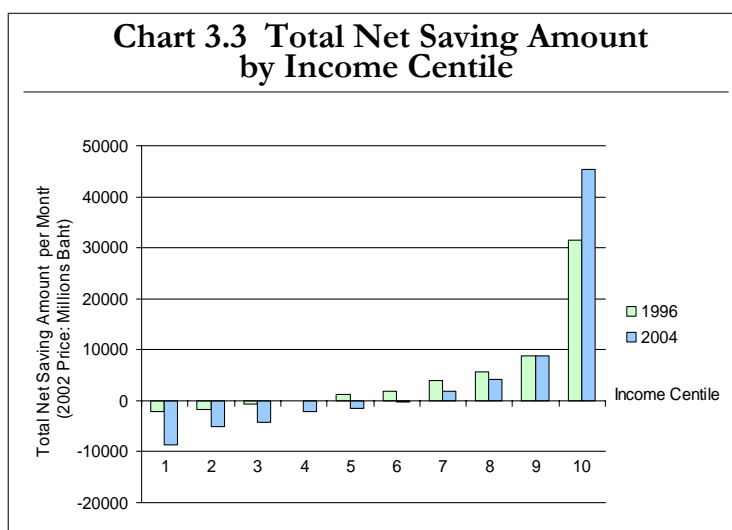
Sources: NSO SES (2004) and authors' calculation

One aspect of saving that is missing from the life cycle model is the precautionary motive. In reality, households save not only for consumption following retirement but also for accidents or as a form of insurance against short-term fluctuations in income. A fall in the uncertainty facing households or improved financial intermediation will result in less need for households to save for precautionary motives. Uncertainty facing households may decline if households move out of occupations or sectors susceptible to fluctuating prices. The agricultural sector is a good example since farm income depends on the vagaries of the weather at home and abroad. Financial intermediation can also decrease the amount of saving needed to guard against uncertainty. Consider an economy without financial intermediation. Each household will need to have its own pool of saving to use in case of emergencies. However, with good financial intermediation, households can effectively share risk by funneling funds to households in need. Households will therefore have less need for precautionary saving. In fact, with good enough financial intermediation, households may forgo saving altogether and still be confident of the availability of funds during emergencies. As a result, households may divert funds formerly used for saving into consumption, thereby raising welfare.

Households also save for purchases on durables, or for down payments on housing mortgages and automobile loans. In the absence of financial intermediation, households will have to save the full amount of the purchase price. With financial intermediation, households can choose to make large purchases with funds channeled from other households. In this respect, financial intermediation can serve to lessen the need to save while raising household welfare in the process. The fall in household saving *per se* is therefore neither necessarily undesirable nor an omen of economic ruin. The answer to whether the fall in household saving is deleterious or not to household themselves rests on its causes.

### Who are Saving: the Rich or the Poor? The Rich Save More and Own More Assets

High-income households account for most of household saving in Thailand. The Socioeconomic Survey of 2004 shows that the top two income deciles contribute to 79 per cent of the pool of household savings.



Sources: NSO SES (1996, 2004) and authors' calculation

Low-income households tend to dissave. Rich households are in fact providing funds for poor households to borrow. Furthermore, this tendency has increased since 1996. High-income households are now saving more while low-income households are saving less.

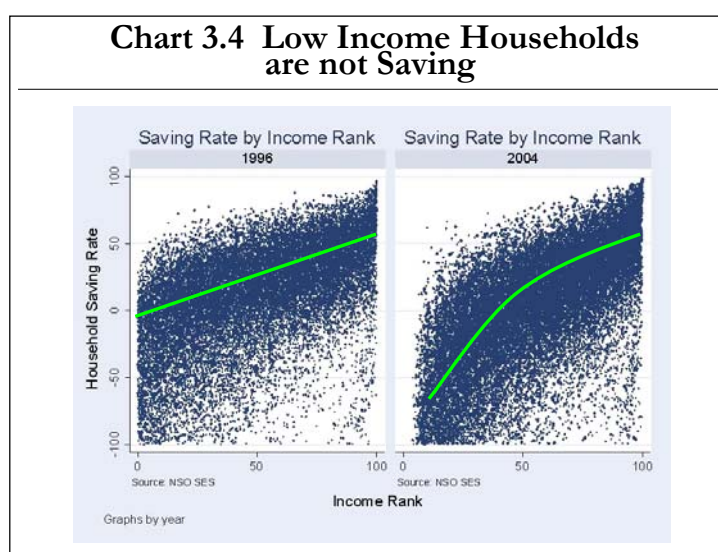
**Table 3.1 Numbers of Deposit Accounts by Size of Deposits**

31 May 2005	Account numbers	Total Amount (million baht)	Share of total deposit	Amount per account (baht)	5% Increase in Deposit
< 50,000 baht	51,044,895	227,549	3.9	4,458	11,400
50,000 – 1 Million	6,255,486	1,342,962	22.9	214,685	67,000
1 Million-10 Mil.	761,050	1,897,812	32.4	2,493,676	94,900
10 Million -100 Mil.	56,573	1,315,257	22.4	23,248,853	65,800
100 Million and up	3,109	1,076,226	18.4	346,164,712	53,800
<b>Total</b>	58,121,113	5,859,807	100	100,821	293,000

Sources: Bank of Thailand

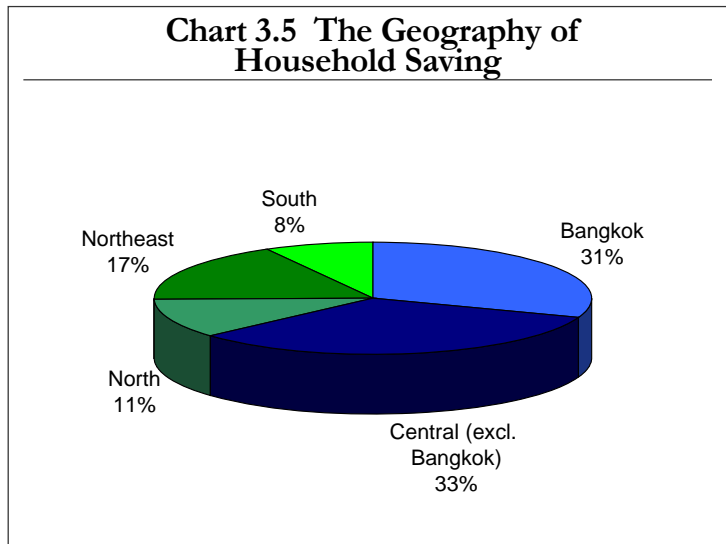
The skewed distribution of saving is further confirmed by the skewness of assets in the form of commercial bank deposits. Commercial bank data shows that 60 thousand accounts, or 0.001 percent of total accounts, hold more than 10 million baht each and together account for 2.4 trillion baht of deposits or 40.8 percent of total deposits. However, we note that the accounts include both households and firms account.

Not only do high-income households save more, they also save at higher rate as the above figure shows. An examination of the households' saving rates over time reveals that the saving rate has declined for low-income households.

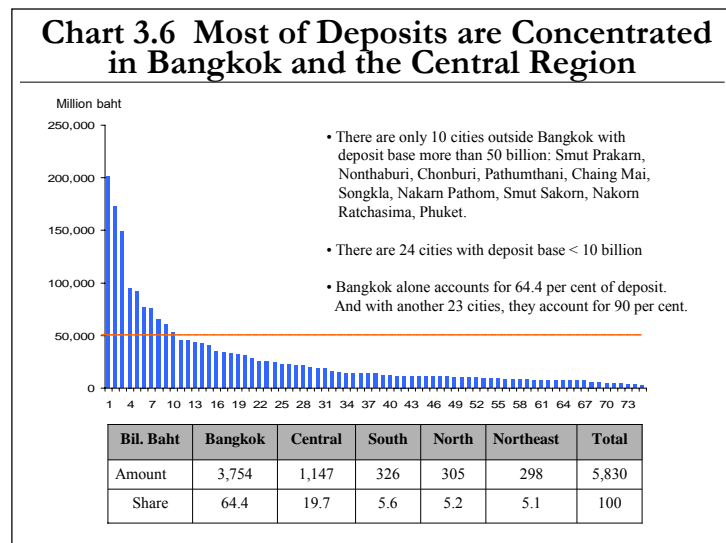


Sources: NSO and authors' calculation

More than half of household saving originates from Bangkok and the central region reflecting the geographical concentration of economic activity and high-income households.



Sources: NSO and authors' calculation

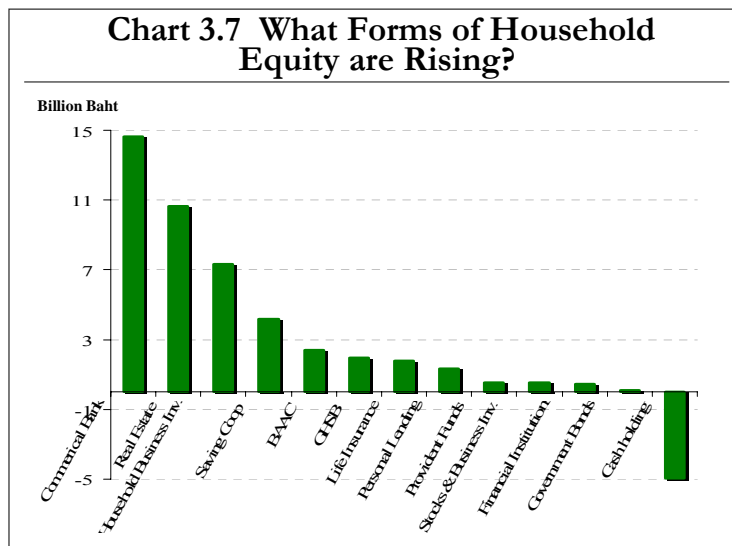


Sources: NSO and authors' calculation

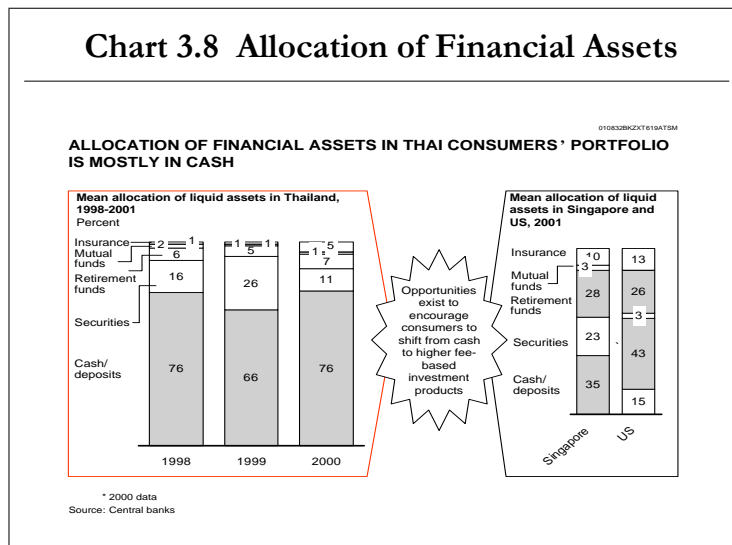
### Instruments of Saving and Wealth – How to Save?

Households are faced not only with the question of *how much* to save but also *how* to save. The question of how to save arises because households save for a variety of reasons: retirement, emergencies, down payments, etc. Each particular objective requires a saving instrument with a certain bundle of liquidity, risk, and return. For example, young households saving for retirement should save in relatively illiquid assets with high returns over the long term, such as mutual funds, retirement funds, housing, or securities. Households saving for emergencies should save in liquid assets with low risk, such as cash deposits.

Given that households save for a multitude of reasons, we would therefore expect household saving to take on a variety of forms. This is not the case in Thailand. Using NSO's Socioeconomic Survey of Households in 2004, we calculate household's net change in equity for different types of saving instruments. We find that households save predominantly in commercial bank deposits, real estate, and household business capital. Furthermore, in 2000, 76 percent of households' liquid assets were held in the form of cash and demand deposits. The concentration of household savings in a handful of instruments suggests that households are not saving as effectively as they can through lack of access to savings or familiarity with saving technologies. A look at how U.S. and Singaporean households save shows that households stand to gain by diversifying saving instruments. For households to "save smarter," households will need to learn about and gain better access to various saving instruments.



Sources: NSO and authors' calculation

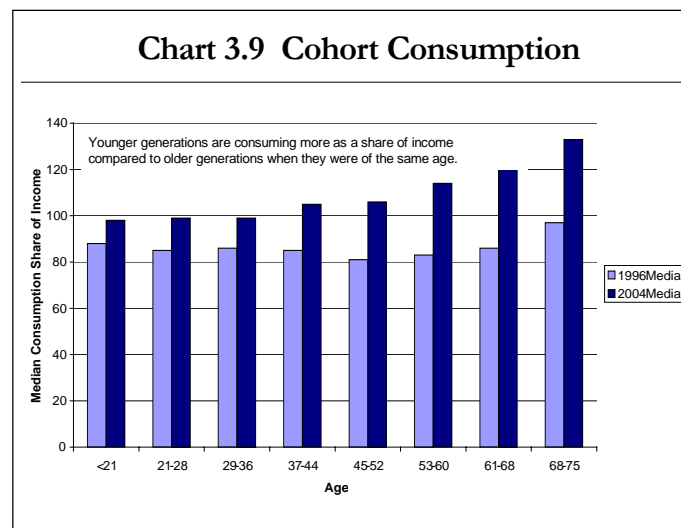


Sources: McKinsey

### 3.3 Changing Attitude Toward Consumption and Saving

It is not uncommon to hear older generations complain that younger generations have lost the virtues of thrift held dear by their predecessors. In other words, younger generations are consuming more and saving less compared to older generations when they were the same age. We test this claim against the data using NSO's socioeconomic survey of household data from 1996 and 2004.

We group households into cohorts of the same age if the heads of household are born within eight years of each other. For example, households with heads of households born within 1974-1982 belong to the same cohort. Next, we construct the median consumption share of income of households in each age cohort in both 1996 and 2004. The construction of cohort groups will allow us to gauge how groups of households behave over time. It should be noted that cohort data does not track identical households over time as in panel data. Nevertheless, cohort data from a sufficiently large household survey, such as the Socioeconomic Survey, can serve to shed light on how groups of households behave over time.

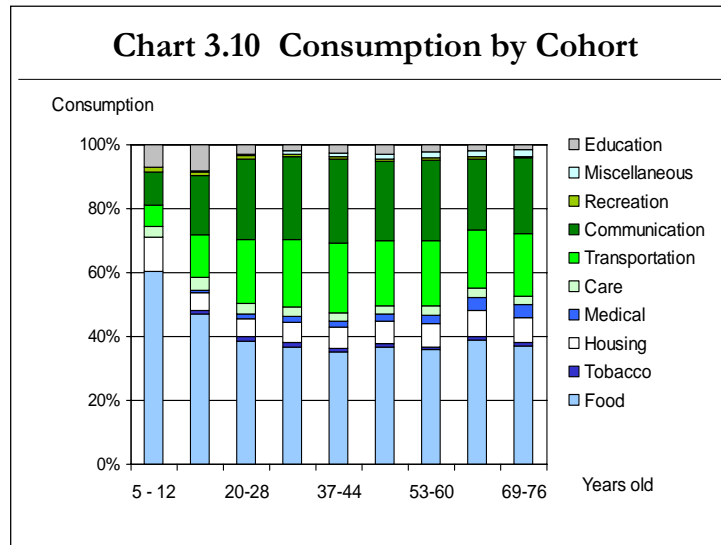


Sources: NSO and Authors' calculation

The figure above displays the results. We find that it is indeed true that young households today are consuming more compared to young households eight years ago. However, what is surprising is that the older generations are also guilty of the accusation levied at the young. The data shows that households in the retirement age brackets are consuming much more compared to households in the same age bracket eight years ago. Households in the middle age groups show approximately the same consumption behavior.

The question of what each cohort is consuming naturally follows. In the following figure we examine the breakdown of consumption by each household cohort. We find that households consume mostly three items: food, transportation (passenger cars, motorcycles, and travel cost), and communication (telephones, cellular telephones, and calling costs). As households move into middle age, the consumption share of transportation and communication tend to increase.





Sources: NSO 2004 and Authors' calculation

### 3.4 Econometric Analysis of Household Survey Data – Why do Certain Households Save More than Others? What can be done to Promote Saving?

#### Determinants of Household Savings: Evidence from Microeconomic Data

Economic theory suggests each household's saving rate depends on its age, income profile, financial access, patience, and uncertainty. With the theoretic framework in mind, we examine the determinants of household saving using the National Statistical Office's Socioeconomic Survey (SES) from 2004. We regress the monthly saving level on proxies of financial access, public insurance, wealth, and various socioeconomic variables while controlling for survey weights and cluster design. We find that household saving tends to be increasing in age, income, and savings access and decreasing in wealth.

Income is a significant predictor of saving. The square of income is also significant, indicating that high-income households save at higher rates and suggesting that low-income households at subsistence levels find it difficult to save. Economic theory also tells us that households save for precautionary reasons for using during times of hardship such as illness or drought. We find evidence that household saving does indeed depend on the precautionary motive as indicated by the tendency of households in risky occupations and households holding the 30 baht medical insurance to save less.

Financial access also matters with regards to saving. Using village access to the Bank for Agriculture and Agricultural Cooperatives (BAAC) as a proxy for rural savings access<sup>10</sup>, we find that households tend to save more if there is village access to a

<sup>10</sup> In using BAAC access as a proxy for rural financial access, we assume that the presence of a BAAC branch reflects a supply-side shift in financial access. This is a reasonable supposition given that BAAC branch expansion has been the result of government policy geared towards bringing financial access to rural areas.

BAAC bank. A village is defined as having BAAC access if at least one household in the village uses BAAC services. It should be noted that the effects of overall financial access on savings are, in fact, theoretically ambiguous. Financial access may serve to increase saving or borrowing. The net effect is indeterminate. Nevertheless, our finding suggests that different financial institutions may have different effects on household saving. Some institutions may serve to augment the ability of households to save effectively while others may specialize in borrowing services. Further research should look into the how different types of financial institutions affect the saving and borrowing behavior of households.

Membership in the government provident fund or social security is found to decrease household savings. This is expected given that households consider their contributions to the government provident fund as part of their assets. Household size tends to decrease saving. This is expected given that an increase in household size, holding the number of wage earners or income recipients constant, means an increase in the number of children or seniors, who tend to be borrowers and dis-savers, respectively. Large households may also reduce the need for precautionary saving as income shocks may be more easily shared within the household. Housing

**Table 3.2 Linear Regression Estimates for *Household Savings Level***  
Socioeconomic Survey (2004)

Variable	Coefficient	Base Unit	Survey Sample Mean Estimate
Income	0.72***		13275.44
Income <sup>2</sup>	2.51e-07***		7.39e+08
Medical Insurance (30B)	-1071.35***	No participants	0.30
Govt. Provident Fund	-1211.37***	“	0.10
BAAC village access	476.85***	No village access	0.23
Govt. Saving/Provident/Soc. Sec	-1211.37***	Non-participating	0.10
Recipients of income	282.36**		2.24
Household Size	-1408.86***		3.45
Renter	3108.09***	Homeowner/Mortgage	0.12
Farm operator	1010.26***	Unemployed	0.17
Farmer, land rented	1089.58***	“	0.03
Labor, daily hire	2211.33***	“	0.08
Entrepreneur	-1139.00***	“	0.17
Other	1221.76***	“	0.27
Own account	-5728.41***	“	6.12e-04
Manager	-1768.55***	“	0.10
Secondary	-1386.56***	Primary or less	0.13
BA	-5215.58***	“	0.05
MA or greater	-7827.53***	“	0.01
Central	3600.97***	Bangkok	0.23
North	5290.91***	“	0.20
Northeast	6237.06***	“	0.32
South	3536.61***	“	0.13
Rural	1432.71***	“	0.67

Number of obs: 34840; Population size: 16,764,151

Number of Jangwat: 76; Number of blocks/villages: 3639; R<sup>2</sup>=0.77

Note: \*\*\*, \*\* and \* denote 1, 5, and 10 % significance levels, with heteroskedasticity-robust standard errors controlling for survey sample design.

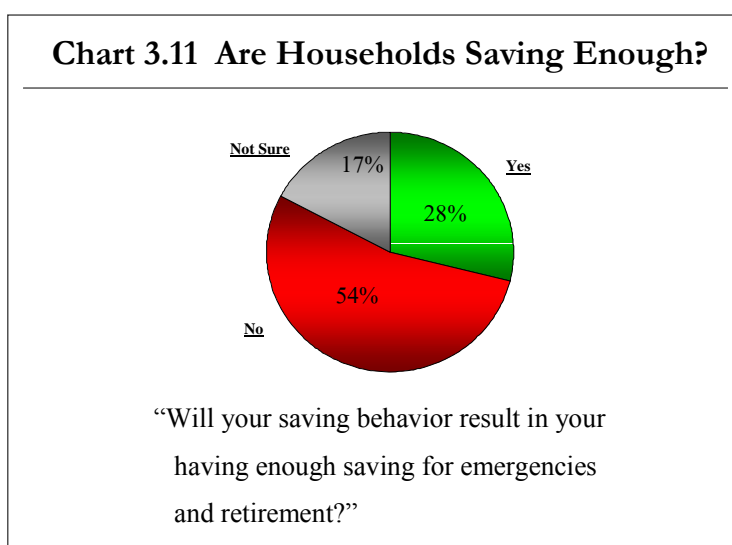
tenure is also significant. Renters, as opposed to homeowners or mortgage holders, tend to save significantly, reflecting the need to save for down payments on home mortgages. In addition, homeownership is a proxy for wealth. For many households, real estate accounts for a sizeable portion of their wealth. Homeowners are therefore more likely to be wealthy and, as such, less inclined to save. In retrospect, we can see that housing tenure has also played a role in the fall of household saving over the past decade. As workers migrated to the cities to find work during the Thai economy's takeoff, a large share of workers would have been renting and saving for housing purchases. Eventually, as renters take out mortgages and accumulate real estate wealth, this saving motive would have declined in importance and led to the downwards pressure on household saving.

Farmers and labor hired on a daily basis tend to save more reflecting the need for precautionary saving against the vagaries of weather and external circumstances. This relationship points to one factor behind the decline in household saving over the last ten years. As households move out of the agricultural sector or occupations with fluctuating income, the need for Thai households as a whole to save for precautionary motives will fall.

#### Are Households Saving Enough for Retirement? (BOT Survey)

Households save for retirement and emergencies. In the Bank of Thailand's Household Attitude towards Debt and Savings (2004), 54 percent of the households interviewed reported saving inadequately for emergencies and retirement.<sup>11</sup>

A logistic regression of saving sufficiency on various socio-economic variables reveals that low financial literacy, low education, being a renter or mortgage holder, numerous household members or being a laborer or firm employee all contribute to households not saving enough.



Sources: BOT HADS Survey (2004)

<sup>11</sup>The survey question asks, “Will your saving behavior result in your having enough saving for emergencies and retirement?”

The fact that low financial literacy or low educational attainment predicts insufficient savings suggests that households may be short-sighted or mathematically challenged with respect to planning and achieving their desired consumption paths. We proxy for financial literacy using the household's ability to compare monthly and yearly interest rates. The northern and northeastern regional dummy variables predict saving adequacy and possibly indicating the high living costs and temptations of the central region. The occupational dummy for labor predict saving inadequacy reflecting the difficulty that laborers may have in dealing with uncertainty in both income and location.

**Table 3.3 Logistic Regression Estimates for *Household Savings Constraint***  
Household Attitude Towards Debt and Savings Survey (BOT 2004)

Variable	Coefficient	Base Unit	Survey Sample Mean Estimate
<i>Ln</i> Household Income	-0.52***		11.51
Income shock	1.24**	No income shock	0.22
Financial Literacy	-0.22*	Financially literate	0.80
BA	-0.64*	No education	0.11
Labor, daily or weekly basis	1.06**	Unemployed	0.09
Rent		Home Owner	0.06
Mortgage		“	0.13
Northeast region	-0.47**	Bangkok	0.31
Constant	5.92***		

Number of obs: 2800; Population size = 15877186; R<sup>2</sup>=0.03  
 Note: \*\*\*, \*\* and \* denote 1, 5, and 10% significance levels, with heteroskedasticity-robust standard errors controlling for survey sample design.

### Are Households Saving Constrained?

We have offered evidence that certain households are not saving enough. This funding naturally raises the question of whether households are saving constrained. The question of saving constraints may at first seem somewhat trivial. After all, households can always choose to save cash under the mattress at home. But saving properly is, in fact, no small feat. Saving is a means of reallocating resources across time. As such, it is vulnerable to theft, inflation, procrastination<sup>12</sup>, and temptation. Households therefore need access to a variety of saving technologies in order to reallocate resources across time in order to meet their consumption plans.

<sup>12</sup> A burgeoning literature exists on behavioral economics and personal saving. For example see Richard Thaler, and Schlomo Benertzi (2001) or David Laibson (1997). This field finds that the framing of saving scheme options can affect saving rates and offers a number of intriguing and subtle policy implications such as raising default saving rates in pension schemes, or allowing savers to pre-commit to the rate at which they will save in the future.

Using the Bank of Thailand Financial Access Survey (2003)<sup>13</sup>, we identified respondents with self-reported saving constraints. A saving constraint is said to exist if a respondent reports at least one unmet need for a saving service. The survey indicates that approximately 18 percent of respondents report being saving constrained. It is noteworthy that saving constraints are prevalent across the country in all regions in both rural and urban areas.

**Table 3.4 Saving Constraints**

<b>Saving Service Needed</b>	<b>Share of Respondents with Unmet Need</b>
Liquid account with withdrawal services available on demand.	8.27%
Liquid account with secure principal and a fixed but low rate of interest.	4.63%
Somewhat liquid account with secure principal with a medium rate of interest such as a government bond.	5.96%
An illiquid account with secure principal and a high but risky rate of interest such a fund with principal protection	2.73%
An illiquid account with non-secure principal a very high and risky rate of interest such as stocks or mutual funds.	2.45%
At least one of the saving services above.	18.33%

Source: Bank of Thailand Financial Access Survey (2003)

**Table 3.5 The Geography of Saving Constraints**

<b>Geographical Unit</b>	<b>Saving Constrained Respondents</b>
Urban	17.84%
Rural	18.94%
Bangkok	20.10%
Central Region (excluding Bangkok)	22.81%
Northern Region	10.10%
Northeast Region	17.29%
Southern Region	21.35%

Source: Bank of Thailand Financial Access Survey (2003)

Low income and low education tend to increase saving constraints. Being in the Northern or Northeastern regions, as opposed to being in Bangkok, contributes to lessening constraints and possibly suggests the need for a saving instrument that can withstand the temptations of the city.

How do saving constraints vary by income group? The above table shows how saving constraints vary by income groups. Low-income earners report being more saving constrained relative to other higher-income groups. A look at the type of saving constraint faced by each income group reveals some variation. We find that 11 percent

<sup>13</sup> A cross-sectional survey of 4800 individuals and 1195 firms commissioned by the Bank of Thailand in preparation for the Financial Master Plan. In this section, we focus on the survey of individuals, not firms.

of low-income earners are in need of the most basic of saving services. Medium-income earners and high-income earners report more need for somewhat less liquid saving instruments with medium rates of interest. In order to mobilize household saving, the different saving needs of the populace must be met. Low-income households need better access while higher-income groups need access to more varied saving instruments with a range of return, liquidity, and risk.

**Table 3.6 Logistic Regression Estimates for *Household Saving Constraints***  
BOT Financial Access Survey (2003)

Variable	Coefficient	Base Unit	Survey Sample Mean Estimate
Income, medium	-0.38***	Income, low	0.27
Income, high	-0.38**	“	0.15
Entrepreneur/Employer	-0.75***	Unemployed	0.05
Merchant, no employees	-0.41**	“	0.15
Primary education	-0.35**	No education	0.39
Secondary education	-0.42**	“	0.26
Certificate	-0.62**	“	0.15
Bachelor or higher	-0.47**	“	0.15
Female	-0.19**	Male	0.50
Northern region	-0.90***	Bangkok	0.20
Northeast region	-0.27**	“	0.20
Constant	-0.44*		

Number of obs: 4800; R<sup>2</sup>=0.03

Note: \*\*\*, \*\* and \* denote 1, 5, and 10% significance levels, with heteroskedasticity-robust standard errors; Low income is defined as yearly personal income between 0 and 50,000; medium income: 50,000-200,000; and high income: 200,000+

**Table 3.7 Saving Constraints by Income Groups**

Saving Service Needed	Low Income with Unmet Need	Medium Income with Unmet Need	High Income with Unmet Need
Liquid account with withdrawal services available on demand.	11%	6%	3%
Liquid account with secure principal and a fixed but low rate of interest.	6%	3%	1%
Somewhat liquid account with secure principal with a medium rate of interest such as a government bond.	5%	7%	6%
An illiquid account with secure principal and a high but risky rate of interest such a fund with principal protection.	3%	3%	4%
An illiquid account with non-secure principal a very high and risky rate of interest such as stocks or mutual funds.	2%	3%	3%
At least one of the saving services above.	20%	17%	14%

Source: BOT Financial Access Survey (2003). Note: Low income is defined as yearly personal income between 0 and 50,000; medium income: 50,000-200,000; and high income: 200,000+

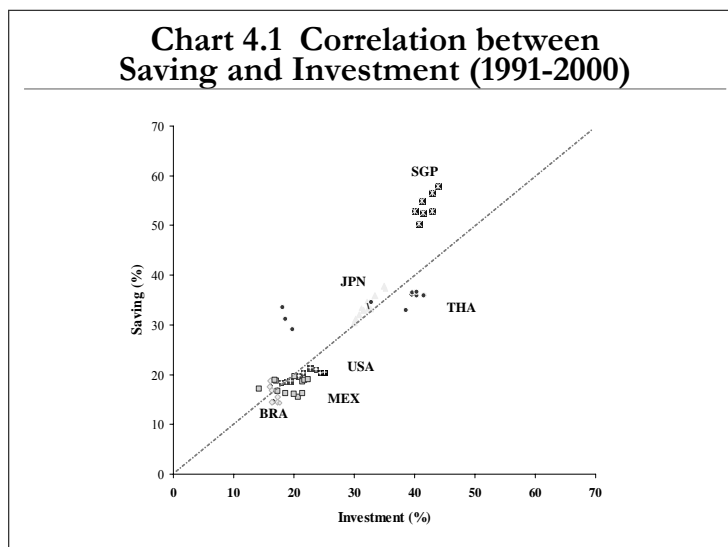
## IV. Are We Saving Enough?

In the past two sections, we spent some time discussing in details the facts and the forces behind the observed declining trends in gross national savings and household savings at both the macro and micro levels. Let us now turn to the second main question of this paper: are we saving enough? In other words, if our gross national savings stays at its present level of 30.5 percent of GDP for the next 5 years, would there be adequate for our economic needs? If not, how much more should we try to increase our gross saving rates?

Answering this question is not easy. There are not many papers in the literature written on this particular topic. In their paper, “*Does Japan Save too much? Or do Other Major Countries Save too Little?*”, Tsuyoshi Oyama and Kotaro Yoshida (1999) employ the modified golden rule approach in their attempt to justify the current level of saving in Japan which is quite high in comparison to other countries with similar level of development. In another paper, “*Are American Saving ‘Optimally’ for their Retirement?*”, John Karl Scholz, Ananth Seshadri, Surachai Khitatrakun (2004) use a stochastic life-cycle model that capture the key household’s consumption decision such as uncertain lifetime, precautionary saving, social security and pension benefits, family structure etc. So, we do not have much guidance from the existing literature for our purposes.

To systematically provide a satisfactory answer to this difficult question, we have to begin by asking ourselves why countries have to save. Can a country simply consume all that they produce each year, avoid engaging in saving activities, but borrow all they need for their domestic investment from abroad?

The short answer is it can try but it will be difficult. In their celebrated paper, Feldstein and Horioka (1980) pointed out that despite the much studied and much hyped theoretical model of a small open economy with free capital flows, countries in the real rarely fit that description. Most usually finance their investment activities with their own savings. In other words, countries are constrained by their own available financial resources. The authors find the coefficient of the simple regression between domestic saving and domestic investment to be quite high of around 0.89 in the period between



Sources: Penn World Table (2002)

1960 and 1974 and for the more recent period of 1982-1991, the coefficient dropped to 0.62 but still shows significant and positive association. Furthermore, the swift punishment meted out by the world capital market on the countries that run large and prolonged current account deficits – for instance, Mexico in 1994 and Thailand in 1997 – also put additional limits on how much a country can borrow from abroad for its own domestic investment need.

Chart 4.1 illustrates a scatter plot of domestic saving to GDP and domestic investment to GDP of countries like USA, Mexico, Singapore, Thailand, and Japan during 1991-2000. Most of the observations, with the exception of Japan, lie around the 45-degree line, indicating not only the high degree of correlation between the two variables as found in Feldstein and Horioka (1980), but more importantly the constraint imposed on domestic investment by the availability of domestic saving. (Only in Singapore with gross saving rate at 60 percent of GDP that domestic saving remained persistently much higher than the domestic investment, with excess saving being invested abroad and its current account persistently in the surpluses.)

So, if one must conclude that a country has to save for its own needs, what does it mean by “saving enough” or “saving adequately?” In answering this question, we have to judge the degree of adequacy against each of the main purposes, for which domestic savings are intended. There are at least three key reasons:

1. To support growth
2. To finance domestic investment and reduce the reliance and associated risks from having to borrow abroad
3. For each individual household, the main reason for saving now is to set aside present income for future needs, especially to finance his/her retirement

#### **4.1 The Present Situation**

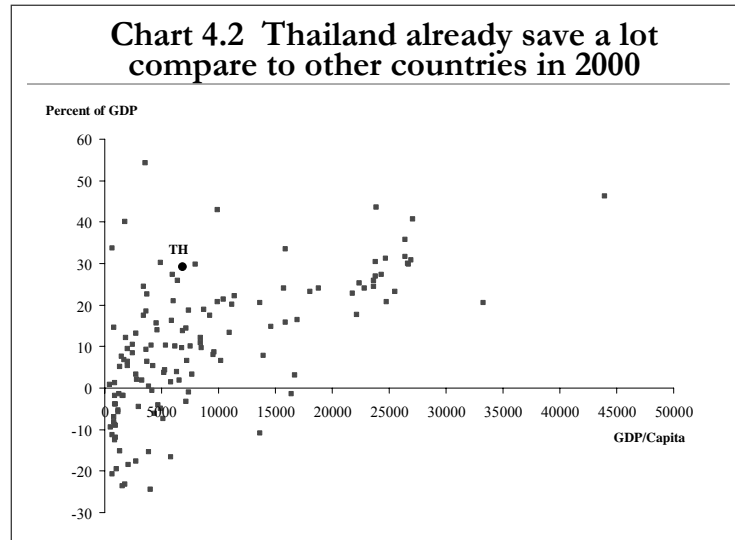
As discussed in our first section, Thailand already saves at a high level in comparison to other countries around the world. Even at the present level of 30.5 percent, there are not many countries that save more than Thailand; for instance, Japan, Chile, Korea, Norway, Luxemburg, Malaysia and Singapore. And for the year 2000, according to the Penn World Table 6.1, the average gross saving rates of those countries with positive saving rates, was at 18.1 percent of GDP.

Nevertheless, we would like to point out that this simple-minded comparison with other countries only provides us with a benchmark to look at the present situation and serves as a point of departure into our full analyses. This is so since each country should save according to its own domestic needs. For example, advanced countries such as the United States, Japan or countries in European Union may not need to save at a high rate at the present given that they have been investing heavily in the past and already reach the high level of capital stock per capita compare to the case of Thailand.<sup>14</sup> In other words, they no longer have the need to invest but Thailand does.

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<sup>14</sup> In 1988, the level of capital stock per capita in the advanced countries such as Australia, France, Germany, Japan, UK, and US is roughly 10 times of that in Thailand.





Sources: Penn World Table (2002)

#### 4.2 Are We Saving Enough to Support our Growth?

Based on the simple Solow growth accounting model, we can compute back-of-an-envelope calculation for the level of gross saving required in order for the economy to attain the growth rate we are aspiring for given our assumption of TFP (Total Factor Productivity) growth will continue at the same level as in the period before the crisis, i.e. 1-2 percent per annum<sup>15</sup>, and the labor forces will expand at the rate of 1.5 percent. Specifically, the implied gross saving rates will be derived from the Solow growth accounting model as illustrated in equation 2 below:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + \alpha \frac{\dot{L}}{L} + (1-\alpha) \frac{\dot{K}}{K} \quad \text{Eq. (2)}$$

where  $\alpha$  is the labor share of income and  $\dot{A}/A$  is the rate of total factor productivity. Here, we assume that  $\alpha$  is equal to 0.65.<sup>16</sup>

Table 4.1 summarizes our findings. In order to support a growth of 5-6 percent in the next 3-4 years, the gross national saving rates should be around 34.3-36.9 percent of GDP. Allowing foreign savings will lessen pressure on the domestic saving process.<sup>17</sup> But more importantly, in order to increase the growth rate to the next bracket of 6-7 percent, our gross saving rates has to rise further to 41.1-45.9 percent of GDP.

<sup>15</sup> There were several studies on the level of TFP in Thailand and the estimates vary from study to study. Some found that TFP can be as high as 3 percent while other found that it is much lower between 0.5-2 percent. Recently, Barry Bosworth (2005) estimated that the total factor productivity growth in Thailand during 1977-1996 was around 1.6 percent and if the period was extended to 1977-2002, including the crisis period, TFP was around 0.8 percent. We think that we should not include the crisis period since low estimate during that time period came from the fact that the number was driven partly by the contraction in aggregate demand with firms stop using their existing machinery. If one looks at these studies, one will find that in 1998, TFP growth will turn negative.

<sup>16</sup> Sarel, p.42-43.

<sup>17</sup> Here, we allow financing from foreign borrowing up to 3 percent of GDP, as a quick benchmark for the comparison with the case of no foreign borrowing. In fact, there is not fixed rule of what should be the number but 2-3 percent of current account deficits usually will not lead to unsustainable level of foreign liabilities in the long run.

Table 4.1 Gross Savings Needed under Various Scenarios in the Next 3 Years

Target Growth Rate	Assumption		Capital Stock Growth	Implied Gross Saving Rate	
	TFP Growth	Labor Growth		with 0% CA deficit	with 3% CA deficit
3 - 4%	2 - 3%	1.5%	0.07%	13.4%	10.4%
4 - 5%			2.93%	20.5 - 20.7%	17.5-17.7%
5 - 6%			5.79%	27.5 - 28.5%	24.5 -25.5%
6 - 7%			8.64%	34.3 - 36.9%	31.3 - 33.9%
3 - 4%	1 - 2%		2.93%	20.5 - 20.7%	17.5-17.7%
4 - 5%			5.79%	27.5 - 28.5%	24.5 -25.5%
5 - 6%			<b>8.64%</b>	<b>34.3 - 36.9%</b>	<b>31.3 - 33.9%</b>
6 - 7%			11.5%	41.1 - 45.9%	38.1 - 42.9%

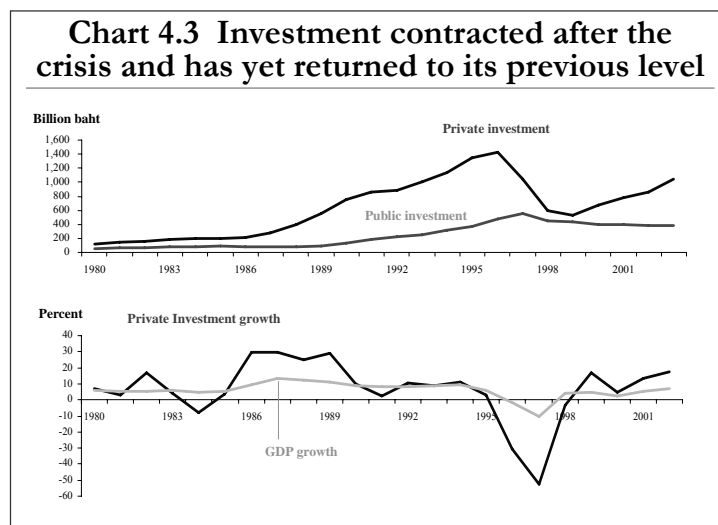
Sources: Author's calculation base on labor share  $\alpha = 0.65$

It is interesting to note that as an alternative to raising more domestic saving to accelerate domestic capital accumulation process and thus the growth rate, if the government can manage to lift the growth level of total factor productivity from 1-2 percent per annum to 2-3 percent per annum then we can support 5-6 percent growth with gross national savings of only 27.5-28.5 percent of GDP. But, of course, raising TFP growth is not an easy thing to do.

### 4.3 Are We Saving Enough to Finance our Domestic Investment and Support our External Stability?

Let us now turn to the second reason for domestic savings and thus the second aspect of adequacy: to support our external stability. As we alluded to earlier, countries will need to save to finance their own domestic investment as access to international capital market will be limited and borrowing too much capital from abroad can entail too much risk.

What does this mean for Thailand? Right after the 1997 crisis, our investment activities contracted sharply from 1.4 trillion baht per year to roughly 0.54 trillion baht per year, a drop of more than 60 percent. Since then, private investment has not returned



Sources: NESDB

to its previous level. Nevertheless, once private investment begins to pick up and return to its previous level before the crisis, the pressure on domestic saving and current account balance will intensify, especially with the government stepping up its investment in mega-projects, currently valued around 1.7 trillion between 2005 and 2009.

To prevent the problem of external stability we will have to mobilize more domestic savings. To calculate how much more savings we need to raise, we compute the share of private and public investment to GDP under various scenarios for the next 5 years and ask whether our current level of domestic savings at 30.5 percent will be adequate for our domestic investment activity. In particular, we start from the base year 2005 with our most recent estimates of public investment at 8.4 percent of GDP and private investment at 20.0 percent. If the economy grows around 5-6 percent during 2006-2009, we expect that the planned mega-projects of 1.7 trillion baht (or an addition of 0.7 trillion baht above what would be the normal level of public investment without mega-projects), will raise the share of public investment to GDP an additional 2 percent by 2009 with average impact 1.2 percent for the five year periods.

**Table 4.2 Projected Share of Public Investment to GDP**

<b>(Billion Baht)</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Planned Mega Projects	67	255	427	486	464
Other Public Investment	530	420	350	420	560
Share to GDP (Percent)	8.4	8.8	9.3	9.9	10.4

Sources: Authors' calculation

As for the trends of private investment share, we first project likely scenarios. One approach is to begin from the estimated figure for 2005 and then calculate the share of private investment to GDP onward up until 2009 given the differential growth rate between the two variables. So, we look back to the period between 1980 and 2003 (excluding the three years following the crisis) for the average differential growth rates to be used in the calculation. During the time period, private investment grew on average roughly around 17 percent per annum, while nominal GDP growth averaged around 12 percent per annum. In other words, investment outpaced GDP by 5 percent

**Table 4.3 Projected Share of Private Investment to GDP**

<b>Differential growth in Private investment</b>	<b>Level of Private Investment to GDP</b>	
	<b>at year 1</b>	<b>at year 5</b>
3%	20.0	22.3
5%		<b>23.9</b>
7%		<b>25.6</b>
9%		27.4

Sources: Authors' calculation

on average. For each sub-period, the behavior however differs with investment growing roughly at the same rate as nominal growth during 1980-1986; faster than nominal GDP by 7 percent during the boom of 1987-1996; and 9 percent faster during 2001-2003, partly attributable to the low base effect. For our calculation, if we assume that during the next 5 years, nominal GDP will grow around 8 percent and investment will grow faster by 5 percent then its share in GDP will rise to 23.9 percent, by 2009.

**Table 4.4 Level of Gross Saving Needed to Support Current Account in 2009**

<b>Percent of GDP</b>	<b>2005</b>	<b>2009</b>
1. Share of Inventory Investment	4	1
2. Share of Public Investment	8.4	10.4
3. Share of Private Investment	20.0	23.9-25.6
<b>Total Financing Need for Domestic Investment</b>	<b>32.4</b>	<b>35.3-37.0</b>

Sources: Authors' calculation

So, how much more gross national savings do we need to keep our external position, especially our current account sound? If we conduct a quick back-of-an-envelope calculation assuming that inventory investment averages around 1 percent of GDP as in the past<sup>18</sup> and private investment outpaces GDP by 5-7 percent then this implies that we need to have a total financing of 35.3-37.0 percent of GDP by 2009. Should we allow for some mobilization of funds from abroad through current account deficits of 3 percent, then we will still need to raise our gross saving rates to 32.3-34.0 percent, i.e. an addition of 1.8-3.5 percent in 5 years. It is also interesting to note that most of the additional financing need came from the rise in private investment from the base year of 3.9-5.6 percent. Mega-projects by itself only add a maximum of 2 percent of financing need by 2009.

#### **4.4 Are We Saving Enough to Finance our Retirement?**

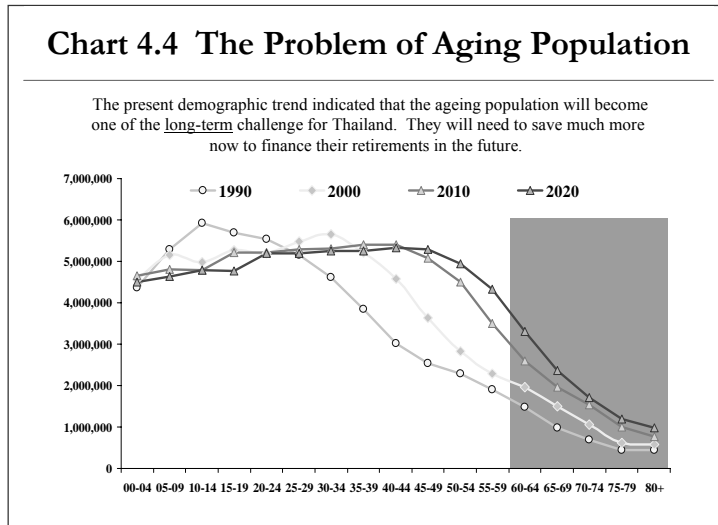
One of the most interesting trends that many countries share around the world is the emergence of an aging economy. From the forecast of the NESDB, our population over the age of 60 year old will rise to 9.5 million people or 13.9 percent of the total population by 2020. This trend however raises several concerns. First, what does aging population mean to the already declining household savings? Will the aggregate household savings decline further? Second, will the future retirees save enough to finance their own retirement?

To answer this first question, we will use information from our micro-data to compute the household savings trend to obtain a rough estimate of a first round impact of aging population on saving rate. Chart 4.4 below provides the data on the level of average income and amount of average saving rates of each age group in 2004. It

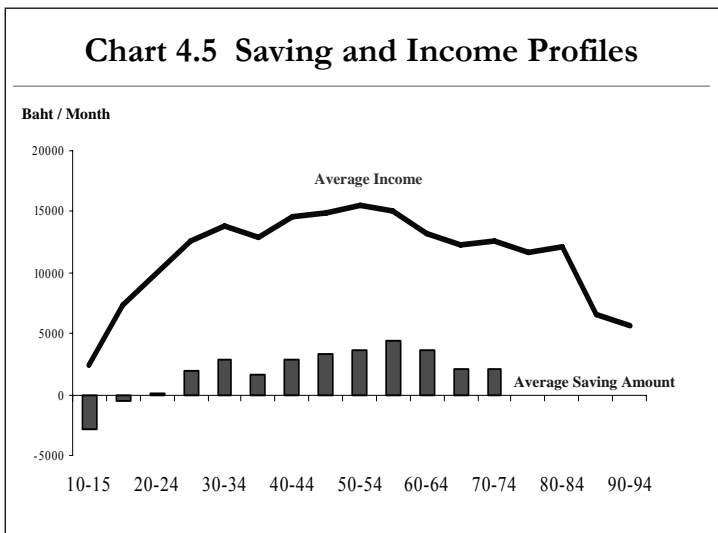
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<sup>18</sup> For inventory investment, from the available data in the first half of 2005, it is indicated that inventory investment for this year, either for oil, iron, steels, and gold will be abnormally high. Usually, share of inventory investment will be around 1 percent of GDP. This may also help explain why we experience a sharp swing in the current account this year. This is why we assume that by year 5, the level of stock investment will return to its normal level.

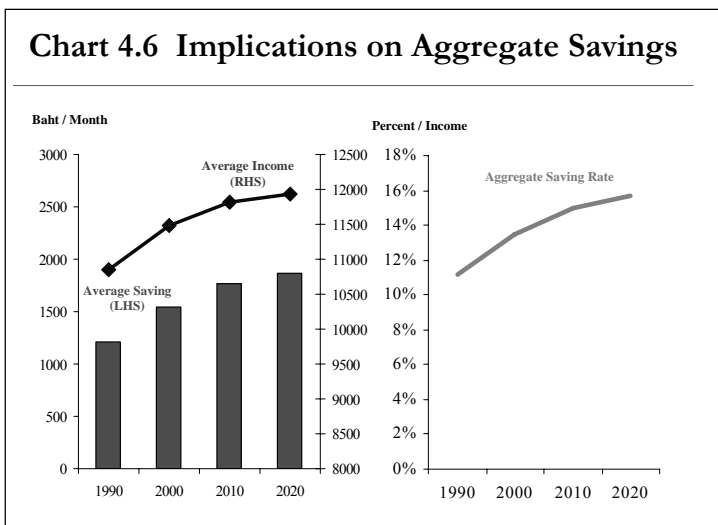
indicates that households will reach a peak income around once they are around 50-55 year old with an income of 16,274 baht. Then their income will decline by roughly 20



Sources: NSO and NESDB's estimates.



Sources: NSO and Authors' calculation



Sources: Authors' calculation

percent once they are between above 60 year old and will decline rapidly after 75 year old. However, their average saving amount per month will reach the first peak when they are around 30-34 year old given that they have to save to build their house, their cars, and their lives. Then it peaks again around the age 55-59 year old. And once they are above 60 years old, their average saving per month will fall.

From our calculation – holding the saving amount and income of each age group constant<sup>19</sup> – we find that the changing demographic structure will increase the level of income per month from the period 1990-2020, given that we will have more people within the higher age group in working positions that pay better than decades before. This rise in income will continue as the peak of the population that used to be around the 14-20 year old age group moves forward and toward the peak of the income profile which is around 55-59 year old. Similarly, as our demographic structure continues to change, the average savings per month will increase. Compared with 1990, we now have a larger portion of our population entering the workforce.<sup>20</sup> In particular, once they reach the age of 25 year old and above they would have already earned enough money to start accumulate their savings. And the average amount of saving per month – holding the profile of saving as found in 2004 survey data – will continue to rise up to 2020.

Given that the sharper rise in the average saving per month in comparison to the rise in income, these together will result in the aggregate saving rates profile that increase upward slightly during 1990-2020. In other word, our calculation indicates that at this point in time, aging population will have yet to reduce the amount of aggregate savings and the level of aggregate saving rates as Higgin (1998) found in his papers. However, the impact is rather small. Hence, it is the conclusions of this paper that (1) aging population will not reduce the level of household saving rate in the next 15 years as previously expected, and (2) demography is not the main factor that explained the decline in our household saving rate during the past decades nor then next coming decades. Other factors such as the easy credit environment and changing attitude will have a larger role.

Nevertheless, this does not mean that aging population does not pose challenge to the economy. Saving enough on the aggregate does not imply that we save enough for individual. Even though the level of aggregate saving does not change much and despite the facts that the level of aggregate saving in Thailand is rather high by international standard, there might be inadequacy of saving at individual level, especially in light of our earlier finding that those with low income save rather small portion of their income and most of the aggregate saving came from those in the top income ranges.

Between 1990 and 2020, the proportion of those with age 60 and above will increase steadily from 7.4 percent to 13.9 percent. These means that we have to be responsible for these elders and if they do not save now, then 15 years later Thailand

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<sup>19</sup> Since our data are those of household income and household consumption, our calculation assumes that their expenses on children are already reflected in the reported expenditure of the household.

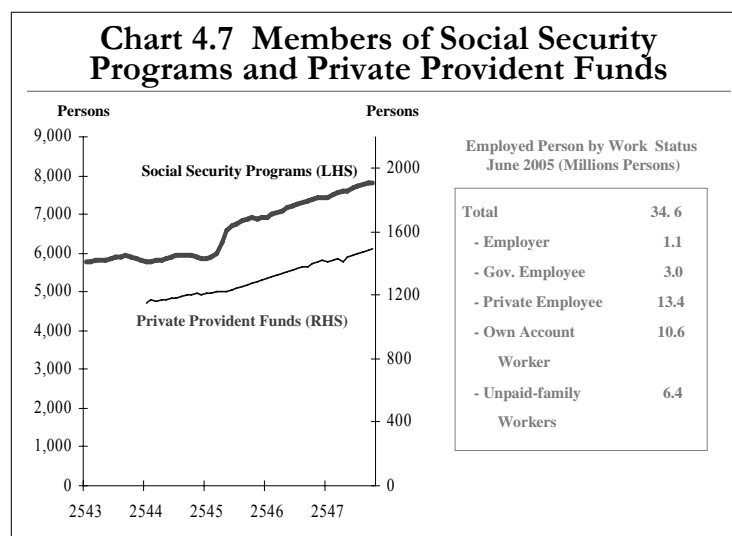
<sup>20</sup> The share of our population between 15-60 year old will rise from 63.8 percent in 1990 to 66.2, 67.0 and 65.9 percent in 2000, 2010 and 2020, respectively.

will face the problem of how to finance the retirement of these people without undue burden on government budget. This will be one of the challenges and risks that our policymakers as well as those in other countries have to struggle with for some time.

### Our Social Safety Net Programs

So far under the 3-pillar system, the government have managed to increase the number of those participating in the program to around 10.5 million persons, of which 7.8 million are under the social security programs (for retirements and child support), 1.1 million are members of the government pension fund, and 1.5 million are members of private provident funds. Since 2000, members of the first two programs has been increasing steadily, growing more than 30 percents over the past 5 years. Their total assets have also increased markedly over the same period. It is these funds that will provide our employees with additional savings for their retirements.

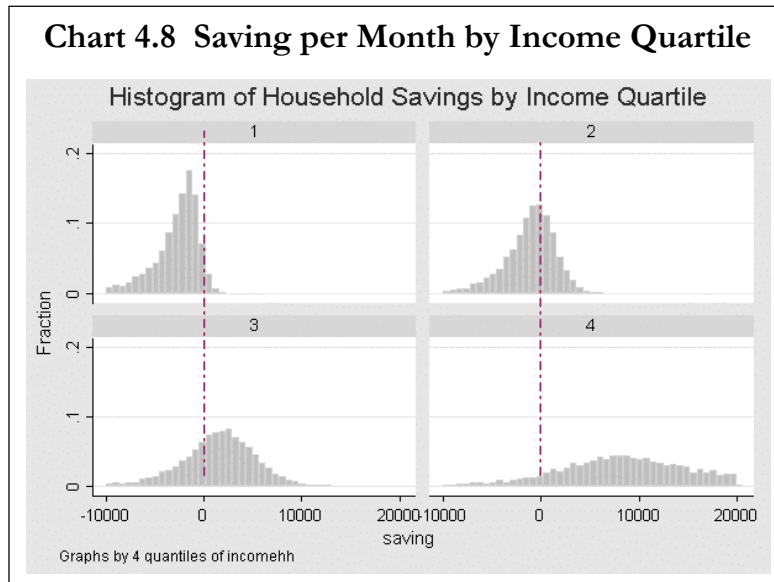
Nevertheless, if one compares the number of member of these funds to the total number of employed persons in our labor force of 34.6 million, one will find that the coverage of the total labor forces can be improved and there are some who still do not get coverage. Specifically, of 13.4 million persons who are employees in the private sector, 7.8 million are under social security programs, and 1.1 million has some forms of savings through private provident funds. However, there are many more workers who presently are not members of these programs such as own-account worker and unpaid family workers, which together they accounted for 17.1 million workers or about 50 percents of our workforces. And in fact, out of 10.6 million own account employee, 8.1 million lives outside the municipal areas, which make these vulnerable group employee further away from the reach of our current social safety net programs.



Sources: NSO, Fiscal Policy Office, MOF

So, at individual level, there still many left uncovered by the existing social safety net programs and evidence from our micro dataset suggests that many continue to feel that they currently do not save enough for their own retirement. Most worrisome fact of all is the distribution of the savings as shown in Chart 4.8. If we divide our savers into 4 groups according to their income rank, with 1 indicating the poorest and

4, those with the highest income. When one compares the amount of savings that the top income quartile and the bottom quartile accumulates each month, there are a large disparities, with most of people in the bottom quartile are dis-saving slightly. Furthermore, more than half of those in 2<sup>nd</sup> income quartile are also dis-saving as well. This suggests that if this situation does not change, we will enter into the era of aging population with a substantial part of our population live without adequate saving.



Sources: NSO and Authors' Calculation

#### 4.5 Other Risks with Regards to Saving

Beside the problem of aging population, there are two additional points worth mentioning here. The first one concerns the currently limited choices of our saving instruments while the other is about the efficiency of our capital accumulation process and choices of our investment projects.

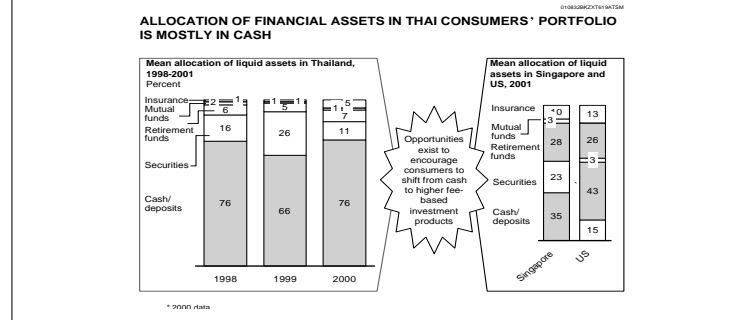
##### Limited Saving Instruments

From our analyses based on macro and micro-data, we found that, despite the high saving rate, our savers are faced with quite limited choice of saving instruments. Compare to savers in advanced countries like the United States and Singapore, Thai savers keep large portion of their savings (76 percent) in deposit accounts. In the case of the United States, only 15 percent of savers' asset was in the form of cash/deposits; 43 percent in securities, 3 percent in retirement funds, 26 percent in mutual funds; and 13 percent in insurance. In the case of Singapore, similar picture emerges: 35 percent was in the form of cash/deposits; 23 percent in securities; 28 percent in retirement funds; 3 percent in mutual fund; and 10 percent in Insurance.



### Chart 4.9 Limited Saving Instruments

Furthermore, the problem with our saving is that most of them are in the form of deposit. There are need to diversify and provide alternative channels of saving and educate our savers.



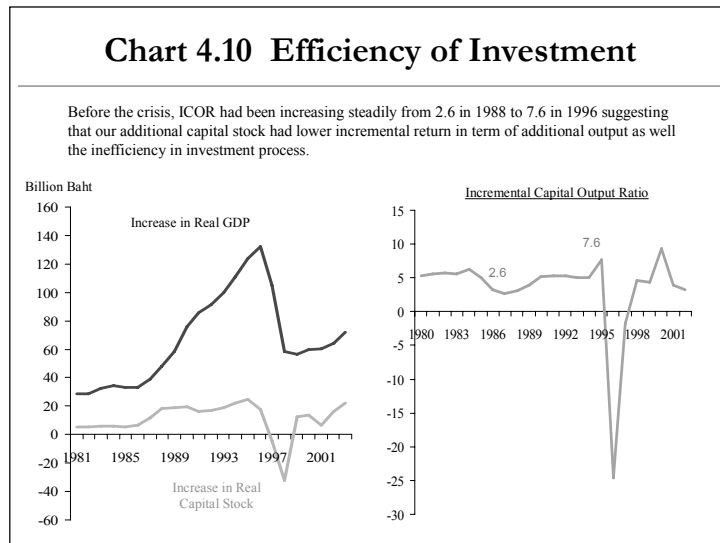
Sources: McKinsey Consulting (2002)

This lack of diversity and concentration of savers' assets in one dominant form reflected problems in both supply and demand sides. On the supply side, the problem is the limited choices of saving instruments in the Thai financial available for savers. On the demand side, the problem is the lack of financial sophistication by the savers to demand more exotic and riskier instruments with higher return from financial services providers. This shortcoming is even more evident at the present time with the real interest rate turn negatives for quite sometimes and the inflation is on the uptrend but a large proportion of savers still continue to prefer keep their assets in the form of deposits at commercial banks. In other words, in the future we have to encourage saver to "save smart" in the form of assets that more suited to their need than deposits.

### Inefficiency of our Capital Accumulation Process

It is important to point out that Thailand may not invest efficiently in the past. The level of domestic investment in Thailand before the crisis reached its peak of 42.1 percent of GDP in 1995, one of the highest in the world. However, at the time, our domestic mobilization of saving could not keep up with such a high level of investment so Thailand borrowed from abroad to help finance its investment, with current account as high as 8 percent of GDP during 1995-1996.

Thus far, we have been suggesting that, we should try to increase our domestic saving to help financing our domestic investment and help alleviate pressure on our external stability. But, there is also an alternative answer. Maybe the problem is not we are saving too little, but we might have been investing in a very inefficient manner. Investing at 42.1 percent of GDP was probably too high. Chart 4.10 shows that as we accumulated greater quantity of our capital stock, output also increased faster as well. Nevertheless, the Incremental Capital Output Ratio (ICOR) had also been increasing steadily from a low 2.6 in 1988 to 7.6 in 1996. This indicates that toward the end of the period, our additional stock might have been not as productive as before in term of raising output (GDP). So, part of the solution, to this problem maybe we need to "invest efficiently" as we are trying to increase our saving and "save smart". This will allow us to use our limited resource more productively and reach our growth potential with the available pool of saving we have at the present.



Sources: NESDB

## Part V. Policy Implications

Before moving on to policy implications, let me recapitulate our findings on the first two of our three main questions: why did gross saving and household saving rates decline over the last decade (1993-2003) and whether we are saving enough for our future need, both on the aggregate and individual level?

On the former question, the findings indicated that the gross saving rate decline was driven partly by the secular decline in household saving. Analyses of macro and micro data suggested that the decline in household saving was not the result of the introduction of government social securities program that replace private saving, nor was it the result of aging population that increase the proportion of those who are dis-savers. Rather, the decline occurred concurrently with the boom in consumption, especially in the consumption of durable goods such as vehicles, communications, and electronics. Further analysis of micro-level data confirms that there were marked reductions in the saving rates of all cohorts, reflecting the recent trend of consumerism during our day and age.

On the latter question, we find that at the present gross saving rate of Thailand is already high by international standard. But this does not mean that we should not save more since appropriate level of saving for each individual country is dictated by its own specific circumstance and its own need, especially the need to save so as to support growth and finance our domestic investment without undue pressure of our external position. Thailand probably needs to increase its aggregate saving from the present level of 30.5 percent by another 1.8-3.5 percent over the next 5 years, with borrowing from abroad another 3.0 percent of GDP. Furthermore, saving adequately on the aggregate level may not imply adequate saving on the individual level. This is especially so for the case of Thailand since most of our aggregate saving are accounted for mostly by saving of the top income earners. In other words, even at the high 30.5

percent gross saving rate, poor households are still vulnerable to the problem of inadequate saving for their retirement.

This leads us to the final question: what should the government do?

### **Policy Recommendations**

If there is a need to reverse the observed declining trends in gross national saving rate and household saving rate and save more on the aggregate by 3-5 percents over the next 5 years to provide support for growth and for external stability as well as to encourage each individual to save more on the micro level to prepare adequate saving for our aging population, should the government actively promote more saving among which groups? And what are the appropriate policy tools?

Based on our findings, both on the aggregate level and micro level, to be successful, we have to design saving mobilization programs that address problems at its root causes. We have to tackle two problems at the same time: (1) to increase our aggregate saving and (2) to ensure adequate saving at an individual level. Here, solution for aggregate and individual will complement each other with the more saving for individual, the more saving in the aggregate. But it is not necessary so the other way around. Given complexity of the problems, the programs will have to be multifaceted and build on the existing current regime in various dimensions.

#### **1. Aggregate Saving**

**Raise more saving from other sources other than household saving.** So far, this paper spends much time discuss about the decline in household saving, since corporate saving share of GDP did indeed increase by 1.1 percent during 1993 and 2003. For the next couple of years, as the economy slows down from the rising oil prices, it is likely that we will find that corporate saving decline or stall for the next few years. Thus, the chance for raising more corporate saving (i.e. corporate income over its expense in that year) which depend much on corporate performance, will be limited. Policymakers then must consider measures that will raise corporate saving in the medium term. These measures are those such as increasing the dividend tax in relative to capital gain tax, thus it will give firms more incentive to keep the money and invest so as to increase the value of its firm over time more than paying out as dividend.

As for public saving, it also declined by 3.7 percent along with the gross saving rate over the same period. Given that the fall was driven more by government policy and poor economic conditions at the time, this paper do not spend much time discussing public saving trends. However, from cross-countries experiences, we find that when we compare countries with high aggregate saving rate in Asia with countries with low aggregate saving rates in Latin America, one fact stands out. That is, in Asia the government saving share of gross saving is much higher. Thus, over the medium-term, we will also need to promote more government saving and fiscal discipline by keeping government current expenditure under control and steering government expenditures away from consumption and toward saving and public investment. As in the case of corporate saving, for the next few years, it is unlikely that public saving will increase

further since public saving is pro-cyclical and government revenue and saving will decelerate along with economic slowdown.

This left us with the only one choice in the short run: household saving. So far, with household saving currently at its all time low of 3.8 percent of GDP from the peak of 14.4 percent, there are rooms for the government in raising the household savings from the present level.

## **2. Household Saving**

**Address the Consumption Boom Problem:** To stem the decline in the household saving we need to correct the boom in consumption, especially in regards to durables and the change in the consumers' attitude to "consume now and save later". Given that the recent rise in durable consumption is partly driven by the low interest rate environment during the past few years and at the present, the tightening of monetary policy that has been occurring during the past years will help correct this problem.

The other reasons for the boom in the consumption is the environment of easy credit, especially with the boom in consumer finance that has been occurring in the past few years, with commercial bank moving aggressively into this segments as well as other non-banks such as AEON, GE Capital, Quick Cash, etc. We will need to impose other policies to help contain this boom in consumer finance, in addition to the recent policy tightening on personal loans businesses on 30 June 2005 and credit card businesses on 26 March 2004. For instance, we should require all non-bank credit card personal loan providers to be members of our credit bureaus as in the case of our commercial banks and all credit extension must be reported to the credit bureaus. This will allow these credit providers enhanced ability to assess the credit quality of the borrower with full information, especially those concerning the customer credit outstanding to all existing credit providers as well as other relevant information. With more critical information, market will function better and credit providers will be able to choose to give credit to those with repayment ability only and avoid those who already loaded with loans given their pervious spending spree.

Other measures include enhancement of financial literacy the public starting with the young to endow people with the ability to better manage their own personal finance as well as properly manage their savings and investment. This also includes the cultivation of their saving habit: that is, people need to save regularly before they are allowed to borrow. This can be done by a close collaborative effort between government agencies and financial service providers. Along the same line, consumers should be encouraged to use more debit cards instead of credit cards. Furthermore, a rise in the consumption tax or increased tax incentive on savings can serve to moderate consumption during good times.

**Enhance Existing Retirement Saving Programs:** From our analysis, we found a substantial number of households still felt that they were saving inadequately for their own retirement. Most households, with the exception of the top income centile, still save very little portion of their income. And more importantly, many are still further from the reach of our existing retirement saving programs.

One solution to this problem is to modify the existing rules on the current social safety net programs to provide additional incentives as well as increase their flexibility to make these programs more attractive and inclusive. For instance:

- Increase the ceiling of income eligible for tax exception for the sum of money invests in private provident fund, government pension fund or retirement mutual fund from the present level of 300,000 baht and 15 percent of total income to higher level.
- Allow members of provident funds and pension fund who would like to save more to voluntary save more of their income than the contribution of employers or the government.
- Expand the current coverage to allow members to save more on account of their spouses and their family members and eligible for tax exemption
- Allow members to use part of their accumulated savings as collateral against specific type of borrowing such as first home purchase or for education.
- Allow pension fund transfers as members move from one job to the next and from one company to another.
- Increase the minimum level of required contributions for both employer and employee from its present level.

Here, from the aggregate level, it is also important for the government to move from the current partially funded social security program to fully funded system, where all benefits that will be contracted to be paid out to program members in the future are already save and invest today. Cross country experiences demonstrated clearly that the provision of public social security program will reduce the level of private saving. More importantly, the aggregate saving will drop if the government fails to save the full amount today. This is why when the government begin its reform and starts to fund its social security program fully, it will not only ensure sustainability of such program but will also increase the level of aggregate saving at the same time.

**More Financial Access** There are limit to the benefits of these proposed changes. They should only profit those who are members or prospective members of the social safety net programs. Nevertheless, for others who are still beyond the reach of the social safety net programs, who constitute a substantial portion of our workforces, especially those in the rural areas, alternative solution is required. Our analysis from micro data indicates that their problem is the lack of financial access, especially access to saving accounts or instruments. One solution to this problem is to provide innovative access to financial services that will allow them to save more for their retirement/old ages. Successful experiences from other countries such as Postal Saving Bank in Japan should be investigated further. Another alternative is the establishment of community banks that is already underway in Thailand at this present stage.

### **3. Additional Policies for Saving Mobilization**

**Promote Long-term Saving** The government should consider providing additional tax privileges for long-term contractual saving that savers will have to invest their money for some time such as in long-term bonds, insurance policy, or long-term deposits. Furthermore, additional incentives for saving for special purposes such as for

education or first home purchase should be considered. Here, the experience of Germany is quite innovative: their consumers are encouraged to save in special account for their home purchase. They have to be discipline in their saving up to the level of the down-payment needed for their new home. As an incentive, they will get to borrow the rest of the money from the banks that they hold this special account at low interest rates once they have reach their targeted level of saving to pay for the down-payment.

**More Variety of Savings** In fact, the problem in Thailand is not only there are limited numbers of saving instruments available to savers but that, even though they exist, they are not as widely popular as in other countries. Thais still prefer to deposit their money in saving accounts despite their low rate of return. In turn, this helps limit the development of other types of financial market. This may partly due to the problem of the lack of financial literacy and also by the lack of market depth for other saving instruments. To alleviate this problem, new types of instruments such as mortgages securitization or long term saving bonds, should be promoted.

## VI. Conclusion

Looking ahead, the issue of long-term saving and its adequacy will become more and more important in the medium and long-term. As the pressure on our current account continues to build up, there is a need to increase our aggregate saving at least by another 1.8-3.5 percent by the next 5 years. In addition, as our population continues to age, there will be a need for better retirement saving programs and the need to provide more access to financial services so that people who have are not members or perspective member of those programs will be able to save for their own need.

These means that we will need better saving mobilization programs that expand their reach to the general public as well as address the specific problems and hindrances to saving. However, one single policy alone will not suffice given the complexity of the issues at hand. We need a comprehensive saving mobilization program. These includes measures to address the boom in consumption, measures to provide additional incentives for more retirement and non-financial saving, more financial access, as well as more saving instruments.

Thailand has been blessed by a high rate of saving by international standards. Policymakers and the nation as a whole must not take this blessing for granted. In the coming years as the Thai economy faces challenges in terms of both growth and stability, a high rate of saving will be crucial to maintaining medium-term stability and long-run prosperity.

## Bibliography

- Alan J. Auerbach, Jinyong Cai, and Laurence J. Kotlikoff (1990), "U.S. Demographics and Saving: Predictions of Three Saving Models", NBER Working Paper No. 3404.
- Aron, Janine and John Muellbauer (2000), "Personal and Corporate Saving in South Africa", CEPR (Centre for Economic Policy Research) Discussion Papers, No. 2656.
- Attanasio, Orazio and Szekely, Miguel (2000), "Household Saving in Developing Countries Inequality, Demographics and All That: How Different are Latin America and South East Asia?", Inter-American Development Bank Working Paper No. 427.
- Boersch-Supan, Axel and Winter, Joachim (2001), "Population Aging, Saving Behavior and Capital Markets", NBER Working Paper No. 8561.
- Butelmann, Andrea and Gallego, Francisco (1999), "Household Savings in Chile", Central Bank of Chile Working Paper.
- Connolly, Ellis and Kohler, Marion (2004), "The Impact of Superannuation on Household Saving", Research Discussion Paper, Economic Research Department, Reserve Bank of Australia.
- Deaton, Angus (1996), *Analysis of Household Surveys*, World Bank Publications.
- Deaton, Angus and Paxson, Christina (1999), "Growth, Demographic Structure, and National Saving in Taiwan", Research Program in Development Studies, Princeton University.
- Dayal-Gulati, Anuradha, and Christian Thimann (1997), "Saving in Southeast Asia and Latin America Compared: Searching for Policy Lessons." IMF Working Paper 97/110.
- Edey, Malcolm and Simon, John (1996), "Australia's Retirement Income System: Implications for Saving and Capital Markets", NBER Working Paper No. 5799.
- Edwards, Sebastian (1995), "Why are Saving Rates So Different Across Countries?: an International Comparative Analysis", NBER Working Paper No. 5097.
- Edwards, Sebastian (1996), "Why are Latin America's Savings Rates so Low? An International Comparative Analysis" *Journal of Development Economics*, 51: 5-44, August 1996.
- Feldstein, Martin (1978), "Do Private Pensions Increase National Savings?", *Journal of Public Economics* 10, pp. 277-293.
- Feldstein, Martin (1979), "The Effect of Social Security on Saving", NBER Working Paper No. 334.
- Feldstein, Martin and Liebman, Jeffrey (2001), "Social Security", NBER Working Paper No. 8451.

- Gavin, Michael, Ricardo Hausmann, and Ernesto Talvi (1997), "Saving Behavior in Latin America: Overview and Policy Issues", Inter-American Development Bank Office of the Chief Economist Working Paper No. 346.
- Gourinchas, Pierre-Olivier and Parker, Jonathan, "Consumption over the Life Cycle", NBER Working Paper No. 7271.
- Heller, Peter and Symansky, Steve (1997), "Implications for Saving of Aging in the Asian Tigers", IMF Working Paper No. WP/97/136.
- Hendershott, Patric and Joe Peek (1987), "Private Saving in the United States: 1950-85", NBER Working Paper No. 2294.
- Higgins, Matthew (1997), "Demography, National Savings and International Capital Flows", Staff Reports No. 34, Federal Reserve Bank of New York.
- James M. Poterba, Steven F. Venti, and David A. Wise (1995), "The Effects of Special Saving Programs on Saving and Wealth", NBER Working Paper No. 5287.
- Kaldor, Nicholas. 1966. "A Model of Economic Growth." *Economic Journal* 67(268): 591-626.
- Kirakul, Suchada: Sripayak, Ammara; and Ploydanai, Preecha. "Household Savings," in *Bank of Thailand Quarterly Bulletin*, 24 (December 1984) : 21-49.
- Kosiyanon, Lily "The Behavior of Household Saving in Thailand," Ph.D. Dissertation, University of Oregon, 1974.
- Kraay, Aart. 2000. "Household Saving in China." *The World Bank Economic Review*.
- Laibson, David (1996), "Hyperbolic Discount Functions, Undersaving and Savings Policy." NBER working paper No. 5635.
- Laibson, David (1997), *Golden Eggs and Hyperbolic Discounting*, *Quarterly Journal of Economics* 112.
- Laibson, David, James J. Choi, Brigitte C. Madrian, and Andrew Metrick (2002), "Defined Contribution Pensions: Plan Rules, Participant Decisions, and the Path of Least Resistance," *Tax Policy and the Economy* 16.
- Lee, Ronald, Andrew Mason, and Timothy Miller (1999), "Life Cycle Saving and the Demographic Transition in East Asia", a supplement to Volume 26 of *Population and Development Review*, pp. 194-222.
- Lee, Ronald, Andrew Mason, and Timothy Miller (1998), "Saving, Wealth, and Population", presented at the Symposium on Population Change and Economic Development.
- Loayza, Norman, Klaus Schmidt-Hebbel, and Luis Servén (2000), "Saving in Developing Countries: An Overview", *The World Bank Economic Review*, Vol. 14, No. 3, pp. 393-414.
- Loayza, Norman, and Rashmi Shankar (2000). "Private Saving in India." *The World Bank Economic Review*.
- Muradoglu, Gulnur and Taskin, Fatma (1996), "Differences in Household Saving



- Behavior: Evidence from Industrial and Developing Countries”, *Journal of Developing Economies* Vol. 35, No. 2.
- Nualtaranee, June “Household Consumption and Saving: Random Walk Hypothesis,” Master’s thesis, Faculty of Economics, Thammasat University, 1992.
- Parker, Jonathan (1999), “Spendthrift in America? On Two Decades of Decline in the U.S. Saving Rate”, NBER Working Paper No. 7238.
- Poshyananda, Roong (1995), “ Private Saving in Thailand: Determining Factors and Channels for Mobilization”, in Economic Research Department, Bank of Thailand, *Papers on Policy Analysis and Assessment*, 1995, pp. 52-79.
- Prinsloo, J. (2000), “The Saving Behavior of the South African Economy”, Occasional Paper No. 14, South African Reserve Bank.
- Research Advisory Staff (1999), “Why Do Savings Rates Vary Across Countries?”, *World Bank Policy and Research Bulletin*, Vol. 10, No. 1.
- Schultz, Paul (2004), “Demographic Determinants of Saving: Estimating and Interpreting the Aggregate Association in Asia”, *Economic Growth Center Discussion Paper* No. 901.
- Tengumnuay, Malinee “Household Saving Behavior in Thailand,” Master’s thesis, Faculty of Economics, Thammasat University, 1981.
- Vanitchatchavan, Voravut “Saving Behaviour in Thailand,” Master’s thesis, Faculty of Economics, Thammasat University, 1997.

## Appendix I

### Saving Behavior in Thailand: Macroeconomic Evidence

In recent years, there has been many panel empirical works on the determinants of saving both in developed and developing countries. This has been motivated by the widespread concern over the fall in saving rates especially household saving rate in developed and developing world. This section provides an empirical analysis of saving from 1971 to 2003. We are obtained data<sup>21</sup> from the National Income of Thailand. We adopt the ECM (Error Correction Model) approach with special emphasis on the relation between private and public saving. We provide a brief review of the literature on issues of saving behavior and present our empirical investigation of saving determination in Thailand.

#### Cross-countries Experience

Loayza, Schmidt-Hebbel, and Serven (2000) provided constructive theoretical and empirical studies regarding the impact of several variables on the ratio of private saving to GDP. They show that (per capita) income levels, the terms of trade, and financial depth (usually proxied by monetary aggregates) generally have positive impacts on the saving ratio. The dependency ratio and the public saving ratio have negative impacts on saving. Interest rates and the share of the population living in urban areas have theoretically ambiguous impacts on savings.

Most empirical studies surveyed did not find interest rates to be significant while the urbanization ratio was found to have a negative impact on savings. The urbanization ratio reflected the lower variability of urban (labor) income relative to agricultural income which would reduce the need for precautionary savings.

The measurement of macroeconomic instability (such as inflation) are expected to increase savings for precautionary reasons, although most empirical studies surveyed in that paper failed to establish econometric significance. Dayal-Ghulati and Thimann (1997) found that inflation may negatively impact private saving. This result may reflect the fact that some savings vehicles may not be perfectly indexed, in which case higher inflation could reduce the incentive to save in a way that offsets the precautionary motive.

Although these cross-countries studies differ on the core determinants of saving, they all find the coefficient of government saving to be negative and significantly high in absolute terms. The paper by Loayza, Schmidt-Hebbel, and Serven (2000) found that the Ricardian offset coefficient is significantly higher in developing

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<sup>21</sup> The dataset provided by the Office of the National Economic and Social Development Board (NESDB). The aggregate saving classified as private saving plus public saving. While private saving consists of household and corporate saving and public saving consists of government and state enterprise saving. The main advantage for using this data set is a theoretically correct measure of each category such as measuring household savings which not include corporate and government savings.

countries than in industrial countries. Edwards (1996) and Dayal-Gulati and Thimann (1997) have modeled the behavior of private saving using panel data for Latin American countries and found somewhat similar results.

Oliveira, Beltrão, and David (1998) concluded that reforming the social security system would increase public saving. Their article point out that the financial deepening associated with the social security reform could have a positive or negative impact on savings.

Given the data availability, the saving behavior in developing countries has been examined using multi-country cross-sectional data. Athukorala and Sen (2001) stated the problem of multi-country cross-sectional regression on saving which the regression characterized the 'average' developing country and those panel regressions are unlikely to yield sensible results. These arguments support the time series study of saving on individual countries in order to build a sound empirical foundation.

### **Country Studies**

Loayza and Shankar (2000) analyzed the factors behind India's high private saving rates. The empirical results show that private saving ratios react positively to the real interest rate and are negatively affected by age dependency ratios. The saving rate also is positively related to the share of agricultural income in total income. Similarly with cross-country results, the degree of urbanization likely reflects precautionary saving motives. Loayza and Shankar also show that the naive measure of private saving is adversely affected by financial liberalization, whereas the (theoretically superior) measure of saving inclusive of purchases of durable goods is not.

Aron and Muellbauer (2000) examined the causes of the South Africa's gross national saving rate fall between the 1980s and the 1990s. They showed that the downwards trend in the national saving reflects a deterioration in the government's saving performance. Private saving remained stable until recently, with declining household saving offset by rising corporate saving. They also found that financial liberalization has been a major factor behind the decline in household saving and the rise in corporate saving. The increase in real interest rates has had a positive impact on private saving. Furthermore, they analyzed the share of corporate saving in profits, which is found to depend on inflation, the real interest rate, and dividend taxation. Corporate saving is remarkably under researched, given its importance in many economies. This research laid down Kaldor's argument in the context of corporate saving. Kaldor (1966) insisted that the reason for the different saving propensities lies in the difference between workers and firms. Firms will withhold part of the profits in order to finance investment.

Kraay (2000) highlighted the considerable statistical difficulties in the measurement of saving in China. The measurement problem make it difficult to interpret the recent trends in China's saving aggregates. He found the expectations of future income growth and income levels higher than subsistence consumption (proxy by the share of food consumption) play a significant role in the evolution of saving. In contrast, he finds that demographic factors or income uncertainty have no effect on saving. But the fact that saving rates of rural households are much higher than those of

urban households may partly reflect the greater uncertainty of rural incomes. Furthermore, China's transition to a market economy has not been associated with declining saving, unlike in most other former socialist countries.

### **Thailand's Experience: What We Know**

A study focus mainly on saving was undertaken by Kosiyanon in 1974 with cross-section data from Socioeconomic Survey. She investigated household saving behavior from 1960 to 1972. Her result confirmed the Keynesian absolute income hypothesis. She also found a saving differential between the urban and rural sectors in Thailand. The urban marginal propensity to save was higher than the rural areas and the marginal propensities to save are also significantly differ among regions.

Back in the 1980s, an investigation of saving behavior in Thailand, particularly in the central and greater Bangkok regions was undertaken by the Economic Research Department of the Bank of Thailand. Tengumnuay (1981) applied data from the Socioeconomic Survey and confirmed, using an econometric model, that income, household size, age structure, income source and urban-rural difference have significant effects on saving behavior in Thailand. Income and household size was found to be significant in explaining saving. Age structure was explained the level of saving but no conclusion on the applicability of the life cycle theory in Thailand was reached. Self-employed households and farm households in the rural central area tended to save more. On the contrary, there was no significant relationship between household savings and interest rates.

Kirakul, Sripayak and Ploydanai (1982) found no significant impacts of interest rates (both nominal and real interest rates) on household savings. The net effects of deposit rates cuts did not lead to lower household savings. These results are consistent with other studies on the relationships between household savings and deposit rates in Thailand which concluded that interest rates had low, unclear, or statistically insignificant impacts.

Vanitchatchavan (1997) distinguished the different characteristics among aggregate private savings, corporate savings, and government savings equation in Thailand. He found income (labor income); capital inflow and financial development had a positive effect on the level of savings. While real interest rates have negative effects on aggregate savings, corporate savings and government savings but not on household saving. He also stated that it is difficult to determine the relationship between macroeconomic factors and households saving. It was reasonable to consider socioeconomic factors in determining the level of household saving.

For the understanding on household saving behavior after 1997 economic crisis, an empirical work compare the saving behavior between 1993 and 1998 made use of the data set from the joint Household Socioeconomic Surveys<sup>22</sup> by the National Statistical Office and the Bank of Thailand. They that household saving behavior had dropped

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<sup>22</sup> The survey covered a variety of aspects including income, expenditure, assets and liabilities and socioeconomic characteristics.

albeit average household income rising between 1993 and 1998 because consumption rose more than income in 1998. The explanation for these changes in the behavior is that the economic crisis in 1997-98 has probably led to lower income growth while households struggled to maintain their standard of living. This resulted in a lower average propensity to save.

Rojthamrong (2001) showed the large amount of foreign loans prior to the 1997 economic crisis resulted in domestic saving growing at a slow pace. As Thais significantly raised their consumption of imported luxury goods and travel abroad, the saving rate declined. The current account deficit widened continuously and contributed to the economic crisis in 1997. Rojthamrong concludes that in spite of the government's policy to stimulate the economy by increasing expenditure in the short run, a "Saving Culture" has to be created for a high level of domestic saving is necessary to sustain economic growth in the long run. To this end, the Thai government established the 31st October of every year as Thailand's "National Saving Day."

### **Determinants of Saving in Thailand**

In this paper, we use annual data for the period 1971-2003, with public and private saving rates based on national accounts data to construct the macroeconomic determinants of saving in Thailand.

### **Data**<sup>23</sup>

This study use savings data set from the National Income of Thailand. The aggregate saving data are broken down into private (corporate and household sectors) and public saving. The data on nominal interest rates, inflation rates, money aggregate data, and current account balances were obtained from the International Monetary Fund's International Financial Statistics. As for the wealth variable, we use the market capitalization of the Stock Exchange of Thailand divided by the gross domestic product. The foreign savings variable is defined as the ratio of the current account balance to the gross domestic product. The dependency ratio refers to the share of the population below fifteen and above sixty-five years of age. Demographic data was obtained from the U.N. population database. The remaining variables were gathered from the Bank of Thailand database.

### **Specification of the Model**

We estimate a reduced form equation to model the behavior of saving in Thailand. We follow the previous literature in testing a wide number of possible explanatory variables, but for simplicity only those yielding the best specification will be presented in Table 1.

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<sup>23</sup> GDP growth; the ratio of public saving to GDP; inflation, as a proxy of macroeconomic instability; the ratio of M2 to GDP, to proxy the role of financial instruments in stimulating saving; the terms of trade, to proxy export orientation and foreign reserve; the dependency ratio, to proxy demographic effect.

**Table 1 Long-Run Determinants of Saving**

Dependent Variable	GNS/ GDP	Private Saving /GDP	Public Saving /GDP	Private Saving	
				HH Saving/ GDP	Corporate Saving/ GDP
Growth	0.002** (3.42)	0.003** (7.19)	0.002** (2.84)	0.002** (3.61)	
Log of per capita GDP					0.008* (2.56)
Time deposit rate (real)		0.002** (3.67)		0.002* (2.18)	
M2 / GDP			0.16** (9.32)		
Market Capitalization / GDP	-0.05* (-2.36)			-0.04** (-3.68)	0.03** (6.98)
Net Capital Flow / GDP			0.32** (5.65)		0.06* (2.21)
Dependency ratio		-0.0004* (-1.79)			
Public saving / GDP		-0.18* (-1.75)			
Constant	0.47** (26.08)	0.12** (7.19)	-0.07** (-4.78)	0.07** (6.98)	0.009** (3.11)
R-squared	0.86	0.61	0.78	0.55	0.78
Adjusted R-squared	0.84	0.55	0.76	0.49	0.76
Durbin-Watson statistics	1.61	1.53	1.33	1.44	1.47
Sample period	1975-2003	1971-2003	1971-2003	1975-2003	1975-2003

Source: IMF, NESDB, and Bank of Thailand; t- ratios are given in parenthesis.  
 \*\* significant at the 1 percent critical value; \*significant at the 10 percent critical value.

### The Error Correction Model: *Private Saving Model*

The estimated function for private saving is given here below to illustrate the idea of ECM model we apply in this paper.

$$\Delta S_t^{Private} = \theta_0 + \theta_1 \Delta S_{t-1}^{Private} + \theta_2 \Delta S_{t-1}^{Public} + \theta_3 GROWTH_{t-1} + \theta_4 TimeDeposit_{t-1} + \theta_6 \Delta Dependency_{t-1} + \alpha(\beta_1 S_t^{Private} + \beta_2 S_t^{Public} + \beta_3 GROWTH_t + \beta_4 TimeDeposit_{t-1} + \beta_5 Dependency_t) + \varepsilon_t$$

where SPriv is private saving as a percentage of GDP; SPub is public saving as a percentage of GDP; GROWTH is the economic growth rate; and the dependency ratio is the ratio of population below fifteen and above sixty-five years of age as a percentage of the total population.

As is standard in these formulations, the  $\theta$ , which are the coefficients of the cointegrating relationship among the variables, can be interpreted as providing information about the long-run response of private saving to the explanatory variables, the  $\alpha$  as providing information about the short-run response of private saving to the right hand-side variables, and as an indication of the speed of adjustment toward long-run equilibrium. The estimated of short run coefficients are given in Appendix.

## **Empirical Analysis of Saving in Thailand**

### **Income and Growth**

The permanent-income theory predicts the higher growth (higher future income) reduces current saving. But in the life-cycle model growth has an ambiguous effect on saving, depending on which cohorts benefit the most from income growth. To this extent to which cohort benefit from income growth will discuss in the next section. We note that the life cycle model is controversial it that it shows that growth drives saving. Loayza, Schmidt-Hebbel, and Servén (2000) used a panel instrumental variable approach to estimate the effect of income growth on saving. They find that a 1 percentage-point rise in the growth rate increases the private saving rate by a similar amount, although this effect may be partly transitory.

### **Real Interest Rate**

Our estimates find that growth variable has a positive and significant, albeit small, impact in the long-run on all types of saving rate: a 10-percent increase in the growth of the economy raises the long-run private saving ratio by 0.03 per cent. The log of per capita GDP is statistically significant and positive.

The result for the rate of return variable propose that the real rate of time deposit on bank has a statistically significant positive effect (although small) on private and household saving behavior in Thailand. A one percent increase in time deposit rate is associated with a 0.002 percentage point increase in the private and household saving rate. This finding is consistent with the McKinnon-Shaw proposition that the income effect of high real interest rates on saving behavior generally overwhelms the substitution effect from the return of financial assets which is particularly true in an economy where the saving behavior is highly intensive in money and near-money assets such as Thailand.

### **Financial Deepening**

The ratio of M2 to GDP is found to have a positive coefficient for public saving, implying that financial deepening contributes to raising the long-run public saving rate in Thailand. An alternative proxy for financial development is the market capitalization of the Stock Exchange of Thailand (SET). It is found to have a negative effect on gross national saving rate and household saving rate but has a positive effect on the corporate saving rate. Poshyananda (1998) also confirmed the positive effect of financial development on corporate saving. Corporations can raise equity much more easily and no longer rely on bank debt.

### **External Factor**

In general, the ambiguous relationship between saving and foreign resource inflows (not foreign aids) has observed by many empirical studies. There was no consensus has emerged whether the national saving crowding in or out when foreign saving got through the economy. The problem of simultaneity between the two variables occurred. Loayza, Schmidt-Hebbel, and Servén (2000) found the effect of foreign lending reduces private (and national) saving in the long run. This result should be taken with considerable caution in view of the wide disparity in external financial regimes faced by different countries in different periods. In this paper, we conclude that foreign lending crowds in public saving and corporate saving. We found, a 1 percentage point increase in the inflow of foreign capital relative to GDP is estimated to increase in public saving and corporate saving by 0.3 and 0.06 percentage point, respectively.

### **Demographic Factor**

The life-cycle hypothesis is age-related consumer heterogeneity and the prediction that saving follows a hump-shaped pattern, indicate save and dissave status in one life cycle. Research has shown that this hypothesis is not problem-free when it comes to interpreting actual saving behavior. Life-cycle saving is not sufficient to account for the high level of aggregate wealth in industrial economies (Kotlikoff and Summers 1981). Likewise, we have small evidence here to confirm that a rise in the young-age and old-age population via dependency ratios tends to lower private saving rates in Thailand.

### **Ricardian equivalence**

The coefficient on the government saving rate is significantly negative with the private saving rate. The private sector reduces its long-run saving rate by 0.18 percentage point for each percentage point increase in the public saving ratio. Our estimates indicate that the degree of offset between private and public saving is relatively low, not in line with evidence for other Latin American countries which range from 0.68 to 0.90 in absolute values. See Dayal-Gulati and Thimann (1997) and Tanner (1997).

To the extent that public saving are directly influenced by fiscal policy, explaining the dynamics of private saving has become focus of researchers interested (i.e., the degree of Ricardian equivalence). We found the degree of Ricardian equivalence in Thailand which private saving offset movements in public saving in the long run. The fiscal policy is identified as one of the main instruments to promote the much needed increase in national saving in Thailand.

### **Short-run Behavior**

The estimated short- run coefficients of the saving equation (see Appendix); including the error-correction term coefficients show the signs that are predicted by theory. The importance of this short-run effect is minimized by the fact that the error correction term is significant with a high absolute value. The R-squared statistics show that both the short run and the long run equations have good fit, which can also be seen



in Appendix II. The regressions passed the diagnostic tests for serial correlation and heteroskedasticity. Several stability tests were suggested that the equations estimated are stable.

### **Conclusion**

In this paper, we investigated the empirical determinants of saving in Thailand from 1971 to 2003. Our most important finding is that private and household saving respond positively to real interest rates, suggesting that macroeconomic policy may play a role in boosting national saving. However, we also found preliminary evidence that the tradeoff between private and public saving should be considered. Fiscal consolidation appears as one of the best policy instruments to raise the national saving rate in Thailand. We did find the saving rate to respond significantly to increasing financial deepening. However, we note that many empirical works confirmed financial deepening to positively affect private saving in Thailand.

## Appendix II

### Thailand's Savings Behavior Macroeconometric Model<sup>24</sup>

The econometric model is used to analyze the response of the macroeconomic variables to saving rate in the long run and short run behavior in Thailand, consisting of five behavioral equations. In this paper, the saving functions were revised incorporating with the most recent data, the National Income of Thailand 2003 Edition released by the National Economic and Social Development Board (NESDB).

#### 1. Aggregate Saving

$$\begin{aligned} \Delta (\text{GNS}/\text{GDP}) &= 0.0009 \cdot \Delta(\text{GROWTH}(-1)) + 0.011 \cdot \Delta \ln(\text{Wealth}) \\ &\quad (2.19) \qquad\qquad\qquad (2.18) \\ &\quad - 0.002 \cdot \Delta(\text{DEPENDENCY}(-1)) + 0.181 \cdot \text{ecmGNS} \\ &\quad (-1.67) \qquad\qquad\qquad (1.54) \end{aligned}$$

Adjusted R-Squared = 0.42      S.E. of regression = 0.0107      LM(2) : 0.86 (0.44)  
 $\text{ecmGNS} = \text{GNS}/\text{GDP} - (0.469 + 0.002 \cdot (\text{GROWTH}) - 0.05 \cdot (\text{Wealth}) - 0.004 \cdot (\text{DEPENDENCY}))$

#### 2. Private Saving

$$\begin{aligned} \Delta(\text{PRIVS}/\text{GDP}) &= 0.002 \cdot \Delta(\text{GROWTH}) + 0.0006 \cdot \Delta(\text{RTIME}) \\ &\quad (5.22) \qquad\qquad\qquad (1.57) \\ &\quad - 0.0009 \cdot \Delta(\text{DEPENDENCY}) - 0.441 \cdot \Delta(\text{PUBS}/\text{GDP}) + 0.569 \cdot \text{ecmPRIVS} \\ &\quad (-1.67) \qquad\qquad\qquad (-3.37) \qquad\qquad\qquad (3.26) \end{aligned}$$

Adjusted R-Squared = 0.62      S.E. of regression = 0.0108      LM(2) : 0.10 (0.89)  
 $\text{ecmPRIVS} = \text{PRIVS}/\text{GDP} - (0.122 + 0.003 \cdot (\text{GROWTH}) - 0.002 \cdot (\text{RTIME}) - 0.0004 \cdot (\text{DEPENDENCY}) - 0.185 \cdot (\text{PUBS}/\text{GDP}))$

#### 3. Public Saving

$$\begin{aligned} \Delta (\text{PUBS}/\text{GDP}) &= -0.001 \cdot \Delta(\text{GROWTH}(-1)) - 0.024 \cdot \Delta \ln(\text{YIELD}) \\ &\quad (1.44) \qquad\qquad\qquad (-1.53) \\ &\quad - 0.203 \cdot \Delta(\text{NETK}/\text{GDP}) + 0.569 \cdot \text{ecmPUBS} \\ &\quad (-2.07) \qquad\qquad\qquad (1.61) \end{aligned}$$

Adjusted R-Squared = 0.37      S.E. of regression = 0.0144      LM(2) : 0.02 (0.98)  
 $\text{ecmPUBS} = \text{PUBS}/\text{GDP} - (-0.07 + 0.002 \cdot (\text{GROWTH}) - 0.156 \cdot (\text{M2}/\text{GDP}) + 0.325 \cdot (\text{NETK}/\text{GDP}))$

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<sup>24</sup> ln = natural logarithms

ecm = error correction term

The number in parentheses below coefficients are the t-statistics

LM(2) is the test for second-order serial correlation in the residuals (with *p*-value in parentheses)

#### 4. Household Saving

$$\Delta (\text{HHS/GDP}) = 0.001 * \Delta(\text{GROWTH}) - 0.059 * \Delta(\text{WEALTH}(-1)) + 0.569 * \text{ecmHHS}$$

(1.67)                                  (-3.28)                                  (3.65)

Adjusted R-Squared = 0.47      S.E. of regression = 0.0133      LM(2) : 0.45 (0.64)  
ecmHHS = HHS/GDP - (-0.07 + 0.002\*(GROWTH) + 0.002\*(RTIME) - 0.046\*(WEALTH))

#### 5. Corporate Saving

$$\Delta (\text{CORPS/GDP}) = 0.004 * \Delta(\text{GDP per capita}) - 0.031 * \Delta(\text{WEALTH}(-1))$$

(1.53)                                  (-3.82)  
+0.057 \*  $\Delta$ (NETK/GDP) + 0.364 \* ecmCORPS  
(1.93)                                  (2.28)

Adjusted R-Squared = 0.62      S.E. of regression = 0.0058      LM(2) : 0.67 (0.52)  
ecmCORPS = CORPS/GDP - (0.11 + 0.008\*ln(GDP per capita) + 0.03\*( WEALTH) - 0.059\*(NETK/GDP))

## List of variables

### Dependent variables

GNS/GDP	Ratio of Gross National Saving to GDP
PRIVS/GDP	Ratio of Private Sector Saving (Net) to GDP
PUBS/GDP	Ratio of Public Sector Saving (Net) to GDP
HHS/GDP	Ratio of Net Households Saving to GDP
CORPS/GDP	Ratio of Net Business Saving to GDP

### Independent variables

GROWTH	Growth of GDP at 1988 constant prices
WEALTH	Market Capitalization: SET to GDP
DEPENDENCY	Ratio of the population below fifteen and above sixty-five years to the total population
RTIME	Real time deposit rate
YIELD	Government bond yield
NETK/GDP	(Total) Net flows of private financial account
GDP per capita	Gross Domestic Product per capita

## Appendix III

### The Golden Rule, Growth, and Savings

In the discussion of the right level of saving for Thailand, much of the debate misses the boat by fixating on Thailand’s high rate of saving relative to other countries. To properly address the question of how much to save, we need a framework with which to understand the linkages between saving, growth, and consumption in the long run.

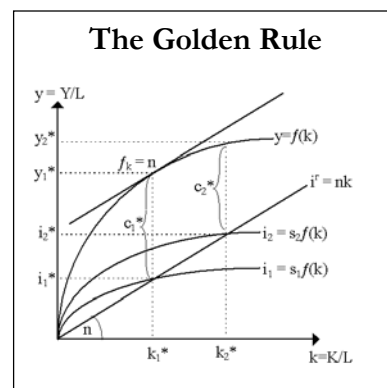
The Solow-Swan Neoclassical model of growth (Solow 1956) shows that economic growth in the can occur from the accumulation of capital, labor, or technology. Long-run output depends on the ratio of capital to labor and technological progress. The ratio of capital to labor, in turn, depends crucially on the rate of saving. High saving results in high investment and a higher capital stock. However, this by no means implies that growth can be sustained indefinitely by capital accumulation. Once the capital stock attains a high enough level, the flow of saving will just be enough replace capital lost through depreciation and maintain the stock of capital at a constant level. Long run growth therefore ultimately depends on technological progress. The Solow-Swan model, however, is silent on the question of how much society should save.

The question of how much society should save was answered by Phelps (1961). Society should save at rate so as to maximize consumption for not only the current generation but also all future generations. This rubric was termed “The Golden Rule” as it rested on the premise of “doing unto other generations what we would have done unto ourselves.”

Once the Golden Rule level of capital is attained, the marginal product of capital will be equal to population and technological growth. Using data from the National Economic and Social Development Board, we calculate whether the Golden Rule level of capital has been attained. First we calculate the marginal product of capital using the following equation.

$$\text{Capital Share of GDP Output} = \text{Marginal Product of Capital} * (\text{Capital} / \text{GDP})$$

The capital share of output, calculated using the national accounts method and implicitly assuming competitive capital and labor markets, is fixed at 33 percent.<sup>25</sup> The capital-to-GDP ratio is calculated at 2.7. We therefore obtain a marginal product of capital equal to 11.9 percent. With a depreciation rate of 4 percent, the net marginal product of capital is 7.9 percent which is larger than population and technological growth, let alone current GDP growth which also includes growth from capital accumulation. The fact that the net marginal product



<sup>25</sup> See Poshyananda, Thaicharoen, and Rodpingsangkaha (2003) *Investment Cycles Economic Recovery and Monetary Policy*, [www.bot.or.th](http://www.bot.or.th), for more details.

of capital is still high relative to population and technological growth indicates that the Thai economy has yet to attain the Golden Rule level of capital and the present rate of saving is therefore not excessive.