

State Gross Domestic Product: Factors Influencing the Economic Growth of Negeri Sembilan

Lim Kok Hwa

Assistant director of Economic Indicators Division, Department of Statistics Malaysia

Kon Mee Hwa

Principal assistant director of National Accounts Statistics Division, Department of Statistics Malaysia.

Abstract

The purpose of this article is to study the factors influencing economic growth of Negeri Sembilan. The data used in this paper focuses on regional economic growth rate of State Gross Domestic Product (GDP), particularly in the state of Negeri Sembilan. The growth of twelve years' time series data for GDP by State from year 2005 to 2017 were employed in this study. This paper demonstrates the correlation and qualitative analysis of statistics data obtaining from the Department of Statistics Malaysia using E-Views statistics analytical program. In the first phase of the study, the correlation and relationship among Negeri Sembilan's GDP and the main economic components, i.e. agriculture, mining and quarrying, manufacturing, construction, services and import duties, were all applied in the Least Square Method analysis. Then, the second phase analysis focuses on the significant variables with other related variables which consist of the consumer price index, unemployment rate and interest rate. The empirical findings generated three linear econometric models and indicated economic indicators that are correlated in influencing the growth of GDP in Negeri Sembilan. This paper is initiated by the statisticians in the Department of Statistics Malaysia and hope to be served as a guideline to young statisticians as well as the junior analyst in the field of statistical analysis using time series of GDP data at regional level, particularly at state level.

Keywords: Negeri Sembilan, regional economic growth, State Gross Domestic Product; economic growth, E-Views, correlation analysis.

Introduction

Negeri Sembilan is one of Malaysia's thirteen states located at 2°45'N 102°15'E coordinates on the western coast of Peninsular Malaysia. It covers 6,665 square kilometres land area of Malaysia with seven (7) districts namely Seremban, Port Dickson, Jempol, Jelebu, Kuala Pilah, Rembau and Tampin. The population in Negeri Sembilan is 1.128 million which is equal to 3.5% of total population in Malaysia as of year 2017. The Gross Domestic Product (GDP) per capita for Negeri Sembilan was RM 39,763 in 2017. Furthermore, the economic growth in Negeri Sembilan was also influenced with the support from various high impact development projects implemented, such as Economic Transformation Program (ETP), New Key Economic Area (NKEA), and Liberalisation in the 10th Malaysia Plan towards Malaysia Vision 2020 at national level.

The objective of this paper is to study factors that influencing the economic growth and to identify the significant economic activities that performed as the major contributor towards the state economy in Negeri Sembilan. This study also aims to present some endogenous analysis of statistical data with economic growth in Negeri Sembilan as well as to provide exposure to the regional economic data users particularly the junior

statisticians and analysts. In this paper, the position of GDP per Capita by State in Malaysia was presented as an initial illustration of economic analysis. The indicators of economic factors in Negeri Sembilan are illustrated via percentage growth shown by specific statistical indicators. Firstly, the relationship among State Gross Domestic Product (GDP) with the five (5) economic main sectors, i.e. agriculture, mining & quarrying, manufacturing, constructions and services as well as import duties were being analysed. Analysis has been applied on the statistical indicators that measure regional economic growth to determine the causal relationship between state GDP and the selected economic indicators in Negeri Sembilan. Then, further analysis focuses on the significant sectors and the growth of other economic indicators that directly impact the economic growth in Negeri Sembilan was implemented, i.e. consumer price index, unemployment rate and interest rate.

This article is divided into several sections. Introduction and objective of the study were stated in the first section. The second section focuses on the review of literatures and methodology of the study, with the concepts and definitions explanation for economy activities based on Malaysia Standard Industrial Classification (MSIC) 2008 of the main economic activities studied in this paper. Then, third section goes beyond the analysis findings on the economic position of GDP per capita by state in Malaysia and followed by two phases of the econometric model analysis using E-Views statistical tools. In addition, analysis was done to identify the relationship between GDP at Malaysia level and GDP at Negeri Sembilan level. The fifth section contains conclusions and recommendations for future regional economic studies.

Literature Review

Dhiraj J., K. Sanal N. and Vaishali Jain (2015) investigate the impact of various macro-economic factors on GDP components. The authors used the secondary data for the period 2000-2001 to 2011-2012. Data was collected from the Economic survey of India and Reserve bank of India bulletins. The dependent variable in this study was GDP components and was expressed as a function of various macroeconomic measures of growth. These variables involved were FDI, Net FII equity, Net FII debt, Import and Export. This study used multiple regression analysis to develop the relationship among the relevant components. In the analysis shows significant affect of FDI, Net FII equity and Import on GDP components but no significant affect of Net FII debt on GDP components. The research also indicated that there was no significant affect of Export on GDP components for Manufacturing and Industry while Service had a significant affect. In the study, the impact of different macro-economic factors on GDP components had been analysed, and the components that need to be taken into the considerations were being highlighted for future policy design.

Besides, Eatzaz A. and Aisha M. (2009) analyses the role of financial sector development in economic growth for domestic and foreign capital accumulation using a panel data set for a total of 35 developing countries over the period of 1970-2003. Finding from this study shown financial sector development affects GDP per capita mainly through its role in efficient resource allocation, rather than its effects on capital accumulation. It is the domestic rather than foreign capital accumulation that instrumental in increasing output per worker, and hence managed to promote economic growth in the long run of the economy. In addition, the empirical study concluded that domestic capital plays a significant role as a complementary factor for attracting foreign capital.

Zanib J. and Kashif M. (2016) analyze the impact of export composition on economic growth in South Asian countries (i.e. Bangladesh, India, Pakistan, and Sri Lanka) from year 1990 to 2013. This study analyzed vertical and horizontal export diversification and their relation with economic growth. The authors highlighted export composition, vertical and horizontal exports diversification are augmented in Cobb-Douglas production function in three (3) models respectively. Herfindal index is used for measuring the export composition that reveals export diversification exists in South Asian countries. Results from the study showed export composition and vertical export diversification have inverted U relationship with economic growth, while horizontal export diversification has U shape relationship with economic growth. The authors found that economy moving from primary exports to manufacture exports had linked with economic growth via externalities of learning by doing as vertical exports are positively related with GDP.

Petrakos G., Kallioras D. and Anagnostou A. (2007) The opening of national borders, together with the rapid technological and scientific progress, has exposed regional economies to an extremely competitive, free-market, integrated economic environment, affecting their patterns of development. The paper develops a generalized econometric model for the investigation of the determinants of regional economic growth in 249 EU NUTS II regions, for the period 1990-2003.

Fauzi H. and Soo Y.Y. (2012) examined the contribution of economic sectors to economic growth in China and India by using time series data from 1978 to 2007. The correlation analysis indicated that each agriculture, manufacturing and services sectors has strong, positive and significant linear relationship with economic growth in both countries. The results show that manufacturing sector contributes the highest to China's economic while services sector is the highest contributor to India's economic growth.

David L. K., James E. P., Mildred E. W. (2007) highlighted the importance of service industries, especially local services and their role in inducing economic growth, requires a measure that includes both forward and backward linkages to empirically account for the complete role of an industry. The paper demonstrate how the input-output-based method of hypothetical extraction can more appropriately measure the economic linkage of a broader range of contemporary economic sectors (including services) than traditional, final demand-induced, backward-linkage multipliers. The analysis provides empirical support for greater economic development attention toward local services.

M. Idham M. R., Norazira M. A. and Noor Junaini A. Y. (2015) describe the contribution of the agricultural production to the economic growth spanning the year 1977-2006. The study discussed factors that have affected productivity trends experienced by the agricultural sector in Malaysia. The study also argued that a new paradigm is needed that recognizes agricultural 's multiple functions for development in triggering economic growth, reducing poverty, narrowing income disparities, providing food security and delivering environmental services.

The Data

The compilation of comprehensive national economic statistics by the Department of Statistics Malaysia has adopted the recommendations of System of National Accounts (SNA) 1993 and followed by the latest version of SNA 2008. In Malaysia, the state GDP at constant prices with base year 2010=100 was compiled based on production approach which provides the value added of economic activities by each of the 13 States.

This study had utilised twelve (12) years of statistics with annual time series data from year 2005 to year 2017 in performing the statistical analysis. The source of data were obtained from the Annual GDP

2015 report, GDP by State 2005-2013 report as well as the statistics for the period of 2010-2017, Consumer Price Index (CPI) and Labour Force Survey report that published by the Department of Statistics Malaysia. The annual growth of each economy indicators were being calculated after data extraction. On the other hand, time series data on the interest rate for the same period of time which obtained from Bank Negara Malaysia (BNM) were also employed in this study.

The annual growth of each relevant time series statistics indicators from year 2006 to 2017 were demonstrated as in Appendix A, namely the growth of Negeri Sembilan's economic indicators 2006 to 2017. These data were used as an input to the E-Views program in running the statistical model. The economic indicators analysis in this study involved are GDP per capita by state at current price, GDP at constant price, agriculture, mining and quarrying, manufacturing, construction, services, import duties, consumer price index, unemployment rate, interest rate and the amount of capital investment development project approved in the state of Negeri Sembilan.

Methodology

This section described briefly about the concepts and statistical techniques applied in the GDP data analysis for economic growth in Negeri Sembilan. In the first phase, this paper studied the correlation and relationship among Negeri Sembilan's GDP with the main economic components, i.e. agriculture, mining and quarrying, manufacturing, construction, services and import duties, were all applied in the Least Square Method analysis. Then, the second phase of analysis focuses on the significant variables with other related variables which consist of the consumer price index, unemployment rate and interest rate. In addition, this study has utilized Least Squares Analysis, Ordinary Correlations Analysis, descriptive analysis and linear relationship econometric model in identify the significant economic indicators to the economy. Finally, the analysis of capital investment development project approved by the Malaysian Investment Development Authority (MIDA) from year 2005 to 2015 is also shown in the line chart to support the significance of regional economic development in Negeri Sembilan.

Economic growth is a measure of the value of output of goods and services within a time period while economic development is a measure on welfare, investment, and development in a society. The basic concepts and definitions and the source of references in this study are listed as below:

- i. **Gross Domestic Product (GDP)** is the total value of all goods and services produced after deducting the cost of goods and services used in the process of production. It is defined as "an aggregate measure of production that is equal to the sum of gross values added of all resident, institutional units engaged in production activities" (OECD, 2002).
- ii. **Agriculture** includes the exploitation activities of vegetable and animal natural resources, comprising the activities of growing crops, raising and breeding of animals, harvesting of timber and other plants, animals or animal products from a farm or their natural habitats. It also includes crops and animal production, foresting and logging, hunting and related service activities. (MSIC, 2008)

- iii. **Mining and quarrying** are extraction activities from a mine or quarry, also includes dredging of alluvial deposits, rock crushing and the use of salt marshes. The products are used most notably in construction (e.g. sands, and stones), manufacture of materials (e.g. clay, gypsum and calcium) and manufacture of chemicals, etc. (MSIC, 2008)
- iv. **Manufacturing** includes the physical or chemical transformation of materials, substances, or components into new products. (MSIC, 2008)
- v. **Construction** includes general and specialised construction activities for buildings and civil engineering works. General construction is the construction of dwellings, office buildings, stores and farm buildings. The construction of civil engineering works includes motorways, streets, bridges, tunnels, railways, airfields, harbors, irrigation systems, sewerage systems, industrial and sports facilities, pipelines, electric lines, etc. (MSIC, 2008)
- vi. **Services** are output produced by production activity that changes in the conditions of the consuming units, or facilitates the exchange of products. (SNA, 2008)

In line with the objective of this study and the available time series data of State's GDP in Malaysia, a general econometrics model explains direct relationship of the state GDP as dependent variable Y, and X for economic activities as below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots + \beta_n X_n, \text{ where } i = 1 \dots n$$

The analysis begins with an examination of the coefficients significant test for each sector toward state GDP in Negeri Sembilan. The test of significance for β_i or α_i was carried out with Least Squares Method to obtain a specific econometrics model for state GDP Negeri Sembilan. Time series data used for this study is obtained from the growth of state GDP Negeri Sembilan by economic activities from year 2006 to 2017 obtained from the Department of Statistics, Malaysia. The modified linear econometrics model for the growth of the five economic main sectors and import duties as the influencing factors of GDP Negeri Sembilan have been developed as below:

$$\text{GDP}_{\text{Negeri Sembilan}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6; \text{ where,}$$

The first phase with value of coefficients (β_i),

- Y = GDP Negeri Sembilan;
- X₁ = Agriculture (AGR);
- X₂ = Mining and Quarrying (MNQ);
- X₃ = Manufacturing (MFG);
- X₄ = Construction (CON);
- X₅ = Services (SER);
- X₆ = Import Duties (IMD);

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The second phase with value of coefficients (α_i),

Y = GDP Negeri Sembilan;
X₁ = Agriculture (AGR);
X₂ = Manufacturing (MFG);
X₃ = Services (SER);
X₄ = Consumer Price Index (CPI);
X₅ = Unemployment Rate (UEM);
X₆ = Interest Rate (INT);

and simple linear model relationship,

Y = GDP Malaysia
X₁ = GDP Negeri Sembilan.

The main statistical tool applied for data analysis on Negeri Sembilan economic performance in this study is E-Views program. E-Views program is comprehensive and user friendly that managed to provide complicated specialised functions for statistical operations particularly in econometric modelling and business performance analysis. Correlation analysis has been applied in order to identify the relationship among indicators in the time series data for both GDP at Malaysia level and Negeri Sembilan state level. The basic interpretation of statistical analysis criterions that need to be take note for all statistical analyser especially the junior statisticians are listed as below:

Significant t-statistics	: $t > 2$;
Significant probability value	: $p < 0.05$;
Strong R-squared	: R^2 near to 1;
Strong correlation	: correlation near to 1; and
Weak correlation	: correlation near to 0.

Analysis and Findings

Chart 1 shows economic position of GDP per capita by State in Malaysia for year 2017 at current prices. Base on chart 1, Negeri Sembilan registered an average GDP per capita amounting RM 41,615 and rank as the 7th among other states.

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Chart 1: The Economic Position of GDP per Capita by State in Malaysia, 2017

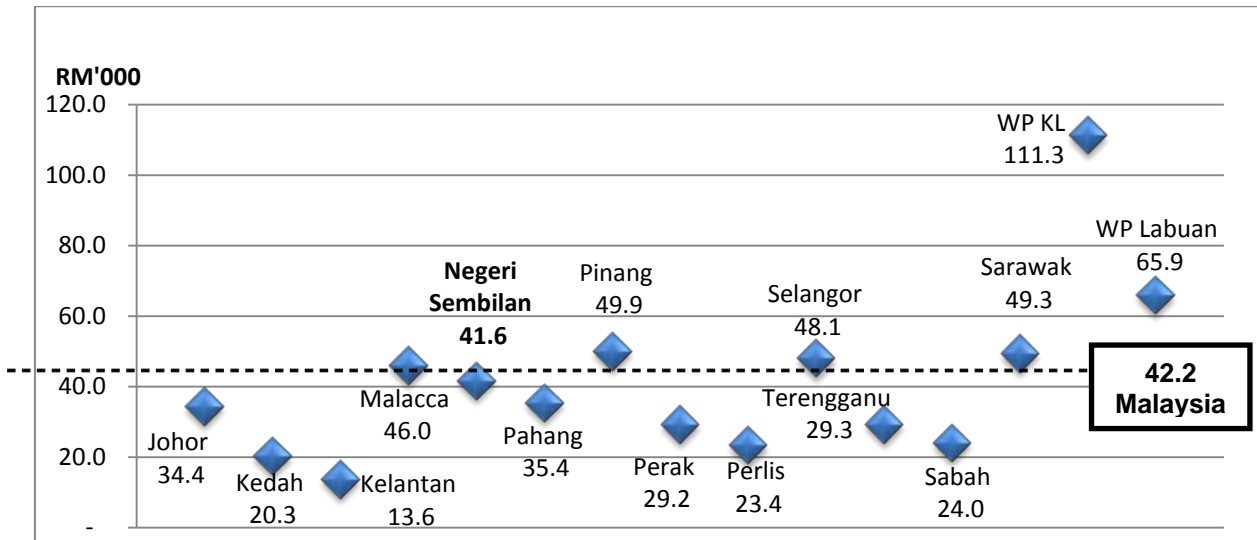
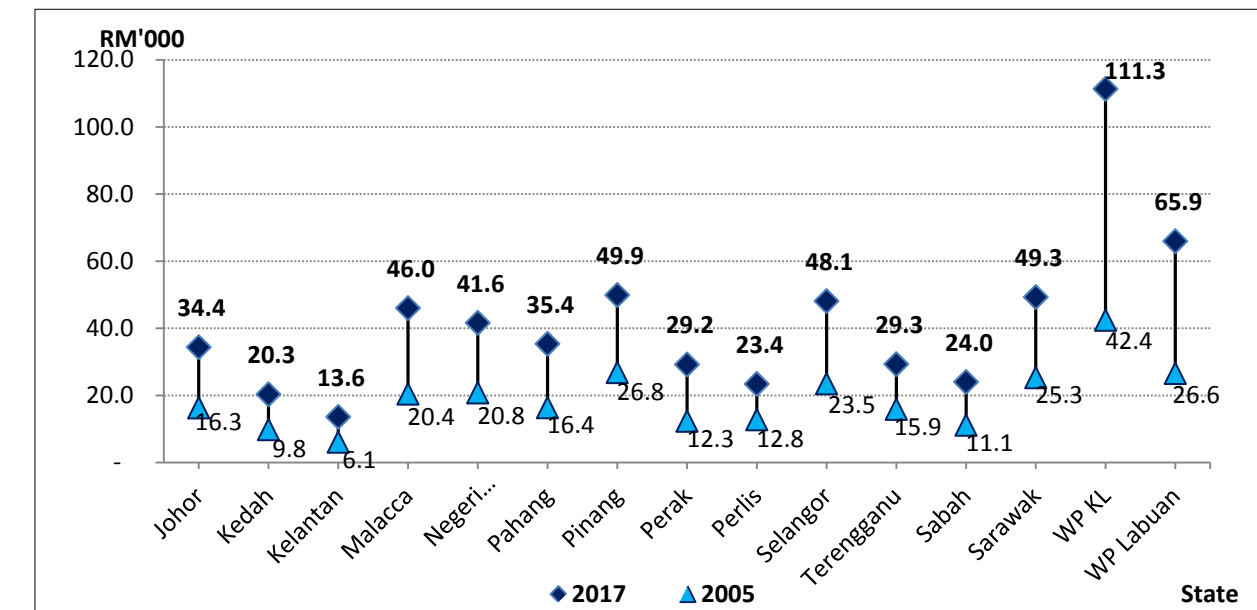


Chart 2 demonstrates the growth of GDP per capita at current prices by State for year 2005 and 2017. The economic performance of Negeri Sembilan increased from RM 20,768 in year 2005 to RM 41,615 in year 2017. While other developing states, i.e. Kedah, Kelantan, Sabah and Perlis are slower than the significant growth of GDP per capita for developed states such as Kuala Lumpur, Labuan, Selangor and Malacca.

Chart 2: GDP per capita at current prices by State, 2005 and 2017



Base on the least square analysis result by sectors obtained from E-Views in table 3 as below, the result revealed that agricultural, manufacturing and services sectors had significantly impact positively the state GDP growth in Negeri Sembilan.

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Table 3: Least Squares Analysis on GDP Negeri Sembilan by sectors

Dependent Variable: GDPNS

Method: Least Squares

Sample: 2006 – 2017 (percentage change)

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGRICULTURAL	0.108505	0.015969	6.794703	0.0011
MINING QUARRYING	0.023834	0.013718	1.737421	0.1428
MANUFACTURING	0.452906	0.027849	16.26312	0.0000
CONSTRUCTION	0.022950	0.010025	2.289174	0.0707
SERVICES	0.379021	0.045139	8.396732	0.0004
IMPORT DUTIES	0.004576	0.001002	4.567980	0.0060
C	0.051985	0.379862	0.136853	0.8965
R-squared	0.996050	Mean dependent var		4.676327
Adjusted R-squared	0.991310	S.D. dependent var		2.050857
S.E. of regression	0.191182	Akaike info criterion		-0.179981
Sum squared resid	0.182753	Schwarz criterion		0.102881
Log likelihood	0.079887	Hannan-Quinn criter.		-0.284707
Prob (F-statistics)	0.000008	Durbin-Watson stat		1.999832

Thus, the relationship among each sector towards GDP by State for Negeri Sembilan has formed an econometric model which represented as below:

$GDP_{NegeriSembilan} = \beta_0 + \beta_1 AGR + \beta_2 MNQ + \beta_3 MFG + \beta_4 CON + \beta_5 SER + \beta_6 IMD$, where the value of coefficients (β_i) and are as below:

$$\begin{aligned} \beta_0 &= 0.051985; \\ \beta_1 &= 0.108505; \\ \beta_2 &= 0.023834; \\ \beta_3 &= 0.452906; \\ \beta_4 &= 0.022950; \\ \beta_5 &= 0.379021; \text{ and} \\ \beta_6 &= 0.004576. \end{aligned}$$

Hence, the regression results obtained from E-Views system for endogenous econometric model of Negeri Sembilan State GDP in phase one is illustrated as below:

$$\widehat{GDP}_{NegeriSembilan} = 0.051985 + 0.108505AGR + 0.023834MNQ + 0.452906MFG + 0.022950CON + 0.379021SER + 0.004576MD$$

Based on the model, the significant t-statistics where $t > 2$ and the significant probability value where $p < 0.05$ shown that the manufacturing, services and agricultural sectors are influencing factors to the economic growth in GDP Negeri Sembilan. Besides, further analysis has been done on the selected significant factors and other additional indicators, which consist of consumer price index, unemployment rate

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and interest rate. The second phase of Least Squares Analysis on GDP Negeri Sembilan by indicators is presented in Table 4 as below:

Table 4: Least Squares Analysis on GDP Negeri Sembilan by indicators

Dependent Variable: GDPNS

Method: Least Squares

Sample: 2006 – 2017 (percentage change)

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGRICULTURAL	0.063009	0.025022	2.518119	0.0533
MANUFACTURING	0.381044	0.076844	4.958675	0.0043
SERVICES	0.292467	0.076303	3.832970	0.0122
CPI	0.021911	0.100659	0.217678	0.8363
UNEMPLOYMENTRATE	0.003087	0.014005	0.236181	0.8227
INTEREST RATE	1.959340	1.596790	1.227049	0.2744
C	1.388697	0.474867	2.924393	0.0328
R-squared	0.984605	Mean dependent var		4.676327
Adjusted R-squared	0.966130	S.D. dependent var		2.050857
S.E. of regression	0.377435	Akaike info criterion		1.180363
Sum squared resid	0.712287	Schwarz criterion		1.463226
Log likelihood	-0.082180	Hannan-Quinn criter.		1.075638
Prob (F-statistics)	0.000227	Durbin-Watson stat		2.534558

The data analysis in phase two with the involvement of consumer price index, the unemployment rate and the interest rate was run as the influencing factors. The empirical result indicated the most significant indicators that impact and influencing the economy of Negeri Sembilan is precisely driven by manufacturing sector and services sector. Therefore, the relationship among those indicators towards GDP for Negeri Sembilan has formed a comprehensive econometric model that demonstrated as below:

$GDP_{NegeriSembilan} = \alpha_0 + \alpha_1 AGR + \alpha_2 MFG + \alpha_3 SER + \alpha_4 CPI + \alpha_5 UEM + \alpha_6 INT$, where the value of coefficients (α_i) and are as below:

$$\alpha_0 = 1.388697;$$

$$\alpha_1 = 0.063009;$$

$$\alpha_2 = 0.381044;$$

$$\alpha_3 = 0.292467;$$

$$\alpha_4 = -0.021911;$$

$$\alpha_5 = 0.003087; \text{ and}$$

$$\alpha_6 = 1.959340.$$

Hence, the regression results derived a comprehensive econometric model for Negeri Sembilan State GDP which stated as below:

$$\widehat{GDP}_{NegeriSembilan} = 1.388697 + 0.063009AGR + 0.381044MFG + 0.292467SER - 0.021911CPI + 0.003308UEM + 1.959340INT$$

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Table 5 illustrated the Ordinary Correlations Analysis for GDP Negeri Sembilan resulted from E-Views software. The tabulation indicated covariance, correlation, t-statistics and probability's magnitude of the covariance analysis among GDP in Negeri Sembilan and the selected economic indicators. In addition, Table 6 is the summary of descriptive analysis for the growth of GDP time series data in Negeri Sembilan from 2005 to 2017.

Table 5: Ordinary Correlations Analysis for GDP Negeri Sembilan

Covariance Analysis: Ordinary

Sample: 2006 2017

Included observations: 12

Covariance Correlation t-Statistic Probability	GDP NS	MANUFACTURING	SERVICES	CPI	MALAYSIA GDP
GDP NS	3.855514 1.000000 ---- ----				
MANUFACTURING	5.522222 0.947871 9.406517 0.0000	8.803332 1.000000 ---- ----			
SERVICES	3.116714 0.791404 4.094010 0.0022	4.001746 0.672463 2.873162 0.0166	4.022675 1.000000 ---- ----		
CPI	0.969436 0.383275 1.312233 0.2188	1.080693 0.282756 0.932194 0.3732	0.863929 0.334390 1.122024 0.2881	1.659336 1.000000 ---- ----	
MALAYSIA GDP	2.432161 0.604197 2.397787 0.0375	3.538510 0.581734 2.261683 0.0472	1.984987 0.482756 1.743192 0.1119	1.001560 0.379260 1.296163 0.2240	4.202857 1.000000 ---- ----

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Table 6: Descriptive Analysis for the growth of GDP Negeri Sembilan, 2006-2017

Descriptive Analysis Result	GDP NS	Agricultural	Mining and Quarrying	Manufacturing	Construction	Services	CPI	Unemployment Rate	Interest rate
Mean	4.676327	3.355942	8.191173	3.070887	7.785067	6.192173	2.669816	-1.372385	0.020960
Median	4.696182	3.671254	6.469865	3.076739	8.632011	5.516579	2.314738	-1.612903	0.032380
Maximum	9.262872	13.85576	19.32793	9.010444	17.00132	10.29931	5.393743	25.80645	0.248917
Minimum	1.042256	-6.995270	0.000000	-2.353305	-6.822516	3.196707	0.614125	-20.51282	-0.390072
Std. Dev.	2.050857	6.178692	6.424441	3.098973	7.240240	2.094844	1.345431	12.44534	0.157825
Skewness	0.457324	-0.041028	0.364103	0.233731	-0.606159	0.625771	0.500425	0.551830	-1.250050
Kurtosis	3.607106	2.202114	1.891585	2.643173	2.585558	2.617344	2.551803	3.115367	5.150334
Jarque-Bera	0.602579	0.321678	0.879434	0.172923	0.820739	0.856392	0.601291	0.615688	5.437217
Probability	0.739864	0.851429	0.644219	0.917171	0.663405	0.651684	0.740340	0.735030	0.065966

The mean of GDP Negeri Sembilan is 4.676 with Standard Deviation 2.05 and Skewness 0.457.

On the other hand, GDP at national level for Malaysia has been targeted to grow 6% annually in the 10th Malaysia Plan 2011-2015 (EPU, 2010). Table 7 shows correlations analysis and the coefficients of Pearson Correlations analysis result between both GDP Malaysia and Negeri Sembilan. Analysis result shows the GDP Negeri Sembilan is moderately influencing the economy of GDP Malaysia.

Table 7: Correlations analysis between GDP Malaysia and GDP Negeri Sembilan

Dependent Variable: MALAYSIA GDP

Method: Least Squares

Sample: 2006 2017

Observations period: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPNS	0.630827	0.263087	2.397787	0.0375
C	1.931062	1.334335	1.447210	0.1784
R-squared	0.365055	Mean dependent var		4.881014
Adjust R-squared	0.301560	Durbin-Watson stat		2.176678
S.E. of regression	1.789498	Akaike info criterion		4.152759
Prob (F-statistics)	0.037457	Schwartz criterion		4.233576

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Base on the correlations analysis result between GDP Malaysia and GDP Negeri Sembilan as shown in Table 7, the linear relationship model between the GDP at Malaysia level and the GDP Negeri Sembilan is illustrated as below:

$$\widehat{GDP}_{\text{Malaysia}} = 1.931062 + 0.630827 \widehat{GDP}_{\text{NegeriSembilan}}$$

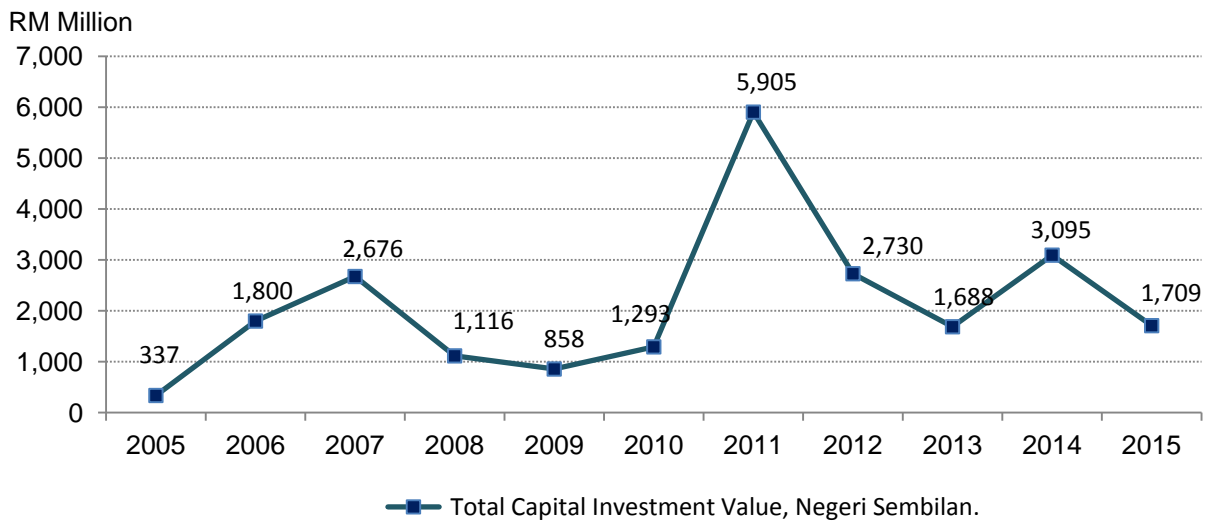
In the above correlation analysis, the impact of GDP Negeri Sembilan coefficient contributes towards GDP Malaysia is 0.630827 with a constant figure of 1.931062. Meanwhile R-squared shows 0.365055, this less strong correlation R-squared coefficient indicated that the contribution of GDP Negeri Sembilan is less significant to affect the Malaysia National GDP as compared with other states in Malaysia, such as Kuala Lumpur, Selangor, Pulau Pinang and Sarawak, which have higher contribution in GDP for Malaysia.

Despite of the impact factor involvement from the implementation of Malaysia Plan (MP) towards the GDP rates in Negeri Sembilan, the fast growing of economic growth in Negeri Sembilan is also dominated by the physical economic projects development throughout the implementation of various projects under Economic Transformation Plan (ETP) and implementation of The Malaysian Urban-Rural National Indicators Network on Sustainable Development (MURNInets) program which has been initiated the by local authority under monitor and coordinate by the Federal Department of Town and Country Planning with the cross-sectorial indicators, such as urbanisation, housing developments, heritage conservation and tourism encouragement and etc.

Furthermore, in line with the objectives of ETP and the initiative on generating high income nation with the target to lift six per cent per annum (6%) of Malaysia's gross national income (GNI) per capita, the improvement of sustainable level in Negeri Sembilan also supported by both the domestic and foreign capital investment with the implementation of projects approved by MIDA towards Negeri Sembilan. Chart 1 shows the total capital investment in Negeri Sembilan approved by MIDA from year 2005 to 2015. The capital investment towards Negeri Sembilan had grown significantly over the years and the largest amount of approved capital investment for Negeri Sembilan was RM 5,905 million in year 2011. Among the notable investment projects approved by MIDA for Negeri Sembilan are the RM34.8 million Energy-efficient Investment, the port project, and the Oil Palm Trunk (OPT) project by a wholly Malaysian owned company based in Siliau, Negeri Sembilan, which provide job opportunities for about 100 Malaysians (MIDA, 2012).

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Chart 3: Negeri Sembilan Total Capital Investment Approved by MIDA, 2005-2015



Source: Malaysian Investment Development Authority (MIDA)

Negeri Sembilan Government had restructuring the Malaysian Vision Valley (MVV) project by focusing on economic development involving high-impact industries in various clusters such as education, tourism and special services. Thus, more jobs were created especially for the youths in the state of Negeri Sembilan (MIDA, 2018).

Conclusion and Recommendations

In conclusion, Negeri Sembilan is an open economy and dependent on the trade investment for its economic development. Statistical data focus on the economy is proven to be input and catalyst to the advancement for the implementation of local socio-economic development programs and projects. Quality of the statistical data is also vital and important to the formation of policy for both state and the Malaysia country's development.

The empirical result from E-views analysis shows that manufacturing and services sectors remained as the key engine influencing the GDP growth in Negeri Sembilan. Hence, the causal link holds both the short-run and long-run to the state GDP growth and three linear econometric models that indicated economic indicators correlated in influencing the growth of GDP in Negeri Sembilan were generated as below:

$$\widehat{GDP}_{\text{NegeriSembilan}} = 0.052 + 0.109 \text{ Agricultural} + 0.024 \text{ Mining and Quarrying} + 0.453 \text{ Manufacturing} + 0.023 \text{ Construction} + 0.379 \text{ Services} + 0.005 \text{ Import Duties}$$

$$\widehat{GDP}_{\text{NegeriSembilan}} = 1.389 + 0.063 \text{ Agricultural} + 0.381 \text{ Manufacturing} + 0.292 \text{ Services} - 0.022 \text{ CPI} + 0.003 \text{ Unemployment Rate} + 1.959 \text{ Interest rate}$$

$$\widehat{GDP}_{\text{Malaysia}} = 1.931062 + 0.630827 \widehat{GDP}_{\text{NegeriSembilan}}$$

The indicators of regional economic development can be illustrated via the growth of GDP as well as the GDP per capita and other similar economic indicators or projects development. It is recommended that similar exercise of time series data analysis methods for other regional statistics could be encourage to apply in measuring the economic growth in Malaysia regionally by using various indicators towards State GDP. This paper is initiated by the statisticians in the Department of Statistics Malaysia and hope to be served as a guideline to young statisticians as well as the junior analyst in the field of statistical analysis using time series of GDP data at regional level, particularly at state level. This paper is to be enhanced and to be expanded in future for regional economic studies.

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Appendix A

The growth of Negeri Sembilan Economic Indicators, 2006-2017

Year	GDPNS	AGR	MNQ	MFG	CON	SER	IMD	CPI	UEM	INT*
2006	9.2629	10.9290	0.0000	9.0104	-2.1382	10.2993	-27.3684	3.6488	11.1111	24.89
2007	5.1277	-2.5287	6.6667	3.4833	8.2353	9.3528	14.4928	1.9802	-10.0000	2.92
2008	4.5084	3.4704	0.0000	1.3574	13.5093	7.7217	49.3671	5.3937	-13.8889	-0.74
2009	1.0423	5.9590	4.1667	-2.3533	9.0287	3.1967	-14.4068	0.6141	25.8065	-39.01
2010	5.6995	3.8722	4.0000	4.5426	7.9046	6.2633	126.7327	1.7294	-20.5128	15.91
2011	5.8818	5.7692	3.8462	6.8401	4.8837	5.5107	-23.1441	3.7000	-3.2258	17.60
2012	5.9924	2.9930	16.6667	5.3659	12.6386	6.8958	11.9318	1.3500	0.0000	3.56
2013	2.8502	-0.8338	13.5095	0.2074	2.5603	3.8013	200.7543	2.0932	3.3333	0.01
2014	3.0360	-4.2620	14.0678	0.6821	17.0013	5.5224	19.7034	2.8891	-3.2258	3.84
2015	4.3232	13.8558	6.2731	1.5613	-6.8225	5.4249	10.5736	2.5362	3.3333	4.15
2016	3.5076	-6.9953	19.3297	3.0084	9.7747	5.4478	15.3213	1.9435	-12.9032	-5.23
2017	4.8840	8.0427	9.7696	3.1451	16.8448	4.8585	5.5150	4.1594	3.7037	-2.74

Source: Department of Statistics Malaysia and Central Bank of Malaysia*.