

HAS THE ECONOMY OF JAPAN IMPROVED BY ABENOMICS?

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ABSTRACT

This research discusses the economic policy program of Japanese Prime Minister Shinzo Abe, known as “Abenomics”. Abenomics is based on three core principles that are often referred to as the “Three Arrows”. By Mr. Abe’s terminology—that is, the “bold monetary policy,” the “flexible fiscal policy,” and the “growth strategy” (Wakatabe, 2015). The main goals of this policy are to take the economy out of continuous deflation, to depreciate the yen (JPY), and to reach an inflation rate target of 2 % per year (Fukuda, 2013).

This study aims to analyze whether the economy of Japan improved by Abenomics by examining the conditions of small and medium-sized enterprises (SMEs) in Japan after its onset. The research advances two hypotheses: the number of small and medium sized enterprises bankruptcies decreased after December 2012 and the exporting sector shows a relatively low level of decline in the bankruptcy number among Japanese firms. After implementing the new policy, the Japanese economy improved firms and made more profit, and bankruptcies among SMEs decreased.

Keywords: *Abenomics, Shinzo Abe, economic policies, three arrows, reforms, inflation, GDP, the yen, stagnation, Bank of Japan, monetary policy, fiscal stimulus, consumption, structural reforms, investment, deflation, SMEs, unemployment, exchange rate, balance of payment.*

Overview

In December 2012, Shinzo Abe, the leader of the Liberal Democratic Party, won Japan’s general election and re-entered office as the new Prime Minister. In his policy agenda, there was a big task of pulling the Japanese economy out of the deflationary situation. Shinzo Abe initiated a new policy package, commonly known as “Abenomics”. Abenomics was based on three core principles that were often referred to as the “Three Arrows” (Hoshi, 2013). The first “arrow” targeted monetary policy, the aim of which was to overcome deflation and achieve sustainable economic growth, reaching inflation at 2% per year in two years time (Miyao & Okimoto, 2017). The second arrow targeted the fiscal and tax policy which consisted of several economic

packages focusing mainly on public works spending. The third arrow aimed to promote a growth strategy that targeted broad and complex support measures to high potential industries, including pharmaceuticals, education, tourism, and Finance (Lok, 2015).

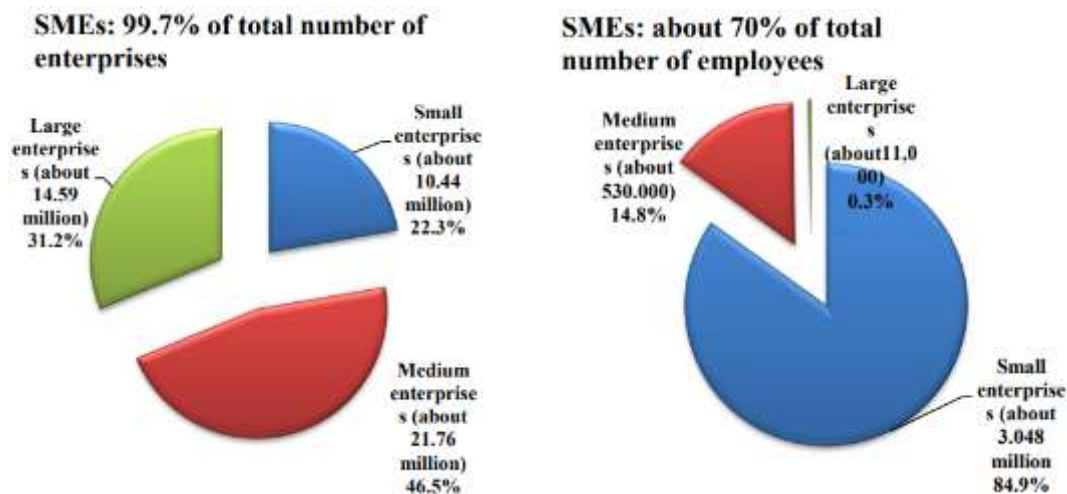
Dinterman et al. 2018 indicated that bankruptcy is significantly influenced by macroeconomic factors such as interest rates and unemployment rates. The author also indicates that bankruptcies are a lagging indicator of financial stress. Meijers et al. 2019 present that bankruptcy is one of the critical aspects of the financial crisis and is perceived to be one of the most important factors that determine the macroeconomic dynamics. As indicated by the authors, bankruptcy creates huge financial stress by causing unemployment, affecting the wealth stocks as well as foreign investments. It is to say that after the new regime started, both the stock market and the foreign exchange market reacted very favorably. The new stimulus package depreciated the yen from December 2012 which was very profitable for Japanese companies by giving them the opportunity to export more to the global market.

Yet, scholars usually analyze the Abenomics impact on large businesses. This leaves out the situation of SMEs. After implementing the new policy package Japanese economy showed clear signs of recovery, and business sentiment also was improving among large companies, SMEs, and micro-enterprises (White Paper, 2019). However, when actually talking to SMEs, there are still many opinions that “only large companies are benefiting”. Therefore, the real situation of SMEs remains to be unknown. In this paper, based on the results of the latest performances of SMEs I will analyze the impact of Abenomics on SMEs and the whole economy. In fact, even in the same industry with large companies, SMEs are improving their business performance. A number of researchers, both domestic and foreign, had different points of view regarding the effectiveness and consequences of Abenomics.

The study aims to examine the outcome of Abenomics on the Japanese economy. In this study, I will analyze how economic reforms and developments in Japan under Abenomics have affected the SMEs’ performance. The role of SMEs in the Japanese economy is very important. In Japan, there are over 3.5 million of SMEs and they consist of more than 99% of all businesses as of White Paper (2019). Haron et al., (2015) argue that a large number of SMEs are in the part production systems of large companies as well as daily life industries such as suppliers of daily necessities and services to individuals. Toyota, Honda and Sony started out as small Backstreet factories, and their success shows how SMEs can help Japan Economy if adequate assistance is provided (Haron et al., 2015). These days, the level of dependence on

SMEs is increasing in majority countries in the world. For example, in Japan 99.7% of all businesses are SMEs and they provide over 70% of all employment and more than 50% of all value added manufacturing sector and nearly 60 % in nonmanufacturing (METI, 2019). There are 3.578 million SMEs in Japan (METI, 2019).

Figure 4: Number of employment and number of enterprises(2019)



Source: 2019 White Paper on Small and Medium Enterprises in Japan. (*Small and Medium Enterprises Agency*) METI 2019.

Data collection.

In this research, secondary data has been collected from the Statistics Bureau of Japan. The data collection used in this analysis provides information concerning over 3.5 million SMEs operating on the Japanese market. All of this information comes from the financial statements of the businesses spanning the period from 2005 to 2020. The sample sizes consist of 15 years of monthly data, covering from the year 2005 and 2021 both for dependent and independent variable.

Measurement of variables.

Dependent variable. Our main interest in the regression model is the changes in the number of SMEs' bankruptcies after beginning of Abenomics. The dependent or the explained variable in this study can be explained as the number of cases of SME bankruptcies occurring in Japan.

Independent variables: Inflation (CPI), GDP, Unemployment, Exchange rate, Balance of payment.

Research method. We divided the data in two parts: independent and dependent variables. To illustrate relationship between dependent variable (SMEs bankruptcies) and independent variables (CPI, GDP, exchange rate, unemployment) multiple regression model is run. A dependent variable is modeled as a function of several independent variables with corresponding coefficients, along with the constant term. Regression analysis is a powerful procedure for analyzing associative relationships between dependent variable and some independent variables.

Multiple regression analysis is the calculation of a regression equation that represents the objective variable using multiple explanatory variables x_i ($i=1, 2, 3, \dots$). The formula can be written as:

$$Y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_n x_{in} + \varepsilon_i$$

where, for $i=n$ observations:

y_i =dependent variable;

x_i =independent variable;

β_0 =y-intercept (constant term);

β_n =slope coefficients (regression coefficients) for each independent variable;

ε_i =the model's error term (also known as the residuals);

The regression coefficient β_i shows how many units the value of the dependent variable y will change when the value of the i -th independent variable changes by one unit, all other things being equal (all other independent variables are equal to their mean values).

In our case the model is written like this:

$$Y = \beta_0 + \beta_1 * GDP + \beta_2 * ER + \beta_3 * UNEM + \beta_4 * BOP + \beta_5 * CPI + \beta_6 * AD + \varepsilon_i$$

β_0 = y-intercept (constant term);

GDP = Gross Domestic Product;

ER = Exchange Rate (USD to Yen);

UNEM = Unemployment Rate;

BOP = Balance of Payment (BOP);

CPI = Consumer Price Index;

AD = Abenomics Dummy;

ε_i =the model's error term;

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = regression coefficients for each independent variable;

Descriptive statistics and model results

The results of the study are presented and discussed in this chapter. For the purpose of finding the quantitative predictions regarding dependent and independent variables, regression analysis method has been adopted that shows the individual significance of each independent variable and overall significance of the model. Following are the results of regression analysis:

Table 1.

	Descriptive Statistics					
	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
SME bankruptcy	208	588.0	1560.0	987.245	16.6241	239.7566
CPI	192	99.2	104.0	101.060	.0938	1.3004
Exchange rate	208	76.3	124.2	104.587	.8868	12.7900
Unemployment	208	2.1	5.8	3.921	.0634	.9150
GDP	204	-5.4	4.2	.876	.1354	1.9346
Balance of payment	208	-6635.0	24385.0	13309.385	413.6417	5965.6258
Valid N (list wise)	192					

In the below model summary table the capital „R“ representing the coefficient of correlation. There is a range of coefficient of correlation which express the strength and direction of the correlation between the variables. This range includes „+1“ and „-1“. If there is a strong positive linear relationship found between variables and the value of the „R“ would close to the „+1“. While the value of the „R“ will be closed to „-1“ a negative linear relationship found between variables and if the value of „R“ will be zero which describes a weak relation between the variables.

Table 2.

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.843 ^a	.710	.702	127.7667

a. Predictors: (Constant), Balance of payment, CPI, GDP, Unemployment, Exchange rate

b. Dependent Variable: SME bankruptcy

In Table 2, the R² (R square) (coefficient of determination) shows the model. The model’s degree of goodness of fit was estimated and evaluated using multiple coefficients denoted by R² and the adjusted R². R² is the square of this measure of

correlation and indicates the proportion of the variance in the dependent variable that is explained by the independent variables in the model. However, the disadvantage of R^2 is that it tends to over-estimate the success of the model in some cases when applied to the real world, so an adjusted R^2 value takes into account the number of variables in the model and the number of observations is used (Ahmed, 2006). It can be read as a percentage. In the above column of R^2 , the value is 0.710 which means that the independent variables can explain the change or variance of about 71.0% in the dependent variable. Based on the R^2 , there is approximately 71.0% of the variation in the SMEs bankruptcy case could be explained by the variation in independent variables which are the unemployment rate, GDP, CPI, BOP, and Exchange rate. The remaining value, 29 % is explained by other factors that are not included in this research. Meanwhile, from the adjusted R^2 , there is approximately 70.2% of the variation in the SMEs bankruptcy case could be explained by the variation in independent variables which are the unemployment rate GDP, CPI, BOP, and Exchange rate after taking the degree of freedom into account. The R-value just shows the simple correlation and in this case, it is 0.843, which indicates a high degree of correlation.

Table 3.

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7439932.221	5	1487986.444	91.151	.000 ^b
	Residual	3036327.024	186	16324.339		
	Total	10476259.245	191			

a. Dependent Variable: SME bankruptcy

b. Predictors: (Constant), Balance of payment, CPI, GDP, Unemployment, Exchange rate

In Table 3, the ANOVA (Analyses of Variance) indicates that the regression model predicts the dependent variable bankruptcy significantly well, as the Sig.-value is less than the significance level of 0.05. This demonstrates that the model is a good fit for the data.

F-test is employed to test the overall difference in the variances of the economic model. The result for F-test is significant as tabulated in Table 3 thus indicates that

dependent variable (bankruptcy) is statistically affected by the independent variables (Balance of payment, CPI, GDP, Unemployment, Exchange rate). It means that null hypothesis which states that dependent variable (bankruptcy) is not affected by the independent variables is rejected. Therefore, this model can be said as significant and it can be used for forecasting method.

Table 4.

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2304.302	928.540		2.482	.014
	CPI	-25.875	9.341	-.144	-2.770	.006
	Exchange rate	3.692	.978	.209	3.776	.000
	Unemployment	227.135	12.927	.806	17.571	.000
	GDP	-27.787	4.960	-.237	-5.602	.000
	Balance of payment	.003	.002	.081	1.721	.087

a. Dependent Variable: SME bankruptcy

b. Predictors: (Constant), Balance of payment, CPI, GDP, Unemployment, Exchange rate

The macroeconomic indicators are significant when the significance value is less than the significance level of 0.05. Four of five independent variables - GDP growth, rate of inflation, and interest rate have proved statistically significant effects, as it can be seen in the coefficient that reflects the p-value below 0.05, which shows that these variables are imparting to this model by creating and showing a good relationship between bankruptcy and GDP, Unemployment, Rate of inflation and Exchange rate. Balance of payment had no significant relationship because the p-value was 0.087 and it was more than 0.05. The value of the unstandardized constant is found 2304 which describes that if all independent variables remain zero the bankruptcy case will remain affected by other variables that have not been taken into account.

Based on the regression result, each of the independent variables is interpreted as below:

$\beta_1 = -0.144$. The t-statistics for the Inflation is -2.770, which is significant at 5% significance level. The coefficient result of the Inflation rate is -0.144, the negative sign indicates that there is a negative relationship between SME bankruptcy and inflation. The coefficient also means that holding other variables constant, if the

inflation rate increases by 1 %, on average, the estimated SME bankruptcy case in Japan will decrease by 14 % point, *ceteris paribus* assumption.

$\beta_2 = 0.209$. The t-statistics for the Exchange rate is 3.776, which is significant at 5% level. The coefficient result of the Exchange rate is 0.209, the positive sign indicates there is a positive relationship between the Exchange rate and the SME bankruptcy case in Japan. The coefficient also means that holding other variables constant, if the Exchange rate increases by 1 %, on average, the estimated SME bankruptcy case in Japan will increase by 20.9% point, *ceteris paribus* assumption.

$\beta_3 = 0.806$. The t-statistics for the Unemployment rate is 17.571 which is significant at 5% level. The coefficient result of the Unemployment rate is 0.806, the positive sign indicates there is a positive relationship between the Unemployment rate and the SME bankruptcy case in Japan. The coefficient also means that holding other variables constant, if the Unemployment rate increases by 1 %, on average, the estimated SME bankruptcy case in Japan will increase by 80.6% point, *ceteris paribus* assumption.

$\beta_4 = 0.237$. The t-statistics for the GDP rate is -5.603 which is significant at 5% level. The coefficient result of the GDP rate is 0.237, the negative sign indicates there is a negative relationship between the GDP rate and the SME bankruptcy case in Japan. The coefficient also means that holding other variables constant, if the GDP rate increases by 1 %, on average, the estimated SME bankruptcy case in Japan will decrease by 23.7% point, *ceteris paribus* assumption.

$\beta_5 = 0.081$. The t-statistics for the Balance of Payment rate is 1.721 which is significant at 5% level. The coefficient result of the Balance of Payment rate is 0.081, the positive sign indicates there is a positive relationship between the Balance of Payment rate and the SME bankruptcy case in Japan. The coefficient also means that holding other variables constant, if the Balance of Payment rate increases by 1 %, on average, the estimated SME bankruptcy case in Japan will increase by 8.1% point, *ceteris paribus* assumption.

Discussion of findings.

The study explored the interrelatedness of macroeconomic factors (GDP, CPI, Exchange rate, Unemployment and Balance of Payment) and number of SME bankruptcies in Japan. The macroeconomic factors showed inconsistent results; unemployment rate had positive and significant effect, while GDP rate had a negative and also significant effect. Exchange rate and Balance of Payment rate was positive and significant effect.

From the result of correlation analysis, it was revealed that Unemployment has a very strong and positive significant relationship with SME of bankruptcy. It means that an increase in unemployment rate increases SME bankruptcy. In 2017, the fifth year of Abenomics, the "total unemployment rate in the 2% range" was achieved for the first time in almost 20 years. The second most strong but negative significant relationship with SME of bankruptcy was GDP. It means that an increase in GDP reduces SME bankruptcy number. The third strong and positive significant relationship with SME of bankruptcy was Exchange rate. It means that an increase in Exchange rate increase SME bankruptcy number. It is clear that the yen is the key to the success of Abenomics. Monetary easing is indispensable for getting out of deflation, and I think the best thing about Abenomics is that it returns to the basics of correcting the excessive appreciation of the yen and aiming for an export-led economic recovery. Further, inflation rate was also found to have a negative correlation with SME bankruptcy, which means that with an increase in the value of inflation rate the profitability of the number of SME bankruptcy declines significantly. This is because inflation rate has been lower than normal rate for a long time in Japan. The Bank of Japan has launched a series of bold monetary policies since it introduced the inflation targeting policy. However, the 2% inflation target has not been achieved. The biggest "discovery" revealed by Abenomics, is that the Bank of Japan has bought up nearly half of its huge government bond balance, and the amount of the monetary base has increased 3.6 times, far exceeding the initial target. Balance of Payment is also positive relationship with the number of SME bankruptcy. It is also significant at 5% level. It means that with an increase in the value of balance of payment rate the profitability of the number of SME bankruptcy increase.

Conclusion

In this research has three research objectives, the first objective is to identify the relationship between the number of SME bankruptcy case and its independent variables which are unemployment rate, CPI (inflation rate), exchange rate, GDP, and balance of payment. The second objective is to examine the existence of a cointegration relationship in the model. The last objective is to identify the causal relationship between the number of SME bankruptcy case and its independent.

Based on the result reports in the OLS (adjusted for autocorrelation problem), the t-statistic shows that the CPI and GDP is significant at 5% significance level. The unemployment, exchange rate and balance of payment, on the other hand, are

significant at 1% significance level respectively. Besides, based on the F-test statistic, the overall relationship between the independent variables and the dependent variable is significant at 1% significance level. In overall, the model is free from econometric problems such as multicollinearity, heteroscedasticity, model specification bias, and normality problem.

The study explores the influence of Abenomics on the Japanese economy, through analyze the performance of small and medium sized businesses. Role of SMEs in the Japanese economy is very important. The reason is that in the Japanese economy there are over 3.5 million of SMEs and they consisted of more than 99% of all businesses. There are three aspects of Abenomics. First is the fiscal stimulus which includes the issues of the consumption tax rate, public spending, and investment. Second is the quantitative easing which consists of inflation, employment and GDP growth. Third is the structural reform policy or growth strategy, which leads with foreign investment projects, the creation of new markets, the development of human capital and the liberalization of trade relationship. This study is based secondary data sources. They are government's annual reports and other official information mainly provided by Japanese government and also other academic, professional and business literatures as well as articles published by major international organizations and research institutes that discuss, examine and review Abenomics.

In the five years of Abenomics, corporate performance reached a record high, stock prices reached a record high for the first time in about 25 years, labor supply and demand tightened, and wages rose slightly. However, the real economic growth rate was only in the 1% range, and personal consumption and capital investment had not yet reached a strong recovery. In addition, despite the large-scale monetary easing, the price target of 2% had not been reached, and the deterioration of the fiscal situation had not stopped. Of the "three arrows" of Abenomics, bold monetary policy and agile fiscal policy had changed market expectations and contributed to the depreciation of the yen, higher stock prices, and improved corporate profits. Although it had achieved great results, there were growing concerns about policy sustainability and future risks. Regarding growth strategies, progress and results had been seen in areas such as the reduction of the effective corporate tax rate, the conclusion of economic partnership agreements, and tourism-oriented nations (inbound), but no remarkable results in items related to labor market reform and innovation promotion. The direction of the growth strategy itself was correct, but it would take several years for the effect to appear.

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