Investment Analysis in Free Trade Zone Batam Island, Indonesia

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ABSTRACT

Free Trade Zone Batam is enacted in Batam Island, Indonesia since year 2009, in Riau Islands Province located in Golden Triangle between Singapore, Johor and Riau. This study analyzes the influence of Investment, Infrastructure, Local and Foreign Labor agaitns Net export and Economic Growth of Batam Island, Indonesia from year 2009 to 2015. This research is supported by theory of Economic Growth, Investment, Export, Labor, Free Trade Zone concept and previous empirical studies. Quarterly Time Series Data from year 2009 to 2015 are analyzed by Multiple Linear Regression Method and Path analysis with E-Views version 9. The analysis results are: (1) Infrastructure, investment, local and foreign labor alltogether has a significant relation on net export, (2) Infrastructure, local and foreign labor investments and net export alltogether has significant relation on economic growth, (3) Net export is not as a mediator variable for infrastructure, investment, local and foreign labor, agaitns economic growth, (4) The existence of Free Trade Zone of Batam Island shows an increase in investment from year to year as well as net export and followed by achievement of economic growth at level 6.75 percent by year 2015. To increase future investment, it is recommended that regulatory control layes in one government body only and with more promising legal jurisdiction. In addition, special economic discretion is required to create more attractive offers to future foreign investors such as tax insentives.

Keywords: Investment, *Free Trade Zone* Batam Island Indonesia.

1. INTRODUCTION

Batam Island, Indonesia is a less developed island region since it was established as a bonded zone by the Indonesian government in year 1971. Since year 2009 the Indonesian government has enacted Batam Island as a Free Trade Zone (FTZ) area under Government Regulation No.2 / 2009. The FTZ area of Batam Island is located in the province of Kepulauan Riau as shown in Figure 1 and 2.

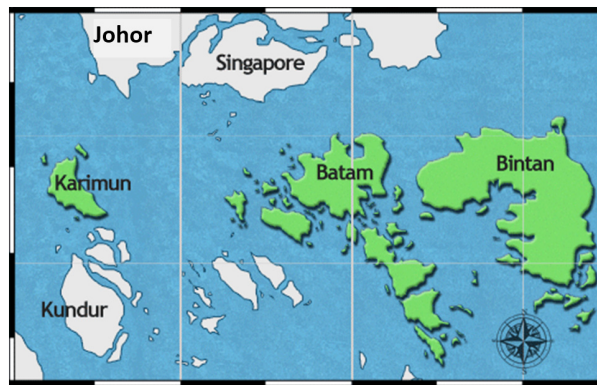**Figure 1: Batam Island on the Indonesia Map**
Source: **http://www.maharprastowo.com/2010/09/pelajaran-untuk-malaysia.html**

Figure 2: Location of FTZ Batam Island in Kepulauan Riau Province
Source: **http://sampuawaltosilajara.blogspot.co.id/2013/09/akhirnya-pajak-kendaraan-ftz-2013.html**

The Free Trade Zone lies geographically at the latitude of 0 ° 25 '29' '- 1 ° 15 '00' 'N, 103 ° 34' 35 '' - 104 ° 26 '04' 'E. Which is adjacent and located in the golden triangle area of SIJORI (Singapore, Johor / Malaysia and Kepulauan Riau / Indonesia).

Batam Island is designated as a Free Trade Zone (FTZ) area because: (1) The Indonesian Government designates Batam Island as a Free Trade Zone pilot project, (2) Located on the golden triangle of SIJORI, where three countries have three international ports, (3) Bilateral cooperation agreement between Indonesia and Singapore on Batam Island development, (4) The readiness of a strong management team consisting of Security Council and Executive Representative Officers to propose Batam Islands as a free trade zone and a port with facilities such as infrastucture, manpower and land that qualify Batam Islands as FTZ area.

Exemption of value added tax (VAT, 10 percent), income tax (holding tax) on imports and exports of luxury goods and the prime location and availability of supporting facilities and infrastructure will make investors willing to invest. Therefore, Indonesian government expects foreign and local investors to export the production results of its specialized activities. These investment activities will have multiplier effects and enhance the economic growth and development of Batam Island.

The following are changes in economic indicators occurred in Batam Island before and after the establishment of FTZ status starting from 2003 to 2015 (Table 1)

Table 1
Change of Economic Indicator in Batam Island in period 2003 to 2015
Before FTZ Status

S. No.	Indicator	Unit	Year					
			2003	2004	2005	2006	2007	2008
1.	Total Investment	Billion USD	10,28	11,53	11,89	12,42	13,08	13,66
2.	Economic Growth	Percentage	7,73	8,28	7,60	7,47	7,52	7,18
3.	Inflation	Percentage	4,27	4,22	14,79	4,58	4,84	8,39
4.	Infrastructure Development	Billion Rupiah	216,5	240,2	247,4	255,4	284,5	314
5.	Net export	Billion USD	-0,11	0,36	0,31	0,9	5,03	-4,7
6.	Population	People	562.661	591.253	685.787	713.960	724.315	899.940
7.	Local Labor	People	185.095	221.163	221.391	252.391	252.667	261.290
8.	Foreign Labor	People	2.747	3.097	2.988	3.464	3.347	4.490
9.	Tax Revenue	Billion Rupiah	923,01	1.033,52	1.233,70	1.544,86	1.800	1.278,27
10.	Locally Generated Revenue	Billion Rupiah	247,05	162,16	178,28	229,99	273,62	142,37
11.	Gross Regional Domestic Product	Trillion Rupiah	9,34	10,79	12,02	29,23	33,02	38,26

During FTZ Status

S. No.	Indicator	Unit	Year						
			2009	2010	2011	2012	2013	2014	2015
1.	Total Investment	Billion USD	14,10	14,59	14,92	15,69	16,47	17,71	19,83
2.	Economic Growth	Persentage	4,65	7,77	7.20	6.78	5.83	7,99	6,75
3.	Inflation	Persentage	1,88	7,40	3,76	2,02	7,81	7,61	4,73
4.	Infrastructure Development	Billion Rupiah	343,12	330,30	416,64	640	918	1.000	1.097
5.	Net export	Billion USD	-1,94	-0,18	1,95	0,58	2,3	2,90	2,37
6.	Population	People	988.560	1.056.701	1.137.894	1.235.651	1.135.412	1.030.528	1.037.187
7.	Local Labor	People	260.350	288.318	313.544	330.592	330.592	330.592	350.674
8.	Foreign Labor	People	5.080	5.108	5.510	5.970	5.970	5.970	5.891
9.	Tax Revenue	Billion Rupiah	1.951,49	1.817,39	2.101,75	2.674,84	2.411,39	3.932,35	615,71
10.	Locally Generated Revenue	Billion Rupiah	155,04	161,84	335,41	409,98	606,34	359,48	845,304
11.	Gross Regional Domestic Product	Trillion Rupiah	40,89	47,30	52,62	57,65	65,55	84,68	90,40

Source: BPS Kota Batam, 2004-2016.

The total investment cumulative condition at Batam Island in year 2003 (before FTZ status) is 10.28 billion USD and there is an increase of 32.8 percent in 6 years (2008). In early 2009 when FTZ status started, it reaches 14.10 billion USD and increased to 19.83 billion USD in 2015 (Figures 3 and 4). With the existence of FTZ it shows that the investment prospect on the island of Batam rises 40.6 percent from year 2009 in which the economy endures crisis period in Indonesia and until year 2015. In year 2008, the investment value of 13.66 billion USD rises insignificantly, only reaches 14.10 billion USD in year 2009 with influence of economic crisis period in Indonesia.
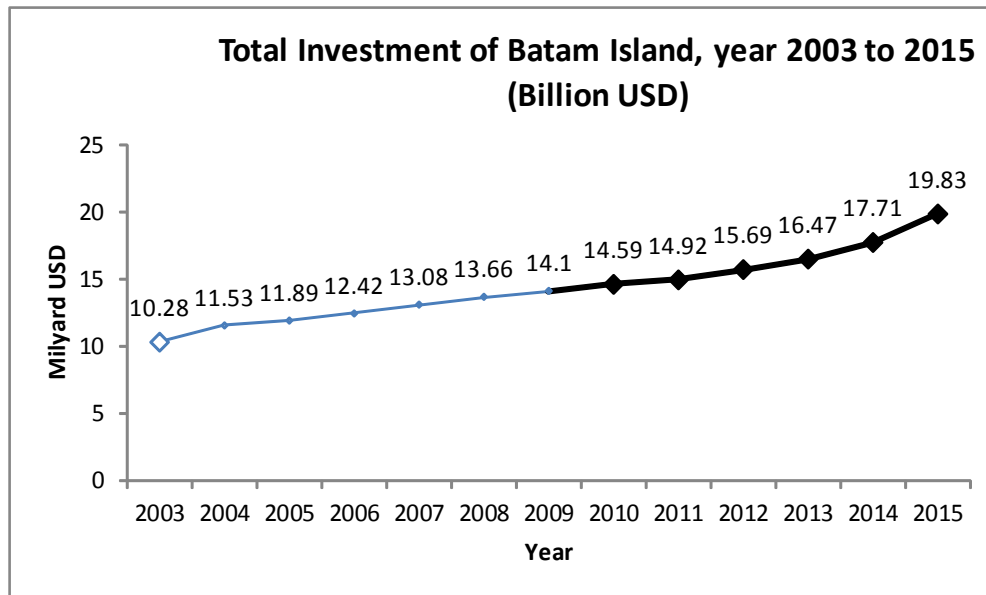

Figure 3: Total Investment of Batam Island, year 2003 to 2015 in Billion USD
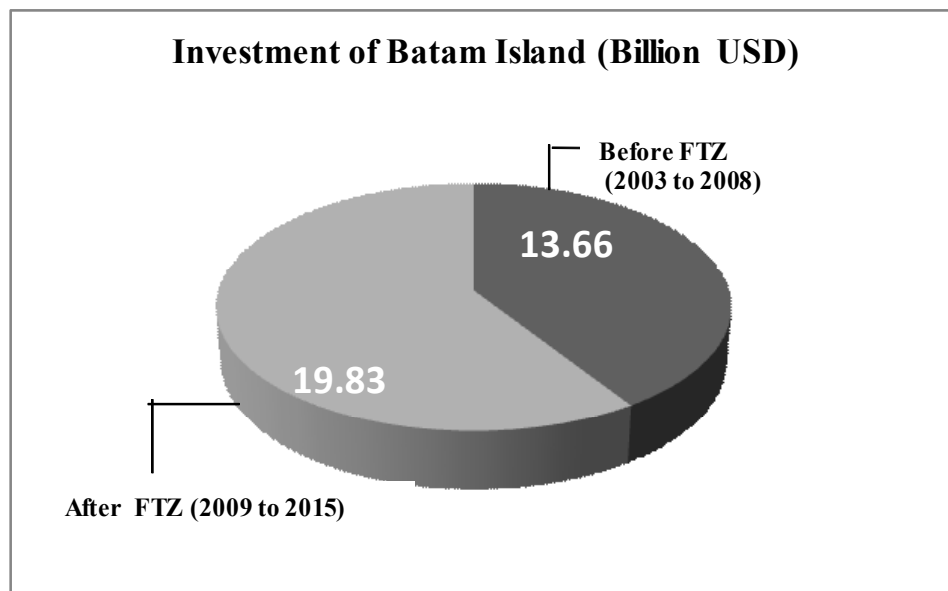*Source:* BPS Kota Batam, 2004-2016

Figure 4: Investment of Batam Island, Before and After FTZ
Source: BPS Kota Batam, 2004-2016

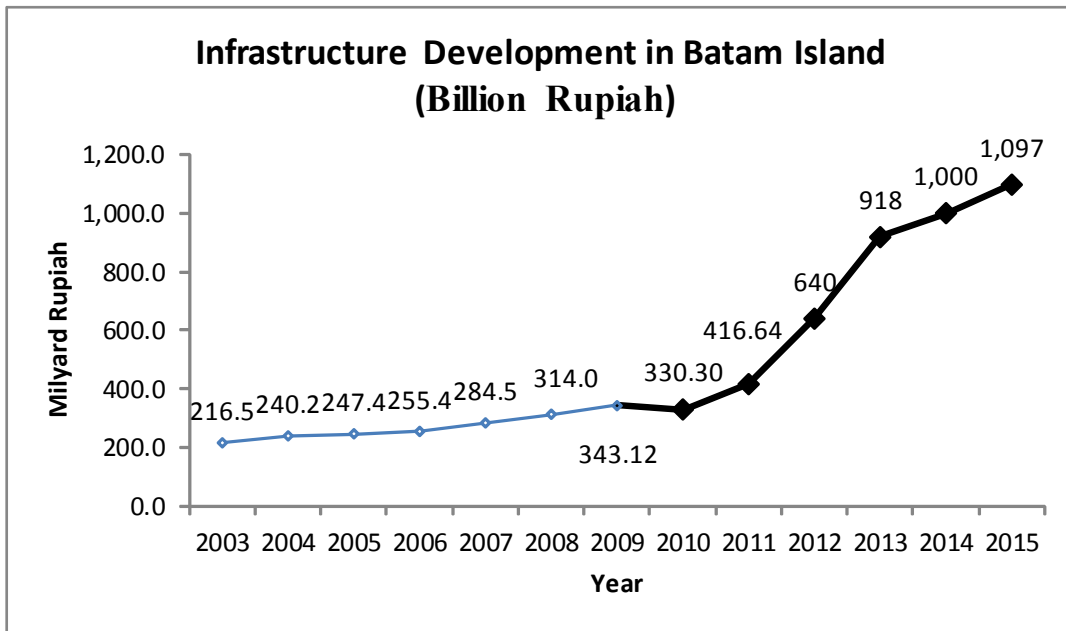Development of government investment in infrastructure in Batam Island (Figure 5).

**Figure 5: Government Investment in Infrastructure Development in
Batam Island, year 2003 to 2015 in Billion Rupiah**
Source: **BPS Kota Batam, 2004-2016**

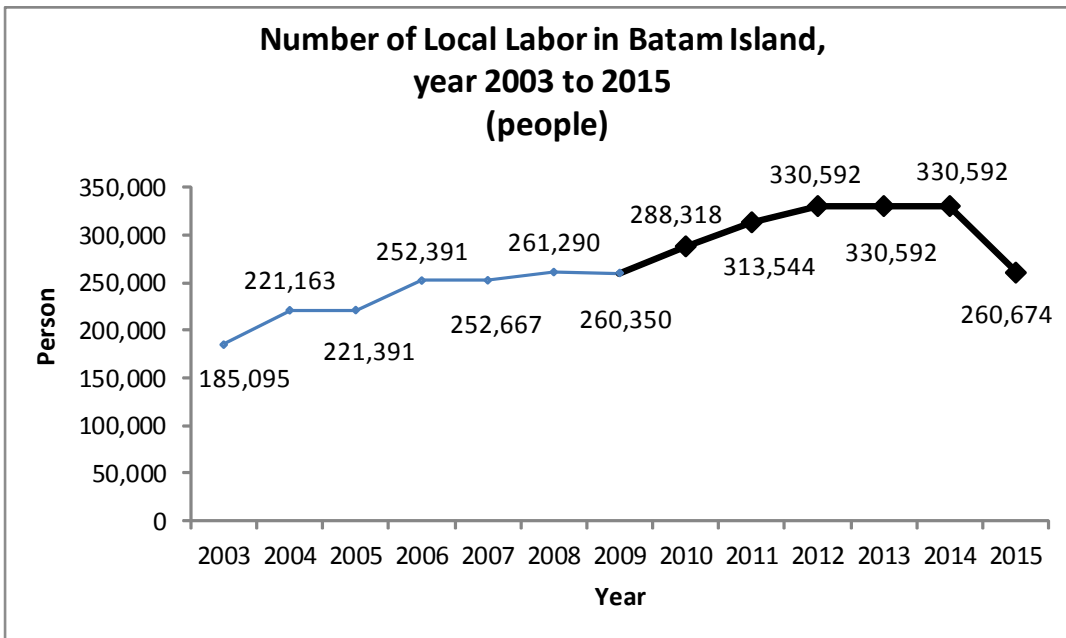Development of local labor in Batam Island (Figure 6).

Figure 1.6: Number of Local labor in Batam Island, year 2003 to 2015
Source: **BPS Kota Batam, 2004-2016**

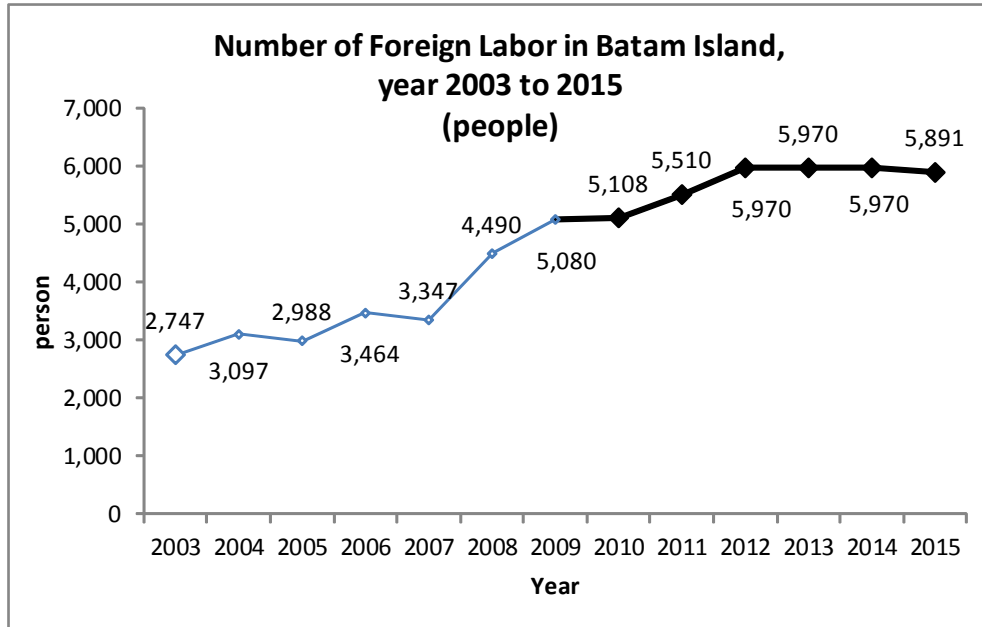Development of foreign labor in Batam Island (Figure 7).

Figure 7: Number of Foreign labor in Batam Island, year 2003 to 2015
Source: **BPS Kota Batam, 2004-2016**

Total annual economic growth in Batam Island in year 2003 reaches 7.73 percent and indicates regular growth beyond 7 percent right before global economic crisis in 2008. During year 2008, Batam island economic growth records a mere 4.65 percent yet succeeded in gaining a value of 7.77 percent in 2010 with a 67 percent incremental rise. The growing trend value remains until 2012 yet decreases consistently until 2015. In general, Batam Island economy maintains growth above 6.75 percent annually in which is above national economic growth average annual values (Figure 8).
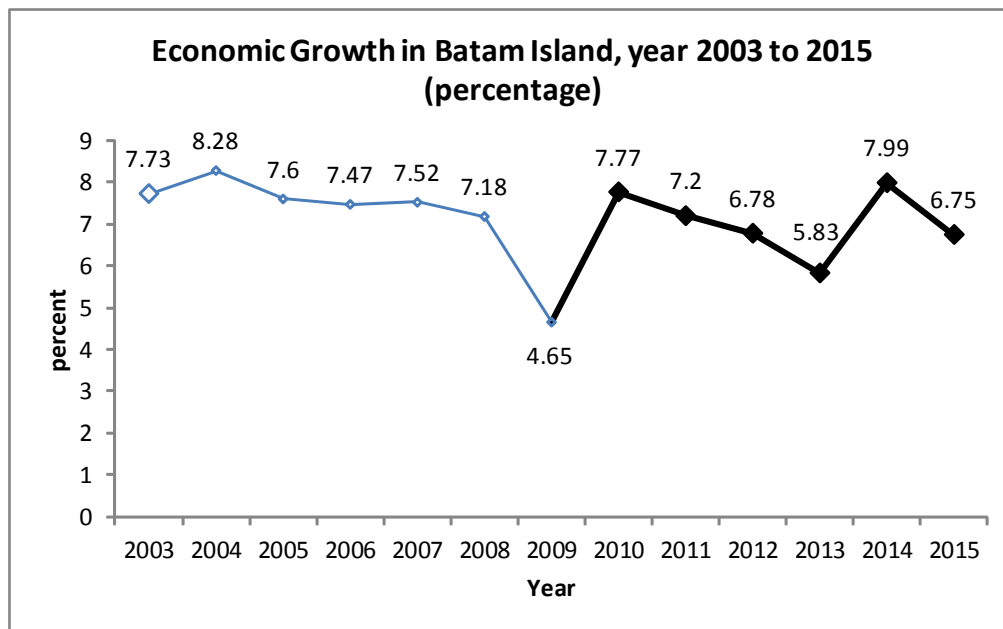

Figure 8: Economic Growth in Batam Island, year 2003 to 2015
Source: **BPS Kota Batam, 2004-2016**

Values of Net export (total export deducted by total Import value in certain period) in FTZ Batam Island is presented in Figure 9.
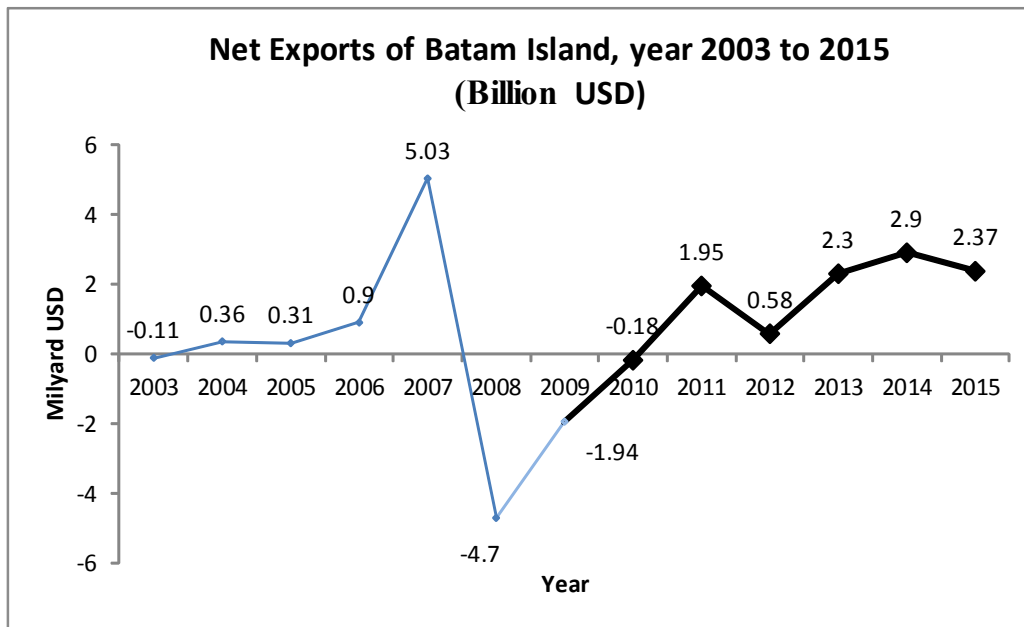

Figure 9: Net export of Batam Island, year 2003 to 2015 in Billion USD
Source: **BPS Kota Batam, 2004-2016**

The main obstacle faced in FTZ among others is regulatory and bureaucracy dualism to be solved between city government of Batam (Pemko Batam) and Batam management board (BP Batam). The dualism momentarely creates discomfort to investors and potential investors in running their operations in FTZ. The establishment of Batam Island as FTZ is mainly to offer hope and profit for investors. This study discusses the analysis of the effect of total investment, government investment in infrastructure, local and foreign labor agaits net export and economic growth in Batam Island FTZ area starting from year 2009 to 2015.

2. HYPOTHESIS

This study source hypothetical solutions as follows.

1. **Hypothesis 1 (H1):** Government investment for infrastructure (INF), total investment (INV), local labor (LL) and foreign labor (LA) when related all together has a significant relation against net export (Y) with FTZ facility being applied in Batam Island, Indonesia.

2. **Hypothesis 2 (H2):** Government investment for infrastructure (INF), total investment (INV), local labor (LL) and foreign labor (LA) each has a direct relation against economic growth in Batam Island (Z) with FTZ facility being applied in Batam Island, Indonesia.

3. **Hypothesis 3 (H3):** Government investment for infrastructure (INF), total investment (INV), local labor (LL), foreign labor (LA) and net export (Y) when related all together has a relation against economic growth in Batam Island (Z) with FTZ facility being applied in Batam Island, Indonesia.

4. **Hypothesis 4 (H4):** Government investment for infrastructure (INF) with support of total investment (INV), local labor (LL) and foreign labor (LA) each has an indirect relation against economic growth in Batam Island (Z) through net export (Y) as intervening factor with FTZ facility being applied in Batam Island, Indonesia.

3. METHODOLOGY

Concept of the study may be illustrated as follows:

Theoretical Study	Empirical Study
• Economic growth theory (Bishop et.all, 2014) • Exports theory (Joshi, 2005; Bishop et. al., 2014). • Infrastucture Invesment by government investment concept (Arsyad, 2010) • Investment theory (Todaro dan Smith, 2006; Bishop et.all,, 2014) • Human resources (Todaro dan Smith, 2006) • Economic development (Arsyad, 2010) • Local development concept (Stimson, Stough dan Robert, 2006) • Gross Regional Domestic Product (Dodge, 2011)	• Pancawati, 2000 • Hidayah, 2005 • Yuliarmi, 2008 • Rindang dan Firdaus, 2009 • Hidayat, 2009 • Aritonang, 2009 • Adrian, 2010 • Suryanto, 2010 • Swaramarinda dan Indriani, 2011 • Sandhika dan Hendarto, 2012 • Firmasnsyah, 2012 • Zaenuddin, 2012 • Anwar, 2014 • Oktari, 2014 • Paudel, 2009 • Al Bataineh, 2012 • Safdari, 2012 • Bappenas, 2016 • Batam Dalam Angka, 2004-2016 • BPS Kodya Batam, 2004-2016 • BPS Pusat, 2016 • Bank Indonesia, 2014-2016 • Badan Pengusahaan Batam, 2016 • Widhatama, 2016, 2017

Hypothesis

Statistical analysis (E-Views)
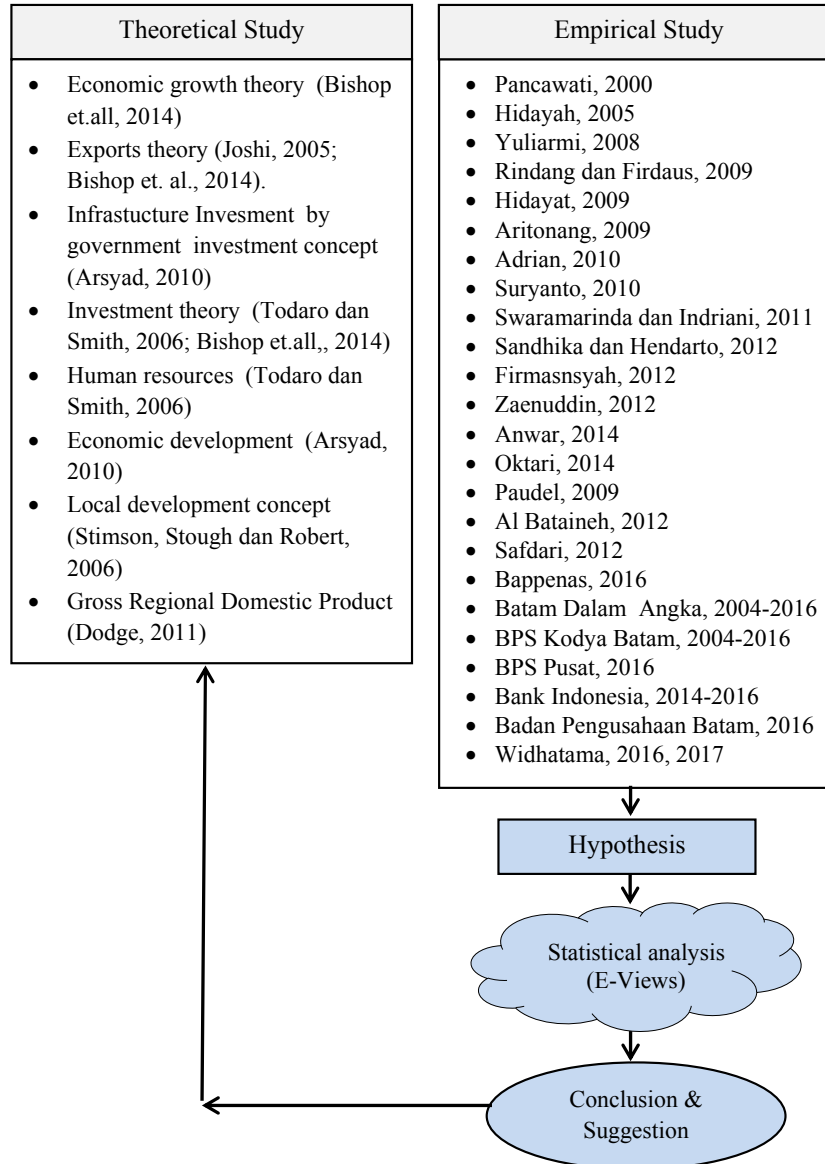
Conclusion & Suggestion

Figure 10: Research Concept

The concept of the research is based on variables:

1. **Independent Variables** which consists of Government Investment on Infrastructure (INF), Investment (INV), Local Labor (LL), Foreign Labor (LA) in Free Trade Zone Batam Island,

2. **Intervening Variable** which consists of Net export (Y) Free Trade Zone Batam Island,

3. **Dependent Variables** which consist of Economic Growth (Z) Free Trade Zone Batam Island and

4. **Error Variable** (error = e).

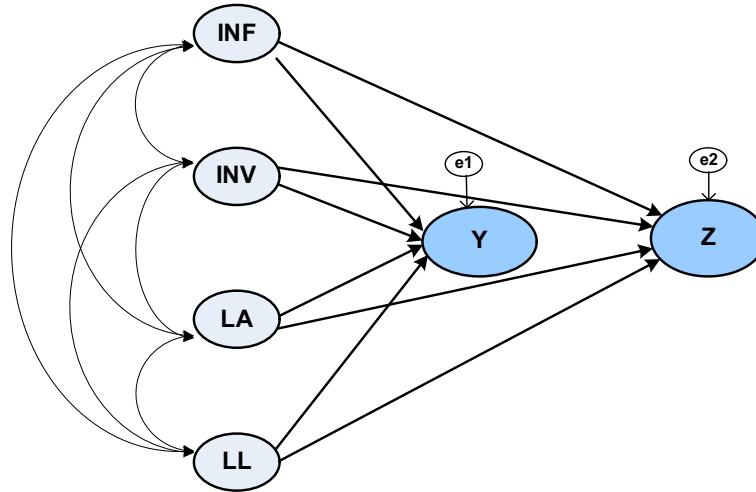Relationship between variables may be illustrated on the schematic at Figure 11.

Figure 11: Relationship between Research Variables

This research uses secondary data obtained from *Biro Pusat Statistik Kota Batam* (BPS Batam) in the form of quarterly time series data with period ranging from year 2009 to 2015 in which represent empirical research variables to be analyzed.

As means to analyze the variables using statistic approach, linier regression and path analysis with software E views version 9 are used.

Following are functions of exponential equation model used in this research:

$$\text{Ln}Y_t = \beta_0 + \beta_1 \text{Ln INF}_{t-1} + \beta_2 \text{Ln INV}_{t-1} + \beta_3 \text{Ln LA}_{t-1} + \beta_4 \text{LnLL}_{t-1} + e_{1t} \tag{3.1}$$

$$\text{Ln}Z_t = \beta_0 + \beta_1 \text{Ln INF}_{t-1} + \beta_2 \text{Ln INV}_{t-1} + \beta_3 \text{Ln LA}_{t-1} + \beta_4 \text{LnLL}_{t-1} + \beta_5 \text{Ln } Y_{t-1} + e_{2t} \tag{3.2}$$

In which:

INF_{t-1} = Total Government Investment on Infrastructure in year $t-1$

INV_{t-1} = Total Investment in year $t-1$

LA_{t-1} = Foreign labor in year $t-1$

LL_{t-1} = Local Labor in year $t-1$

4. ANALYSIS RESULT

1. **Hypothesis Analysis H1:** Table 4.1 indicates: Statistic value F which give 10,07007> F_{tabel} ($F_{0.05;4,23}$) = 2,80 and with significant probability value of 0,000073 < 0,05. By so it is proven that: Government Investment on Infrastructure (INF), Investment (INV), Foreign Labor (LA),

and Local Labor (LL) alltogether has a significant relation in statistic against Net export (Y) in FTZ Batam Island, Indonesia. Hypothesis H1 is proven.

Table 2
Regresion of 1ˢᵗ Substructure

Dependent Variable: EXPNET

Method: Least Squares

Date: 06/01/17 Time: 05:01

Sample: 2009Q1 2015Q4

Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.720530	6.281715	0.433087	0.6690
INF	0.001384	0.003336	0.414880	0.6821
INV	–4.35E-06	4.41E-05	–0.098669	0.9223
LA	–0.005867	0.002189	–2.679732	0.0134
LL	9.89E-05	2.39E-05	4.132644	0.0004
R-squared	0.636538	Mean dependent var		1.137793
Adjusted R-squared	0.573327	S.D. dependent var		2.203143
S.E. of regression	1.439098	Akaike info criterion		3.726342
Sum squared resid	47.63306	Schwarz criterion		3.964236
Log likelihood	–47.16879	Hannan-Quinn criter.		3.799069
F-statistic	10.07007	Durbin-Watson stat		1.198490
Prob(F-statistic)	0.000073			

Source: EViews 9.

2. **Hypothesis Analysis H2:**

Table 3
Regression Coefficient of 1ˢᵗ Substructure

Dependent Variable: EXPNET

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.720530	6.281715	0.433087	0.6690
INF	0.001384	0.003336	0.414880	0.6821
INV	–4.35E-06	4.41E-05	–0.098669	0.9223
LA	–0.005867	0.002189	–2.679732	0.0134
LL	9.89E-05	2.39E-05	4.132644	0.0004

Source: EViews 9.

Table 4 indicates:

(a) Direct relation X1 : INF to Net export gives value 0,0687 indicates positive and is not significant → H2 is not proven.

(b) Direct relation X2 : INV to Net export gives value –0,0176 indicates negative and is not significant → H2 is not proven.

Table 4
Causality Analysis to Y

Path	B	S_X	S_Y	Beta	Prob	α	Results
INF → Y	0,001384	109,3551	2,2035	0,0687	0,6821	0,05	Prob > 0,05 ; not significant
INV → Y	–0,00000435	8937,534	2,2035	–0,0176	0,9223	0,05	Prob > 0,05 ; not significant
LA → Y	–0,005867	371,7775	2,2035	–0,9901	0,0134	0,05	Prob < 0,05 ; significant
LL → Y	0,0000989	36109,97	2,2035	1,6210	0,0004	0,05	Prob < 0,05 ; significant

Note: b = regression coefficient
Sy = deviation standard Y
Beta = path coefficient
a = real range
S_x = deviation standard X

(c) Direct relation X3 : LA to Net export gives value –0,9901 indicates negative and is significant → H2 is proven.

(d) Direct relation X4 : LL to Net export gives value 1,6210 indicates positive and is significant → H2 is proven.

Hypothesis H2 is not proven for X1 (INF) and X2 (INV), but it is proven by X3 (LA) and X4 (LL).

3. **Hypothesis Analysis H3:**

Table 5
Linier Regresion of 2nd Substructure

Dependent Variable: GROWTH
Method: Least Squares
Date: 06/01/17 Time: 05:02
Sample: 2009Q1 2015Q4
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.99703	4.027701	4.468314	0.0002
INF	0.001144	0.002138	0.534915	0.5981
INV	–1.14E-05	2.82E-05	–0.404570	0.6897
LA	–0.006231	0.001602	–3.890528	0.0008
LL	7.57E-05	2.02E-05	3.753008	0.0011
EXPNET	–0.067013	0.133153	–0.503280	0.6198
R-squared	0.530581	Mean dependent var		6.713608
Adjusted R-squared	0.423895	S.D. dependent var		1.210751
S.E. of regression	0.918979	Akaike info criterion		2.856303
Sum squared resid	18.57950	Schwarz criterion		3.141775
Log likelihood	–33.98824	Hannan-Quinn criter.		2.943575
F-statistic	4.973287	Durbin-Watson stat		1.539917
Prob (F-statistic)	0.003385			

Source: EViews 9.

Table 4.4 indicates: Statistic value F which give 4,973287 > F-$_{tabe}$l (F$_{0.05;22}$) = 2,66 and with significant probability value of 0,003385 < 0,05. By so it is proven that: Government Investment

on Infrastructure (INF), Investment (INV), Foreign Labor (LA), Local Labor (LL), and Net export (Y) alltogether has a significant relation in statistic against Economic growth (Z) in FTZ Batam Island, Indonesia. Hypothesis H3 is proven.

4. **Hypothesis Analysis H4:**

Table 6
Causality Analysis to Z

Path	B	S_X	S_Z	Beta	Prob.	α	Results
INF → Z	0,001144	109,3551	1,2108	0,1033	0,5981	0,05	Prob > 0,05 ; not significant
INV → Z	–0,0000114	8937,534	1,2108	–0,0841	0,6897	0,05	Prob > 0,05 ; not significant
LA → Z	–0,006231	371,7775	1,2108	–1,9132	0,0008	0,05	Prob < 0,05 ; significant
LL → Z	0,0000757	36109,97	1,2108	2,2576	0,0011	0,05	Prob < 0,05 ; significant
EXPNET → Z	–0,067013	2,2035	1,2108	–0,1220	0,6198	0,05	Prob > 0,05 ; not significant

Table 6 indicates:

(a) Direct relation X1: INF to Economic growth gives value 0,1033 indicates positive and is not significant.

(b) Direct relation X2 : INV to Economic growth gives value –0,0841 indicates negative and is not significant.

(c) Direct relation X3 : LA to Economic growth gives value –1,9132 indicates negative and is significant.

(d) Direct relation X4 : LL to Economic growth gives value 2,2576 indicates positive and is significant.

(e) Direct relation Y: EXPNET to Economic growth gives value –0,1220 indicates negative and is not significant

Table 7
Influence on Economic Growth

Variable	Influence				Significance
	Direct to Y	Indirect to Z through Y	Direct to Z	Total to Z	
X1: INF	0,0687 (NS)	(0,0687 × –0,1220) = –0,0084	0,1033 (NS)	0,0949	Not significant
X2:INV	–0,0176 (NS)	(–0,0176 × –0,1220) = 0,0022	–0,0841 (NS)	–0,0820	Not significant
X3: LA	–0,9901 (**)	(–0,9901 × –0,1220) = 0,1208	–1,9132 (***)	–1,7924	Not significant
X4: LL	1,6210 (***)	(1,6210 × –0,1220) = –0,1978	2,2576 (***)	2,0599	Not significant
Net export Value	–	–	–0,1220 (NS)	–0,1220	Not significant

Source: analysis results

Note: NS = Not Significant

(**) = significant on real range a = 5%

(***) = significant on real range a = 1%

Table 7 indicates analysis results as follows:

Indirect influence to economic growth through intervening (mediator) variable of Net export:

(a) INF with result : $(0{,}0687 \times -0{,}1220) = -0{,}0084$ indicates negative and is not significant.

(b) INV with result : $(-0{,}0176 \times -0{,}1220) = 0{,}0022$ indicates positive and is not significant.

(c) LA with result : $(-0{,}9901 \times -0{,}1220) = 0{,}1208$ indicates positive and is not significant.

(d) LL with result : $(1{,}6210 \times -0{,}1220) = -0{,}1978$ indicates negative and is not significant.

It may be concluded then that hypothesis H4 is not proven for X1: INF; X2: INV; X3: LA and X4: LL. Net export is not a mediator variable against INF, INF, LA, LL and Z (economic growth).

5. CONCLUSION & SUGGESTION

Conclusion of this research is as follows:

1. Based on 1st substructure linear regression equation: When related together, government Investment on Infrastructure (INF), Investment (INV), Foreign Labor (LA), and Local Labor (LL) when related alltogether has a significant relation in statistic against Net export (Y) in FTZ Batam Island, Indonesia.

2. When related partially, government investment on infrastructure direct relation has a positive and insignificant result, investment direct relation has a negative and insignificant result, foreign labor direct relation has a negative and significant result, and local labor direct relation has a positive and significant result against net export at FTZ Batam Island, Indonesia.

3. Based on 2nd substructure sub linear regression equation: When related together, government investment on infrastructure, investment, local and foreign labors alltogether has a significant relation against economic growth at FTZ area batam island, Indonesia.

4. When related partially, government investment on infrastructure direct relation has a positive and insignificant result, investment direct relation has a negative and insignificant result, foreign labor direct relation has a negative and significant result, local labor direct relation has a positive and significant result, against net export at FTZ Batam island, Indonesia

5. Partially, government investment on infrastructure indirect relation has a negative and insignificant result, investment indirect relation has a positive and insignificant result, foreign labor indirect relation has a positive and insignificant result, local labor indirect relation has a negative and insignificant result, against net export at FTZ Batam island, Indonesia

6. Net export is not a mediator variable against government investment on infrastructure, investment, foreign labor, local labor, and economic growth in FTZ Batam Island, Indonesia

7. FTZ Batam Island from 2009 until 2015 is quite a success which is stated by increase of total investment growth up 45.16 percent, net export rises 256.83 percent with an economic growth rate of 5.98 percent by the end of year 2015

8. The potential loss of taxes for Indonesia Central government due to the enactment of FTZ is calculated in approximated amount of 304.69 billion Rupiah in period of 7 (seven) years fro

2009-2015 yet still provides significant benefits to the development and economic growth of Batam Island, Indonesia.

Suggestion of this research is as follows:

1. Immediately end dualism policy and bureaucracy between the city government of Batam (Pemko Batam) and Batam management board (BP Batam) and creates one single regulatory body for local regulator to govern administration and investment in Batam.

2. Legal certainty from one government body is necessary to make certain rules and regulations for investors.

3. Special economic discretion by Indonesian central government is required to facilitate investmenti FTZ Batam, and to warrant effectiveness of investment with interesting policies, benefits, tax insentives, and tax holiday especially for Foreign Investment Companies.

6. LIMITATION OF STUDY

This research is limited by obtained existing economic secondary data from year 2003 onwards and data after the establishment of FTZ, year 2009 to 2015. The analysis of this research is limited to the variables used and proposed hypothesis in this study. This research process was conducted from June 2016 to December 2016.

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Attachment 1

Potential Loss of Taxes due to Batam Free Trade Zone, year 2009 to 2015
(Billion USD)

Year	Total Exports	Total Imports	Net export	Total Exim
2009	5,75	7,69	−1,94	13,44
2010	8,48	8,66	−0,18	17,14
2011	11,55	9,60	1,95	21,15
2012	10,72	10,14	0,58	20,86
2013	11,75	9,45	2,3	21,2
2014	11,30	8,40	2,9	19,70
2015	9,17	6,80	2,37	15,97
				129,46

Potential Loss of Taxes due to Free Trade Zone, year 2009 to 2015 is 15% × 129,46 billion USD = 19,42 billion USD