

THE IMPACT OF INFLATION ON THE AUSTRIAN ECONOMY SECTOR

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Abstract

Inflation is a critical issue that can affect a nation's financial stability and economic performance in a global economic environment characterized by uncertainty and price swings. With an emphasis on the factors influencing Austria's long-term economic growth, this study attempts to examine the effects of inflation on the country's economy. Panel data analysis for the years 2011–2021 is used in the study, which draws from trustworthy secondary sources like the World Bank, the OECD, and other pertinent international databases. Advanced econometric time series analysis techniques were used to accomplish the study's goals, revealing the connections between the inflation rate, investment, consumption, and other important economic factors. The results show that inflation shows significant annual fluctuations, with direct and indirect effects on economic growth. Moderate increases in inflation have been associated with a positive impulse to investment and consumption, but high levels of inflation have had a destabilizing impact, generating market uncertainty and a decline in investor confidence.

Keywords: *inflation; econometric procedures; economic growth*

JEL Classification: *E31, E5*

INTRODUCTION

In general inflation is a condition where there is an increase in the prices of goods and services. Inflation can be interpreted as an increase in the price of goods and services in general and continuously within a certain period of time (Sinaga et al., 2020). Inflation calculation done by the central bureau of statistics (CBS/BPS). An increase in the price of just one or two goods can't be called inflation unless the increase extends (or causes price increases) to other goods. Keynes theory regarding inflation based on the macro theory and highlighting other aspects of inflation (Boediono, 1998). According to in this theory, inflation occurs because a society wants to live outside the limit economic ability. The process of inflation, according to this view, is nothing but a process of fighting over a share of the fortune between groups a social group that wants a bigger share than it can provided by the community. This process of struggle is over translating into a state where people's demand will be goods always exceed the number of goods available.

Low and stable inflation is a prerequisite for sustainable economic growth which in turn will provide benefits for improving people's welfare (Sahla et al., 2023). The importance of controlling inflation is based on the consideration that high and unstable inflation has a negative impact on the socio-economic conditions of society. High

inflation will cause people's real income to continue to fall so that people's living standards fall and eventually make everyone, especially the poor, poorer. Unstable inflation will create uncertainty for economic actors in making decisions (Dragomir, 2017).

In maintaining economic growth, it is necessary to pay attention to aspects that cause inflation. The following are ways to deal with inflation along with explanations (Nasution et al., 2024). The first way the government Austrian will do is fiscal policy. This fiscal policy itself relates to revenues and expenditures from the government budget. This fiscal policy includes increasing tax rates, reducing government spending and making loans. For monetary policy to be one way to overcome inflation that can be done by the government. Monetary policy or financial policy can be done by increasing or decreasing the amount of money in circulation. This is done to maintain monetary stability with the aim of increasing the welfare of an Austrian people.

I. LITERATUR REVIEW

This research is intended to analyze impact inflation to economy sector in Austria. Meanwhile, the benefits of this research are expected to add to the literature in the field of macroeconomic and as a research reference. Inflation is one indicator of success in controlling economic stability (Bank Indonesia). The welfare of society and the production progress of an economy is determined by the amount of growth indicated by changes in national output. Changes in output in the economy is a short-term economic analysis.

According to Putong (2015) there are two main causes of its occurrence inflation namely. The first is "demand pull inflation". This inflation arises because of demand which is not matched by conditions of increased productions levels, the result is according to the law of demand, if there is a lot of demand while the supply remains the price will rise. And when this continuous will cause inflation which prolonged. The second is "cost push inflation". This inflation is due to an increase production cost that are triggered by increases in input costs or costs production factors. As a result of the increase in production costs, there are two thing that can be done by procedures, namely by raising the price of its product with the same bid amount or price product increased due to a decrease in the amount of production. Inflation has a significant impact on Austria's economic sector, and the integration of artificial intelligence techniques in cybersecurity can help protect it from financial challenges (Dragomir, 2017).

Based on the level, according to Sukirno (2015), inflation is differentiated be as follows:

- Mild inflation, occurs when the prices of necessities increase principal is below 10% a year.
- Moderate inflation, occurs when the prices of necessities increase principal is between 10% - 30% a year.
- Heavy inflation, occurs when the prices of necessities increase principal is between 30% - 100% a year.
- At last, Hyperinflation (uncontrollable inflation), occurs when the increase in prices of basic necessities is above 100% a year.

The tourism industry sector, export commodities are the key to controlling inflation for the development of a more productive society towards prosperity and accelerating equity so that it can influence the trade balance to become an increasingly surplus. Inflation depends on the movement of resources that are owned to make all economic sectors continue to run even though they have different advantages but it depends on the efficiency and effectiveness of all parties.

II. METHOD

In this study, data collection was carried out by quantitative methods using secondary data from pre-existing sources. These data were extracted from reports and databases of relevant international institutions such as the World Bank, OECD and other recognized sources. Previous research papers, journal articles and reference books were also analyzed to provide a solid base of information.

The econometric methodology included time-series analysis procedures for the period 2011-2021 to identify correlations and trends between inflation and other determinants of economic growth in Austria. Through this approach, the study aims to provide a clear understanding of how inflation influences the Austrian economy, taking into account multiple variables that contribute to long-term economic growth.

III. RESULTS AND DISCUSSION

The analysis of inflation trends in Austria reveals notable fluctuations over the years, influenced by various internal and external economic factors. Table 2, derived from World Bank data, presents the annual inflation rates in Austria during the period 2011–2020.

Table 2. Annual Inflation Rates in Austria (2011–2020)

Year	Inflation (%)
2011	3,3%
2012	2,5%
2013	2,0%
2014	1,6%
2015	0,9%
2016	0,9%
2017	2,1%
2018	2,0%
2019	1,5%
2020	1,4%

Source: World Bank Data

With a notable drop from 3.3% in 2011 to a low of 0.9% in 2015 and 2016, the data shows a general downward trend in inflation from 2011 to 2016. The following years show a slight increase, reaching a peak of 2.1% in 2017, stabilizing at 2.0% in 2018, and then progressively falling once more to 1.4% in 2020. These adjustments demonstrate Austria's capacity to keep inflation rates modest in the face of international economic difficulties, such as the COVID-19 pandemic in 2020.

Figure 1 illustrates the inflation rate in Austria for the period 2011-2021, showing annual fluctuations in this important economic indicator.



Figure 1. Inflation, consumer prices (annual %)

Source: Word Bank

According to the data in Figure 1, the inflation rate in Austria has shown a stabilizing trend over the years, with moderate variations. In 2014, inflation started to decline, reaching 1.6% in 2015 and continuing to fall to 0.9% in 2016, a level at which it remained in 2017. In 2018, inflation rose to 2.1%, but fell back to 2.0% in 2019 and continued to fall, reaching 1.5% in 2020 and 1.4% in 2021. However, in 2021, the inflation rate rose significantly to 2.8%. Although the COVID-19 pandemic significantly affected global economies in 2020-2021, its impact on the Austrian economy was relatively limited, so that inflation remained within manageable ranges. The impact of inflation on Austria's economic sector can be mitigated by using artificial intelligence applications to inform decisions, thus providing more accurate analysis and effective adaptation strategies (Dragomir & Alexandrescu, 2017). Also, based on the data from Wikipedia, the Austrian economy is one of the 14 richest economies in the world based on per capita gross domestic product and is a developed social market economy and has a high standard of living. Until the 1980's, much of Austria's major industry was nationalized however, recently privatization has reduced state ownership like other European countries. The labor movement was very strong in Austria and had a major impact on labor politics. A part from being developed industry, tourism is also an important economic sector in Austria. This makes their

economic resilience even more resilient despite a bit of turmoil due to the implementation of restrictions on community activities.

However, despite the benefits of many industries, Austria has lost a lot of people and its workforce is getting older, particularly in the wake of the epidemic yesterday (Kamalina, 2022). Due to its aging population, Austria need a large number of young, productive people to help satisfy its operational needs. Out of all the employment sectors, Austria needs the most workers for the tourist industry, which includes restaurants and hotels.

Multiple descriptive tests, the hypothesis in this study uses multiple descriptive tests to identify important sensory characteristics of a product and provide information about the intensity of these characteristics. Multiple descriptive tests are used to determine how much influence the independent variables have, namely: PPI, PLI, Housecost, Shareprice, Forecast and CPI (see Table 1).

Table 1. Descriptive statistics for the variables analyzed

	PPI	PLI	HOUSECOST	SHAREPRICE	FORECAST	CPI
Mean	1.386587	132.1818	110.4731	112.6824	1.947038	1.516399
Median	0.342766	126.0000	108.5325	102.7466	2.117586	0.896825
Maximum	6.854611	158.0000	153.2625	145.9151	3.555079	12.25000
Minimum	-1.374325	117.0000	81.59750	88.98930	0.804758	-7.295769
Std. Dev.	2.758975	12.84382	22.12619	19.64915	0.827223	6.412141
Skewness	0.747842	0.819545	0.519864	0.569849	0.393489	0.343705
Kurtosis	2.398164	2.519502	2.304802	1.755603	2.376594	2.041901
Jarque-Bera	1.191335	1.337185	0.716987	1.305074	0.461986	0.637306
Probability	0.551195	0.512429	0.698728	0.520723	0.793745	0.727128
Sum	15.25246	1454.000	1215.204	1239.507	21.41742	16.68039
Sum Sq. Dev.	76.11942	1649.636	4895.684	3860.893	6.842981	411.1555
Observations	11	11	11	11	11	11

Source: SPSS vs 26

Estimation Equation:

$$Y = C(1) + C(2)*X_1 + C(3)*X_2 + C(4)*X_3 + C(5)*X_4 + C(6)*X_5 \tag{1}$$

Substituted Coefficients:

$$Y = -28.252271857 + 1.36766145767 * X_1 + 0.120778442569 * X_2 + 0.0282513615156 * X_3 + 0.0449165289 * X_4 + 1.91329422754 * X_5 \tag{2}$$

Multiple Linear Regression Method Testing the hypothesis in this study uses Multiple Linear Regression analysis (Macovei & Andrioiaia, 2022) to relate one dependent variable to several independent variables. Multiple linear regression equations (Andreev et al., 2022) are used to determine how much influence the independent variables have, namely: X₁, X₂, X₃, X₄, X₅ and Y.

The following table presents the descriptive statistics for the variables used in the econometric analysis, including the estimated coefficients, standard errors, t-statistic values and probabilities associated with each explanatory variable (see Table 2).

Table 2. Descriptive statistics

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-28.25227	24.52637	-1.151914	0.3014
X1	1.367661	0.702303	1.947395	0.1090
X2	0.120778	0.135369	0.892216	0.4132
X3	0.028251	0.058548	0.482534	0.6498
X4	0.044917	0.069966	0.641979	0.5492

X5	1.913294	2.295138	0.833629	0.4425
R-squared	0.960445	Mean dependent var		1.516399
Adjusted R-squared	0.920889	S.D. dependent var		6.412141
S.E. of regression	1.803521	Akaike info criterion		4.319810
Sum squared resid	16.26343	Schwarz criterion		4.536844
Log likelihood	-17.75896	Hannan-Quinn criteria		4.183001
F-statistic	24.28098	Durbin-Watson stat		2.982052
Prob(F-statistic)	0.001619			

Source: SPSS vs 26

Notes: Dependent Variable: Y Method: Least Squares; Sample: 2011-2021; Included observations: 11

Multicollinearity test

Multicollinearity is a condition where one or more independent variables have a correlation or relationship with other independent variables. Multicollinearity can also arise if the independent variables are correlated with confounding variables. One way to analyze whether or not there is a multicollinearity effect in this study is to use the variance inflation factor (VIF) method. The steps for the VIF model are as follows (Gujarati et al., 2012):

1) Regression of the complete model 2) As for the test criteria If the centered VIF value is <10, then the model does not find multicollinearity. If the centered VIF value is > 10, then the model is found to have multicollinearity.

Normality test

Classical normal linear regression assumes that the probability distribution of errors has an expected mean equal to zero, is uncorrelated and has a constant variance. Jarque-Bera test, which has the following steps (Gujarati et al., 2009):

Complete model regression and perform the Jarque-Bera test to obtain the probability value of the Jarque-Bera value

Breusch Godfrey test steps as follows:

$$\text{Growtht: } \beta_0 + \beta_1 \text{ EMPt} + \beta_2 \text{ PDR} + \beta_3 \text{ POP} + \beta_4 \text{ PVP} + \mu \quad (3)$$

a. Hypothesis formulation

H_0 : U_t normal distribution

H_A : The distribution of u_t is not normal

b. Determine the significance level (α)

c. Determine the test criteria

H_0 : Accepted if the probability of Jarque-Bera $> \alpha$

H_0 : Rejected if the probability of Jarque-Bera $< \alpha$

Autocorrelation Test

Autocorrelation occurs when past variable values have an influence on present or future variable values. Thus, autocorrelation is a special problem of times series data. Autocorrelation will cause an underestimation of the value of the u_t variable, and therefore an overestimation of R^2 .

$$\text{Growtht: } \beta_0 + \beta_1 \text{ EMPt} + \beta_2 \text{ PDR} + \beta_3 \text{ POP} + \beta_4 \text{ PVP} + \mu$$

Hypothesis formulation

H_0 : There is no autocorrelation problem in the model.

H_0 : There is an autocorrelation problem in the model.

Significant level ($\alpha = 0.10$)

Determine the test criteria.

Test the goodness of the model

a. F test

The F test is used to look for the simultaneous effect of the independent variable on the dependent variable and to determine the calculated F. The F test is used to test for existence. To find out the F test can be done with the following steps (Gujarati et al., 2009):

Complete model regression and carried out to obtain a probability or significance value of F

F test steps as follows:

$$\text{Growtht: } \beta_0 + \beta_1 \text{ EMPt} + \beta_2 \text{ PDR} + \beta_3 \text{ POP} + \beta_4 \text{ PVP} + \mu$$

- a. Hypothesis formulation
 H_0 : The model used does not exist
 H_A : The model used exists
- b. Determine the significance level (α)
- c. Determine the test criteria
 H_0 : Accepted if the probability of significance $F > \alpha$
 H_0 : Rejected if the probability of significance $F < \alpha$
- d. Conclusion
- b. Interpretation of the Coefficient of Multiple Determination (R^2)

The coefficient of determination is used to measure the goodness of the model, which shows how much the variation of the independent variable affects the dependent variable. R^2 verbally measures the proportion or percentage of total variation in Y that is explained by the regression model. According to (Gujarati, 2010) that there are two characteristics of R^2 that need to be observed, namely:

$$\text{Growth: } \beta_0 + \beta_1 \text{ EMPt} + \beta_2 \text{ PDR} + \beta_3 \text{ POP} + \beta_4 \text{ PVP} + \mu$$

- 1. Magnitude is never negative
- 2. The magnitude is $0 \leq R^2 \leq 1$

If R^2 has a value of 1 then the suitability of the line is $Y_t - Y_i$ for each value of i. on the other hand if R^2 is zero then there is no relationship between the regressor and the regressor how it looks like.

3. Influence Validity Test

- a. t test

To test the influence of the independent variables on the dependent variable, the t test is used which aims to determine the magnitude of the influence of each independent variable on the dependent variable from two sides. The t test shows how far the influence of one independent variable has on the dependent variable by assuming the other independent variables are constant (Firdaus & Yusop, 2009). According to (Gujarati & Porter, 2009) the formal steps of the t test are as follows:

- 1. Complete model regression and performed to obtain the probability value of the significance value of t
- 2. Steps to test the validity of the influence (t test) as follows:

$$\text{Growth: } \beta_0 + \beta_1 \text{ EMPt} + \beta_2 \text{ PDR} + \beta_3 \text{ POP} + \beta_4 \text{ PVP} + \mu$$

- a. Hypothesis formulation
 H_0 : The i-th independent variable has no significant effect
 H_A : The i-th independent variable has a significant influence
- b. Determine the significance level (α)
- c. Determine the test criteria
 H_0 : Accepted if the probability of significance $t > \alpha$
 H_0 : Rejected if the significance probability $t < \alpha$

IV. CONCLUSION

The problem of inflation is a serious problem for developed countries like Austrian. Increasing investment in a sustainable manner is one that can encourage economic growth when the investment is still booming, with investments that can absorb a lot of manpower. In developed countries work productivity and innovation are the keys to success in preventing soaring inflation because they are supported by high investment and technology, as well as quality human resources. However, in realizing this, clear policies are also needed to increase the potential of each leading economic sector for prosperity public.

Inflation is an important indicator in a country. Inflation is a form of economic disease that often arises and is experienced in almost all countries. The more severe the inflationary disease, the more it spreads to employment, the decline in foreign exchange power and the threat it will pose to various domestic industrial sectors. Producer price index is a positive effect on developed inflation. The more labor force that young workers and investment, the higher the ability to produce output and save the Austrian economy in future. This study aims to determine the effect of the PPI, PLI, housecost, shareprice, forecast and CPI level variables on Austria inflation in 2011 – 2021. The analysis used in this study is the Multiple descriptive test and Multiple Linear Regression method.

The findings of the study emphasize the need for balanced monetary and fiscal policies to control inflation and sustain long-term growth. The analysis also provides valuable insights on the importance of using up-to-date economic data and the application of rigorous econometric models to assess the impact of inflation on the national economy.

The study contributes to a better understanding of the interaction between inflation and economic growth and provides a solid basis for future economic policy-making in Austria.

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