

CHAPTER IV

RESULTS



As mentioned in the previous chapter, 5 interviews were conducted as part of the modified morphological analysis. Each member was presented with a common set of known problems, and asked to present their opinion on what they thought. The second part of this analysis had to do with empirical study of 2 countries, Singapore and Thailand, to start an international comparative research. The purpose of this was to see the amount of government spending on welfare programs such as social security, or other programs in comparison that applied to the development of human capital. The model used and adapted here was presented by Robert J. Barro as mentioned earlier.

4.1. Modified Morphological Analysis Results

4.1.1. Applicability of each Question to Interviewees

Table 4: Bank of Questions

		Economics	Political Science	Finance	Public Law	Social Development
1	Definition of Social Security	•	•	•	•	•
2	Role of Social Security	•	•	•	•	•
3	Types of Welfare Provided	•	•	•	•	•
4	Government Sponsored					
	Pension	•	•	•	•	•
5	Tripartite - Dimished Firms		•	•		•
6	Division of Labor	•	•	•		•
7	SS Adequate?	•		•		•
8	Adoption of Welfare State	•	•	•	•	•

9	SS Leads to High Gov Spending		•	•	•	•
10	Thais Pay High or Low Taxes	•	•	•	•	•
11	SS leads to Growth	•	•	•	•	•

* The symbol “•” is used to denote questions answered, those without, withheld their comments

4.1.2. Parameter Identities of the Problem Complex

- I. Policy Coverage of Social Security
 - a. Size and extent of policy
 - b. What should be included in Social Security
- II. Role of Social Security
 - a. What is it supposed to achieve as a national policy
- III. Funding Capabilities
 - a. Taxation is a means of revenue for the state
 - b. Thai fiscal policy capabilities
- IV. Division of Labor
 - a. Why divide between formals and informals
 - b. Should social security provide universal coverage
 - c. Based on income status for taxation
- V. Welfare State Approach
 - a. Is it suitable for Thailand?
 - b. Should Thailand head in that direction?
- VI. Social Security that Leads to Growth and Development
 - a. Course of direction in terms of economics
 - b. General philosophy to achieve
 - c. Provisions for the end result of the modified morph box
 - d. Investment outlets for future growth

4.1.3. Morphological Box

Table 5: Morph Box

<u>Policy Coverage Of SS</u>	<u>Role of SS</u>	<u>Funding Capabilities</u>	<u>Division of Labor</u>	<u>Welfare State</u>	<u>SS Leads to Growth</u>
Ages 18 - 60	Capital Accumulation	Tripartite Regime	Formals	Liberalism	Increase Factor Endowment
Income Level	Labor Accumulation	Government Tax Revenues	Informals	Populism	Increase Labor Productivity
Industry	Old-Age Retirement	Fully Funded by Members	Entire Workforce	Socialism	Economic Development
	Wealth Redistribution	Responsibility of Employers	Voluntary		

The size of a morph box can be determined by the amount of parameters present, and the conditions that it must meet. Due to the size constraint, the field of study will be limited, to show the capabilities of this methodology to analyze internal aspects of social security policy in Thailand. Naturally the parameters can be much larger, and possess more variables to be included. By doing so will make possible discovery of solutions much wider, therefore narrowing the field is needed in order to contain the amount of answers processed. For future usage, configurations to the box can be made to include a variety of more detailed factors. The current box above has $(3 \times 4 \times 4 \times 4 \times 3 \times 3) = 1,728$ possible configurations. Although the parameter field is relatively small, a process of elimination must be done, by making sure there is consistency in the results, where the variables do not contradict with one another. The table above will be used to gain perspective on what needs to be achieved with current amount of collected data. Here includes topics that were discussed, and set boundaries of the study. In a real morph model, it requires the attributes of probability to see which parameter can be eliminated in order to process the data to come out with the best configuration out of 1,728 possible choices.

4.1.4. Evaluation of Patterns for Solutions

As stated in the previous chapter, the interview questions were designed to address 6 areas of concern of Thailand's Social Security Office (TSSO). The basis of these concerns were taken from previous literature reviews on scholarly works done by international labor organizations, and domestic research departments to ascertain areas that need to be addressed and reformed. Thus the creation of the 6 areas of concern was made, which were then presented as problems to the interviewees and what their opinion was on the matter. This next section combines all of the answers of each of the interviewees with respect to parameters set by the modified morphological analysis, which is also based upon the literature review done in Chapter II. Full interview transcripts and topic highlights are in Appendix B.

Table 6: Morph Pattern Derived from Interview Highlights

<u>Policy Coverage</u> <u>of SS</u>	<u>Role of</u> <u>SS</u>	<u>Funding</u> <u>Capabilities</u>	<u>Division of</u> <u>Labor</u>	<u>Welfare</u> <u>State</u>	<u>SS Leads to</u> <u>Growth</u>
Ages 18 - 60	Wealth Redistribution	Fully Funded by Members	Entire Workforce	Socialism	Increase Factor Endowments

4.1.4.1 Definition of Social Security

The definition of social security is a form of policy initiated by the government that safeguards future consumption of the working class through savings made today. This is just simply a form of insurance, where partial amount of income is put aside in order to be collected at a later date. The date of course is deemed necessary after the retirement age of the laborer which is assumed that, that person is no longer capable or willing to work as hard as the younger generation. The assumption here is that the state must enforce a collection system through taxes, where quality of services provided is maintained by government agencies.

4.1.4.2. Role and Structure of the TSSO

Three main topics come up from this section, which addresses the contributory factor of social insurance, redistribution of income, and means of welfare towards the labor force. It is agreed upon that social security needs to be funded by those who are affected by it, and require it the most, but also with state assistance. The tricky part is to determine who at what income level should contribute more or lesser than each other. This depends on economic, financial, and social factors. During times of economic downturn, taxes should be relaxed in order for everyday citizens to gain more disposable income. If an individual is financially well off, they should share the extra burden of higher taxes, but at the same time, their social standing of a single person, or having many dependents needs to play a role in level of taxation also. Social security is also not only about collecting taxes whenever possible, but the policy itself is supposed to instill a certain level of pride for the workforce. Saying that such policy is for the benefit of the whole, and not the individual, in order for members to become dependent, and willing to see it become better, rather than viewing it as a burden.

4.1.4.3. Funding Capabilities

It is a consensus that the level of social security is not adequate for the Thai people. Although there are other social infrastructures that provide alternatives, they still do not reach the core of those who need it the most. So far only short term measures are the quickest response the government is able to give. Without public participation and regional miscommunication, makes it difficult to meet the most basic needs. The amount of government spending in order to maintain social security contains differing opinions. Some say it is a tradeoff where taxes collected reflect services provided, which also means that Thailand currently does not collect enough taxes, because services given is rated as terrible, where there are severe administrative lags towards members, and hospitals. If the amount collected and spent shows efficiency and adequacy of services, it will be deemed worthwhile to having higher taxes. Accordingly, Thais are considered to pay low taxes compared to the amount of services provided. This is in terms of the

extensiveness of programs available to the Thai public of various income classes. However the quality is considered under par, which can be attributed to the management of the system itself, and the tax revenues that go into it.

4.1.4.4. Division of Labor

It should be time that everyone is covered by the SSO to provide fairness and not exclude any particular group. Even though informals contain other government financial support programs, they should also have the incentive to save for future opportunities. The state dividing a larger portion of the workforce shows class separation, and the perception that the state gives uneven service depending on who you are. Members of the SSO and the general public must see that SS increases the standard of living. Members now do not perceive paying to the SSO as giving them extra security, and because of that they do not want to pay the tax for it. Incorporation of informals will be a tedious task due to the fact that with no proper income statements, tax evasion will be a high incentive and create a free rider effect. Dropping the title of informals will create an extra 11 million persons to the SSO's responsibility. At current the SSO administration is viewed as giving poor level of services, not to mention the extra influx of members if there was no division of labor. All though allowing 11 million new members to enter the program may increase operational revenue, it would not be beneficial for universal coverage because current services provided are not adequate to the current needs today. Not only does fairness and extension to policy needs to be mentioned, but also administrative capabilities need to be enhanced in terms of quality, not quantity. Adding more bureaucratic red tape to the process will only hinder efficiency.

4.1.4.5. Welfare State

Change in social make up, particularly family structure, has created a more independent setting for each individual, where before, an agrarian society would dominate, and diminish the role of social security. Due to families becoming smaller, with parents having lesser children, extended families can no longer depend on the newer

generation to look after the old. Social security however is not there to replace the role of large families, but is to alleviate certain economic and social conditions such as health care, unemployment, maternity, and retirement. It is so that families can dedicate their attention to other matters of their lives, where another entity can help plan for their future as a whole. Tripartite regime was introduced in Thailand so that they individual would not suffer the total financial burden of social security. The government, employer, and employee all pay the same percentage amount according to income, where new thought suggest that those with the ability to pay should not be subsidized as much as those who are less able to pay. Function of government should be to improve the quality of through the perception of personal economic security and ability to work. The role of government can be debated, but seen by popular opinion that it should regulate and monitor but not operate. In order for the state to be the initiator, it has to be sure it has the infrastructure to do so. To head in the direction of a welfare state, Thais as a whole do not understand the concepts required of them, nor the states capability in order to achieve such policies. People need to have the mentality, for the greater good, with long run returns, rather than short run fixes. They do not see the benefits of sacrificing today for the betterment of tomorrow.

4.1.4.6.. Social Security Leads to Growth and Development

Social security regimes force people to save today, or forego current consumption in order to retire and spend another day. Funds that are collected from the lifetime of a group of individuals are used as an investment mechanism in the country's capital markets to grow the economy financially. At the same time individuals have a sense of assurance and security, which adds to their ability to work and be productive. Education and technology follows along the theories of capital and labor accumulation, where it is needed to advance the level of goods produced. The attractiveness of production capabilities, along with enhanced financial markets makes international trade possible. SS increase the ability of the country to invest in future growth. Thailand needs good investment policies, and independent fund managers who keep their eye on return, and not politics. SS can be derived from Marxism where it was stated that welfare leads to

worker productivity, which many countries have adopted these policies that reflect the need for welfare, just not the political ideology that has seen its failures. Currently SS is viewed as not providing security, and because this is the perception, there is a lesser willingness to pay the taxes required. Development of Thailand's SS is a step in the right direction, but there are serious systematical and structural problems today that need to be addressed before anything else happens.

4.1.5. Alternative View on Morphological Capabilities

Table 7: Alternative Morph Pattern (example)

<u>Policy Coverage</u> <u>of SS</u>	<u>Role of</u> <u>SS</u>	<u>Funding</u> <u>Capabilities</u>	<u>Division of</u> <u>Labor</u>	<u>Welfare</u> <u>State</u>	<u>SS Leads to</u> <u>Growth</u>
Industry	Old Age Retirement	Responsibility of Employers	Formals	Liberalism	Increase Labor Productivity
	Capital Accumulation	Fully Funded by Members	Voluntary		

The above box shows how other patterns can be selected from the morphological box. As observed, if industry is chosen as policy coverage, it concerns only those who are employed; therefore the role of SS should be retirement. Since it is individual industries are providing social security, the system should be funded by employers and the members, and cover what Thailand calls formals, to limit it to businesses that employ more than 20 persons, and voluntary basis for those who want to be part of it, but do not meet formal labor requirements. Liberalism is the ideology presented because the government would not be involved to regulate, or collect taxes required to fund the system, but a corporate expense instead. Corporate pension funds are seen as a benefit, or incentive to work at a certain company due to its awards to employees, which should increase labor productivity by adding job security, and financial assurances after retirement.

4.2. Regression Analysis

Data sets used in this section are collected from the United Nations Common Database (UNCDB) or from Chulalongkorn University's CIEC Database. All calculated and accumulated data will be located in Appendix C and organized accordingly to the results presented below. There will be some discrepancies in the data due to the availability of information, and methods each database uses to calculate their findings. This regression analysis will show the linkages of social security annual budget, financial expansion of labor force coverage, and economic growth. All calculations and collected data are in Appendix C

4.2.1. Step by Step Procedure and Analysis

4.2.1.1 Calculating National Savings (NS)

$$Y = C + S + T$$

$$Y = \text{Total GDP}$$

$$C = \text{Private Consumption in Domestic Markets}$$

$$S = \text{National Savings}$$

$$T = \text{Government Tax Revenue}$$

$$Y - (C + T) = S$$

- Savings was chosen as a proxy for capital accumulation
- First is to calculate the total savings amount of Thailand, which will be used as a proxy to be correlated with the Social Security and Welfare Budget (SSWB). The dataset used for this and calculations are in Appendix C

4.2.1.2. Correlation of NS and SSWB

- Now that NS has been established as the proxy for CA, a positive correlation has to be made with SSWB. SSWB on a theoretical basis will act as the variable needed to proving the capability of CA, while the SSWB will show the amount currently available in the system

$$\text{Correlation} = 0.94311 = 94.311\%$$

- The level of correlation calculated is extremely high with due consideration to statistical analysis, but from the practical usage of the model, it is adequate

4.2.1.3. Correlation of SSWB and Ttl GDP

- Showing that NS has high correlation with SSWB, the next step is to show that there exists a relationship with Total GDP, since Total GDP is used as the proxy for the regression model of $Dy = (y, y^*)$

$$\text{Correlation} = 0.9362 = 93.62\%$$

- This level of correlation also shows that when SSWB increases so will Total GDP and vice versa. Same goes for NS to SSWB to Total GDP where they are all positively correlated with each other
- Having such a high value of correlation between these variables makes it impossible for Total GDP to become the dependent variable because it may lead to multicollinearity and/or autocorrelation
 - Therefore the use of Percentage change of Total GDP was employed

4.2.1.4. Output Interpretation and Hypothesis Testing (Thailand and Singapore)

Table 8: Thailand Raw Regression Data Output

Thailand	Model I	Model II	Model III	Model IV	Model V	Model VI
Intercept	-156.9886	-120.0548	-102.9402	-118.4412	-156.6039	-101.7434
<i>T-Statistics</i>	<i>-1.5661</i>	<i>-1.2840</i>	<i>-1.3982</i>	<i>-1.1687</i>	<i>-1.4991</i>	<i>-1.2829</i>
LnGDP/Cap	28.4272	15.7425	15.5516	30.5359	27.7927	23.9408
<i>T-Statistics</i>	<i>3.1097</i>	<i>1.5231</i>	<i>2.1356</i>	<i>3.4110</i>	<i>2.8202</i>	<i>2.0922</i>
LnTtlGovExp	-20.8868					
<i>T-Statistics</i>	<i>-4.3389</i>					
LnHlthExp		-21.5696				6.7958
<i>T-Statistics</i>		<i>-2.1828</i>				<i>0.5058</i>
LnEduExp			-31.1150			-42.1098
<i>T-Statistics</i>			<i>-4.5987</i>			<i>-3.0246</i>
LnSSWB				9.2719		10.9501
<i>T-Statistics</i>				<i>1.2700</i>		<i>1.3197</i>
LnNSDExp					-2.1797	6.6525
<i>T-Statistics</i>					<i>-0.4422</i>	<i>1.5660</i>

LnOtrExp		6.7901	18.6928	-32.5825	-17.7652	-3.3666
<i>T-Statistics</i>		0.5046	2.0245	-3.2337	-1.7292	-0.1903
Intl Opn	20.7015	24.9422	14.4445	7.8342	16.3162	21.6324
<i>T-Statistics</i>	1.6395	2.1391	1.5819	0.5212	0.7638	1.2909
Infl Rate	0.1454	0.1403	-0.0616	0.3586	0.1825	-0.0915
<i>T-Statistics</i>	0.2719	0.2887	-0.1604	0.6669	0.3167	-0.2168
Nt Brt	0.3539	0.1525	0.0501	0.3418	0.2951	0.3633
<i>T-Statistics</i>	1.2558	0.5558	0.2329	1.2542	0.8097	1.1810
Adjusted R Square	0.5611	0.6376	0.7774	0.5902	0.5335	0.7713
Standard Error	3.9687	3.6064	2.8263	3.8350	4.0917	2.8652
F - Statistics	6.1143	6.8650	12.6435	5.8008	4.8122	8.4930
# of Observations	20	20	20	20	20	20

The table above shows Thailand's regression models I-VI. Testing the overall significance and validity of each model shows that MI to MVI all shows promising results for the model as a whole by using F-Test and Significance F of under 0.005. A concerning part of these regressions is MI through MIV shows that the expenditure variables places in the model all show negative valued coefficients, which means they are moving in the opposite direction of the dependent variable, that is percentage change of total GDP. In Model VI, the exclusion of Total Government Expenditures was done so to see each expenditure variable represented and its magnitude of each coefficient. This was done to see the impact each variable had on the dependent variable (% change of total GDP), and whether or not such variables as SSWB, EDU, Hlth, NSD, and OTR had any positive effects on the model as a whole. As can be observed in the table above, Model VI shows a positive significance towards the explanatory variables chosen for this regression. The negative values of expenditure variables associated with MI to MV could be associated with its statistical inability to properly explain the dependent variable, the number of observations, or the magnitude in percentage change fluctuations experienced with total GDP over 20 years. Once combined in MVI, with the exception of LnEduExp and LnOtrExp, shows that by adding more explanatory variables to the model, it has a higher capability of explaining its relationships with the dependent variable.

Table 9: Singapore Raw Regression Output Data

Singapore	Model I	Model II	Model III	Model IV	Model V
Intercept	-169.5762	-183.8364	-68.2547	-153.6504	-96.5713
<i>T-Statistics</i>	-1.0338	-0.9018	-0.2978	-0.7965	-0.3380
LnGDP/Cap	22.7692	23.4961	17.2964	22.4732	18.5635
<i>T-Statistics</i>	1.3469	1.2827	0.9002	1.2655	0.8482
LnTtlGovExp	-14.6968				
<i>T-Statistics</i>	-0.9486				
LnHlthExp		0.1929			2.5226
<i>T-Statistics</i>		0.0151			0.1722
LnEduExp			-16.6512		-17.6374
<i>T-Statistics</i>			-0.8698		-0.7530
LnNtnlDevl				-2.2521	0.6297
<i>T-Statistics</i>				-0.2325	0.0547
LnOtrExp		-14.6981	-2.6242	-14.6081	-3.3638
<i>T-Statistics</i>		-0.8792	-0.1501	2.0149	-0.1835
Intl Opn	9.9127	9.9699	9.2948	10.1944	9.2936
<i>T-Statistics</i>	2.1467	2.0375	1.9358	-0.9204	1.6147
Infl Rate	2.5312	2.4942	2.7654	2.7332	2.6236
<i>T-Statistics</i>	2.1712	1.9725	2.2327	1.7231	1.4561
Nt Brt	0.2739	0.3176	-0.0172	0.2244	0.0877
<i>T-Statistics</i>	0.6652	0.4964	-0.0291	0.4524	0.1058
Adjusted R Square	0.4705	0.4202	0.4460	0.4199	0.3117
Standard Error	4.4739	4.6814	4.5761	4.6826	5.1009
F-Statistics	3.8434	2.9330	3.1471	2.9306	1.9057
# of Observations	16	16	16	16	16

To complete the international comparative study, formulating models that matches Thailand and Singapore's explanatory variables provided a challenge, but none the less proved significant results, even though the variables in some areas mimic each other. Unlike Thailand's Social Security and Welfare Budget, which is part of government expenditure, Singapore's Central Provident Fund is an independent organization, that isn't funded by the state; however its activities are monitored by the government. This is why Singapore doesn't have the explanatory variable of Social Security. National Development addresses government policy towards infrastructure, community and recreational development. By exerting the same methods used on

Thailand, but omitting social security expenditures, the results of the regression on Singapore, is totally opposite of Thailand. The significance of the model at 5%, with critical T-values to test each explanatory variable, and F-statistics for the wholeness of the model itself, yields different results, causing the null hypothesis to be accepted in Model V. This is interesting as when compared to Thailand, once all the expenditure variables were combined together, statistically, more explanatory variables should result in higher level of significance. However the opposite occurred, where MV shows the regression to show insignificance at the 5% level. Models MI to MIV all show significance, but each expenditure variable is also negative, similar to Thailand. Model formulation for Singapore may be slightly different from Thailand due to only 16 observations. But another explanation could be the level of dependency the economy has on government expenditures as a whole. High government expenditures on human and capital developments should have a positive correlation with output capability of the economy reflected by Total GDP. If expenditures are not required, because institutions and infrastructures are already in place already maintain sustainability, or it is not enough to affect growth of the country as reflected in the regression data output above. The reason for formulating various number of models in both tables above, was to show the individual effects of the explanatory coefficients, and their ability to represent the model. By providing different model formulations, and the effects that statistics has on the analysis and implications of each model.