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Structural Modelling for North Cyprus' Economic Growth

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Abstract

This study aim is to explain relationship between the economic growth, consumption and the governmental investment spending with using yearly North Cyprus data between the period of 1985 and 2008. The available data from State Planning Organization which is an agent of Prime Ministry of Turkish Republic of Northern Cyprus (TRNC) is most of the data ending in 2008. The model fit the data well enough and the marks are consistent with the equilibrium relationship derived from the neo-classical economic theory that is increases both in whether public or private consumption and investment cause GDP growth by some multiple. Theoretically, if a country government spending more it is possible to bring more economic growth. Thus, it is possible to North Cyprus to reaching a high level of economic growth, so governments are not able to accomplish their promises completely that they gave before elections. Fundamentally, a country income could be increased by raising the public and the private investment and consumption. However, the precise amount of such growth by consumption and investment that desire by government to serve the best to the country, this can only reached by if the necessary parameters are identified and counted which they are provided the desired level of economic growth; as a result, in this study this done by applied econometric analysis of economic growth. This study aim is to summarize a model for incorporate a forecast with a structural model. The method of forecast is to combine the future participation from the data that consist with the model. It assumed that the model is enough for provide a future forecast for economic growth and this would be the case for this study. The method for generating a model trusted on the short data period. Because, it would be assumed that short data provide more consisted and robust result for Forecast of economic growth.

Jel Classification Numbers: C51, E27

Keywords: Short frequency indicators, Forecasts

Introduction

A model of forecast use the decision that can be outperformed forecast with a structural real time data. Factors of economic events have important effects on the forecasts. The practice of model preparation is based on the set of data. The most cases, to solve a practical problem it shall be translated into mathematical symbol and applied necessary econometrics to have a model. This is called model preparation. Latter, there will be a simple technique and a concept to illustrate the work of a situation. The solution to an equation is not the solution to the pose problem. Nevertheless, the equation shows how they are helpful to solve the problem. The practical way for solving a problem is to whether using mathematical formation to clarify the relationship or institute with the technique.

This study serves a foundation to start with the analysis of perfect and imperfect economy. Existing economies confirmed the conclusion that set of economic failures are exists. Some of these situations may also involve government failures. Now, it seems to be appropriate and necessary to provide a statement of argument to and against for market and government failures, preliminary to any discussion of the techniques of intervention. In this study, this statement requires to discuss broadly for determine the necessary economic policies.

Economic policy analysis examines the decision of economic units about what produce and consume. These decisions are taken with the objectives that objectives represent criteria of the possible situations in that ordering the agents to find themselves properly. According to neoclassical theory, the consumers choose what they want to consume. The combination of products of goods which consumers choose maximise their utility, while producers choose the quantity of output that maximise their profit. Economic policy analysis usually examine these attitudes of public; consumers and producers which they are collectively attributed to the same purposes for wealth maximization and the governments choices is to examine of these public behaviours, namely; government decision according to the level of expenditure and consumption. The analysis enter to the modelling the economic event for find the best model with low frequency data. At most of the studies of economic policy have hypothesis that is regards to the level of government expenditure and consumption that are considered to capture the indication of what are the changes there might be happened in the individual economic units or in the whole economy to find the best economic equilibrium. First, this study tried to understand the serving process by which the governments searching to makes choices or giving decision about its roles and objectives of institutions and coming future events of economic choices. Second, the level of analysis concerns the various existence and prospective economic structures of government and the market. In the economical analysis to these institutions and markets are consider the natural behaviour of agents. The scope of each is given to a possible answer to address the questions about the extent of government objects is to necessary for these institutions and to reinforce the market to become stable and cancelation of the black economies exist. Beyond the specific cases of government and the markets, a more fundamental principle to the different categories of

economic policies of government is to necessary with control the institutions and the markets. If it is failed to provide the necessary objectives to serves public, they have seriously damaging results after the implication of wrong decisions, the government becomes incompetant to perform its policies with its actions that are completely unsuccessful to serve the public needs and aims. After all, the government official status with the title to continuous its relative importance or seniority in governing the country, especially forcing the markets to and serving to agents become insignificant from the eyes of the all agents and their perception for future might be the point the change the regime. Consequently, wrong decisions and its results by govern that is perceived from out of the government referred to a deposition and revise objectives.

The General Equilibrium of the Economy of North Cyprus and the Common Status

The main characteristic of the economy of North Cyprus is present close market economy. In the past, it's economy represented a nonstable economic growth path, so this caused by being an island and till having some political, social and economic restrictions outside from the island and also, the unresolved conflict of peace negotiations between south and north side, its create dependency for North Cyprus to Turkey; in the manner of dependency, both side signed serious agreements to have economic and political relations to helped the North Cyprus economy is rank to continuous that has the least of efficiently working business and economic level to serve people of North Cyprus to continuously living with a least level of standard that the other people out of island have the same level of living-standard at least. The aim of this study is determine the forces that generate the prospective growth rate. The purpose is here, of course, assumed that helping the country to have high level of growth path which is bringing the necessary or gradually the high level of living standard. Regarding the economic wealth part, the aids provided from the related authorities' purpose is to help country to continuous preserve the past high level of economic growth now. However, the North Cyprus obligation is to bring its statue to beater hall, it is not possible to following the same policy that the government pursue till today to denomination of growth with aids. Therefore, this subject that is investigate here choiced bye and followed with the generous reference of Diabold (1998).

For the negotiation issue, the most significant problem is to being ensured that the North Cyprus people atleast have the same living standard as the rest of the world have. Even though, the question is still that if the North Cyprus side integrated to the European Union, what would be happen? Being a member to EU community which is discussed till today, there is no final conclude aggrement between two side. Therefore, the aim of the European Union (EU) and United Nations (UN) attempts and the negotiations is implement the necessary approaches that might be necessary to adopt the North side to the EU in the furture.

Economic Theoretical Framework of the Study

In theory, almost all country produce goods and services for provide economic wealth and prosperity. These goods and services have been categories that a country people might be use to achieve a positive wealth; being, having self-respect in nation and international area, be respected from the other nations and elucidate its respect to the other nation in the manner of any relationship, and developed the country to distribute the created wealth properly to the nation and development of the existing community in the country to show the advantage the received by the people, consent them to have a share from crated positive wealth from the produced goods and services which is generated positive wealth in the country. That is why, to give decision to distribute wealth correctly to the public and in order to represent the objective criteria for give best decision to the possible situations with the specific objectives that the economic agents might find themselves in their minds. To give the best decision, agents need to have without hesitation, it could be say that they need the right, accurate and enough information that all agents such as individuals, households, economic units and governments are using those information to give proper decisions. Related with the subject, when the necessary economic agents have the best knowledge, they have the best decisions for any economic events that can be create economic wealth. It should be understood that when the agents with best decision could be produce the best results for any situations. Therefore, the question in mind might be that, could be the best decision by the government regards to distribute the available nation income to the public is give decision about the level of the living standard in the country. There might be only one answer that could be given here, that is comes from the plan of the central government decides for nation's future prospects. That is why, this study trusts the only serious source of governmental institute data for demonstrate and investigate the factors that oblige the economic growth efficiently at a level that the people continuous their living without having any prosperity. For planning the future of a country by government should be manage its own scarce sources to generate the necessary economic wealth to efficiently distribute. It is important to note that here, trusting just its own capital by the government to generate the necessary economic growth, in the case of North Cyprus, sometime it is too difficult to government to bring the necessary needs to the public with its own capital till today. Because, if a island country don't have similar sources like big countries but needs to developed the country, don't have any choices to receive aids from outside till it will be enough to manage its own capital. This is means that the aim to study should be the course of North Cyprus to address the question with an answer that how to reached the level that is own capital to provide high level of living standard.

In the past, the growth trend of the economy of the North Cyprus increased gradually and in the future, it's expected that the image of the economic growth that recoded in the past its represented the same trend. The growth rates of the next years expect to increase with the same inclination. It is imperative that to use contemporary methods to examine the relation with the forces that drive high level of growth that generates wealth for its government and the reaction of

spending and consumption. Although, the anticipate the course of the future growth of the North Cyprus is to continuous and admire to international area. Consequently, these justifications till now highlight the essence of courage this study to contribute the existing North Cyprus studies in advance. Also, one of the other aims of this study is to supply a ground for future attempts and provide a guide in this direction to be success in this field.

The governments have specialized knowledge that have to know how can be manage in the best way the country. The question is how to interpret the existing information to provide a future prospect. The extensively use of reliable data by the government to guide a country for bring wealth; firstly, needed to do is interpret the magnitude of existing information in order to understand and secondly categorize them with their importunacy to uses accurately. The best knowledge for this study is to conceive the first attempt to serve a ground to the existing North Cyprus studies to solve the conflict that is presented in the economic growth.

Scientist asks question for give an answer to contribute the existing literature. Therefore, to contribute discipline, economic research does not address any answer to the related subject to just extend the existing findings without any policy implications for that question. When the wealth of a nation is concern here, it is necessary to serve the needs and govern community with the respect of authorities' objectives. The level of constitutional choices by the central government assumed to reach with the objectives of state planning organization that serve consequently to the public objectives. Public assessments of countries own events that are represent with the common situations about the economy, this is the only way to stylize an objectives with their respective. These assessments are, of course, drives from the individual preferences and this goes to represent the country preferences at all. This is constituted the foundation for government to decide the necessary objective that planned to serve public. Here, the latter concern of this scope is to detail the national possible situations as whole, rather than to trust individuals' preferences only the way to reach to final best decision. The economic policy is a discipline for identify the relevant preferences and objectives with the necessary tools and techniques that are used in model preparation. Studying in this way to have the best models and their results with its implications serves to governments to drive economic policies and its actions to finalize the goals and objectives for country well being. Conducting its economic policies that is follows the preferences and objectives; derived from households, individuals, institutions and the other agents' collective preferences and aims; is to increase at most their wealth. This is giving responsibility to government; because being government of course has several of meanings; by to finalize its objectives and oriented policies regarding with the preferences that arrived from separately. The economic policy studies are complemented by the econometric studies with investigation of the attitude of an economic system and the related agents. If the subject is ordering the preferences, Acocella (2000) state that if we choose to construct an indirect social ordering, we must tackle the problem of how to aggregate individual preferences when they differ.

Literature Review

With the best knowledge, this study attempt is the first for analyzing the economic growth modelling. Of course, there are many studies that work on the course of North Cyprus. Although, this study that economic growth and its point forecast is the first attempt with stylizes an economic growth model. The best knowledge for referee just this study estimate the best fit model and point forecast the North Cyprus' economic growth rate for future values.

The Methodology and results of the Study

As long as a econometric model preparation had join to generate a forecast and the policy which is derived from the results that is figure out, always forecast studies use the past data for incorporate projections for future that is provide suggestions and assumed to be used source of information for authorities could be use to give decisions. The forecasts are expanded to anticipate the future with the model equations to investigate the problem case. This could be solved by specialized models that can be guided by the expertise to study the course of a problem case is related with the questions. That is why, the approaches that addressed here is to show a simple method for search the economic growth of North Cyprus with the econometric time series methods for explain past growth record and attempt for a point forecast for future with near past data to have the a accurate estimates for future.

The model selection criterion is that find the parsimonious model that fit the data. This is the way to choose model by to construct the parsimony model to explain the real GDP growth of North Cyprus. The model just works with the growth rate and its lag components and that is the reason why is not to losing the power of the growth rate with other variables. When adding except of its lag variables, other variables, the concern of the model is changing why, because you need to also considered the components own features, because just only the GDP is represent prosperity of a country. The concern in this study is to analyzed the wealth of a nation that is the reason why if there is another variables in the model, it is necessary to investigate their effects on the GDP. For example, consumption by the government includes the investment spending that is related with its program of authority that could be change by elections. If we assume that the consumption or investments spending not change over the study period, we make mistake and we misleading the results from model. To have best, this study analyzed the growth prospect of a country, it might be its own to concern. Because it is believed that GDP and lag contains all necessary information. That is why, in this study to find the best fit model, just the GDP and its components are used. It assumed that, this explanation is giving answer for all those questions for model selection.

In this section, the macroeconomic modelling are discussed to analyzed an economic growth model with using short time horizon to accomplished an economic model to explain the growth expansion in the North Cyprus case. The econometric methodology used to analyzed the past

records of growth and propose models with model selection process. After the model is state, it is used to predict the point forecast of real economic growth rates. The word of forecast means also prediction to the future values of time series. Brooks (2008) state that prediction of forecasting simply means attempts to determine the value that a series is likely to take. Point forecast values are important in this subject, because it is helpful for agents to know the future values as like supervise for them. The data set that is observed in this study is short time and yearly basis. First of all, the data of real growth rate analyzed to understand the past data properties with Box-Jenkins model selection procedure to estimate best fit model of data and find out the specification help to find the best fitted model. After all, the selected model used to estimate future point forecasts. Moreover, it is important to estimate the accuracy of selected model; therefore, the estimated values for sample period compared with those values of past data. This provides an encouragement for whether the selected model is accurate for point forecast or not. This study proposes evidences for point forecast with using time series techniques. Time series forecast occupy to testing the point forecast to the future values of economic growth. Firstly, the past data and its estimation values and residuals from model to continuous for forecast steps. In this study, it could be provide a point estimate that is the former analyzed model equation used. Of course, there is another method for forecasting to dependent variable. But this study just used point estimate method. As always to having accurate result, it shall be use short time horizon. The point estimate forecast has steps and first the past data analyzed; and after the selected model used to generate future point estimate and residual. When the point estimate and residual analyzed again it's used to decide the accuracy of selected model. After all, the same model estimates for future values and its residuals use to find out a value with the forecast estimates accuracy and it should be close to zero, it is the way to be ensured. Also, this represent as a result for checking the robustness of the model.

$$y_{t+1} = f(y_t, y_{t-1}, \text{residual}) \quad (1)$$

The procedure to decide the accuracy of a model is to compare the past data y_t and estimated future values that calculated from model. This is the way to ensure about the selected model for the past period. For future forecast period to understand whether estimates are accurately will be enough is to have a value of close to zero. Of course, to expanding the estimation of forecast too far from the last actual value period, It is directly diluted the result of the models estimation. That is why, four periods forecasts are used to assess the accuracy. For example the available data from state planning associated prove till the year of 2008, and in this study for point forecast is expanded to 2012 with the best fitted model. It assumed that the generated point estimates in future time line and long term forecast is giving average values of observe time series for future from past.

$$E(y_{t+1}, e_{t+1}) = c + \beta_1 y_t + \beta_2 y_{t-1} + \dots + e_{t+1} \quad (2)$$

The model form represent both autoregressive and moving average coefficient and the steps include 1,2,....., s step to forward future estimates and forecasts for y at time t+1,t+2.....+s are used to have $y_t, y_{t-1} \dots$ and e_{t+1}, e_{t+1} are known. The forecast model specification is;

$$y_{t+1} = c + \beta_1 y_t + \beta_2 y_{t-1} + \dots + e_{t+1} \quad (3)$$

This study selected model with the box-Jenkins steps is

$$d(\text{rgdp}) = \beta_1(\text{rgdp}(-1)) + \beta_2(\text{MA}(2)) \quad (4)$$

as a result with coefficients

$$d(\text{rgdp}) = 0.9511*d(\text{rgdp}(-1)) + 2.5569*\text{MA}(-2) \quad (5)$$

(5.9513)*** (2.7738)*

$$R^2 = 0.8197, \quad \text{SSR} = 2.5499 \text{ and } \text{DW} = 1.6594$$

The point forecasts for future economic growth are -4,386 %, -0.919%, 5.280%, 12.691% for the years 2009, 2010, 2011, 2012, respectively.

And point forecast estimation for t+1 is equal to $y_{t+1} + 0.5 e_{t+1}$ and the result is for testing the forecast proponent is -0.010482 which is close to zero. Consequently, this is meaning the point forecasts are accurately right.

The way to find the best fitted model (ARMA) is to use the Box-Jenkins steps, namely; identification, estimation and diagnostic check. First step include deciding the order lag for model to require the accurate model. Of course, with acf and pacf from correlogram and graphical view provide necessary information about the time series lag structure. The second way to conclude lag structure is using a AR(1) technique to know with residual to the maximum lag length. Last step is to have whether the specified model is accurate. Although, first the large model run out and then finding the best fitted model with the other models for using AIC, SBC, and acf, pacf or Ljung-Box test¹. The diagnostic test for specified model in selection process is to using only autocorrelation test. This is the usual way to find parsimonious model and this is the way to find the best in all alternative models. However, the selected parsimonious in this study is shown above. Unfortunately, in this study just one model shown.

¹ Enders (2004) stated that AIC and SBC parameters are used to select parsimonious model.

Conclusion

The aim of this study is to analyze the course of North Cyprus' economic growth with the short time horizon for modelling an economic growth equation and provide point forecast for future. To decide the best fitted model, the box-Jenkins methodology used to be choosing the best model. After all, the parsimonious model selected with the methodology and its results represents above. For the year 2011, the economic growth rate found to be approximately 5% as expected. The model constitute with ARMA(1,2) and the selected model robustness check with the test result which is close to zero like -0.01. Consequently, It could be say that the model have two components; one is its lagged variable and the other is moving average. The study of the course of North Cyprus economic growth represent a ARMA(1,2) model and it is important state that here, North Cyprus like the other countries has been affected by the trend in global market. The final conclude mark could be that North Cyprus economic growth model shown that it's not too much closed economy; that is why, consumption and investment spending with or without capital aids are effects the economic growth. For further steps, it could be a guide for North Cyprus to conclude after the year 2011, has been expected to grow by approximately 13%. For a policy implication, North Cyprus needs to manage its own capital and also the aids to accomplish the target economic growth rate. Although, if a country manage own nation wealth efficiently, the result could be succeed. But, for North Cyprus case are differ, because if a country won't chose it beater hall with its prior preferences and objectives depends on nation wealth, most probably its future prospect mislead.

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