AJEMB
AMERICAN JOURNAL OF ECONOMIC AND MANAGEMENT BUSINESS

American Journal of Economic and Management Business
e-ISSN: 2835-5199
Vol. 4 No. 1 January 2025

Inflation, Income, and Happiness: Contrasting Low-Income Developing Countries and Advanced Economies

Muhammad Ichsan Fadillah
Poznań University of Life Sciences, Poland
Emails: ichsan.fadillah@up.poznan.pl

Abstract

This study explores the relationship between inflation, income, and happiness in low-income developing countries and advanced economies, as classified by the IMF. Using panel data from 66 countries (2012–2022) and random effects models, the results show a negative impact of inflation on happiness in low-income countries, while advanced economies exhibit a positive relationship, where inflation reflects economic vitality. Income per capita significantly drives happiness in low-income countries but moderates inflation's effects in advanced economies. These findings underscore the distinct macroeconomic influences on happiness across these two economic classifications.

Keywords: Advanced Economies, Inflation, Happiness, Income, Low-Income Developing Countries

INTRODUCTION

The relationship between inflation and happiness is well-documented in past research. The general idea is that the relationship is negative, where higher inflation means less happiness (Blanchflower, 2007; Di Tella et al, 1999; Blanchflower et al, 2014; Below, 2023; Arge, 2022; Di Tella et al, 2001). This means that both inflation is a factor in people's happiness levels, and the effect of inflation on people's happiness is negative.

The mechanism of how inflation effects happiness negatively varies. An argument is made where inflation is perceived as costly, which lowers the well-being of people (Di Tella et al, 1999). Another one shows that inflation is associated with 'negative' social function (Di Tella et al, 1999). Through inflation also, people feel that the economy becomes uncertain, and as a result, it reduces individuals' purchasing power and causes stress about future financial stability (Blanchflower et al, 2014).

The data used in past research is also varied. In terms of inflation data, a paper uses the Harmonized Index of Consumer Prices (HICP) (Below, 2023). Another one uses Consumer Price Index (CPI) (Arge, 2022). Meanwhile, for happiness data, the sources include the US' General Social Survey and the Eurobarometers (Blanchflower, 2007), or the European Social Survey (Arge, 2022).

While the negative relationship between inflation and happiness is generally an accepted assumption, there is a nuance. There is a divide between countries with lower level of development

and higher level of development, where happiness in the former is closely tied to income per capita, while in the latter it is not (here suggesting that inflation could play a stronger role in explaining happiness than income per capita) (Blanchflower, 2007; Blanchflower et al, 2014). However, when the level of development is ignored, there is evidence that the relationship between economic development (i.e. how rich a country is) and the level of happiness (i.e. how happy a country is) is strongly correlated, even stronger than inflation's negative correlation with happiness, which in turn mitigate the negative effect of inflation on happiness (Di Tella et al, 1999).

While the relationship between inflation and happiness especially when adjusted for economic development is well-researched in the macro-level (using income per capita measurement such as GDP) (Blanchflower, 2007), the relationship between inflation and happiness in the micro-level (household income) is less albeit also researched (Arge, 2022). A study shows the contrast between macro-level relationship which was found significant and micro-level which was found insignificant (Arge, 2022).

Building on past research, this paper tries to address the issue of inflation's relationship with happiness, adjusting for income per capita on macroeconomic level by grouping the countries based on their economic performance and contrasting the groups. In doing so, it attempts to answer the question "how are the relationship between inflation and happiness differ among countries with different groups of economic performance, before and after adjusting for income per capita?".

RESEARCH METHODS

The data used in this paper consist of three variables: GNI per capita PPP-adjusted from World Bank (World Bank, 2024a), Happiness Score from World Happiness Report (World Happiness Report, 2024), and Inflation data from World Bank (World Bank, 2024b). On top of that, it also based the data on the IMF's Economy Groupings information to cluster the data into Advanced Economies and Low-Income Developing Countries (IMF, 2024a). The data are on country-level and annually available covering 10 years (from 2012 to 2022).

The inflation data used in this paper is taken from the Global Database of Inflation available as an open-source in the World Bank website (World Bank, 2024b). The database consists of six types of inflation data, namely: headline consumer price index (HCPI), food consumer price index (FCPI), energy consumer price index (ECPI), core consumer price index (CCPI), producer price index (PPI), and gross domestic product deflator (GDPD) (World Bank, 2024b). Furthermore, each type consist of three kinds of data classified by their time period: annual, quarterly, and monthly (World Bank, 2024b).

This paper uses the HCPI annual data due to several considerations. However, to understand comprehensively, each of the indices will firstly be explained. The HCPI captures the change in all goods and services in a basket that represents consumer's expenditure, meaning it captures the overall consumer's cost of living, including domestically-produced and imported goods (Ha et al, 2021). Similar to HCPI, CCPI captures the same but excluding food and energy prices which are classified as highly volatile (Ha et al, 2021). Different from HCPI and CCPI which capture the consumer-side inflation rate, PPI and GDPD capture the producer-side, specifically those of

domestically-produced goods (Ha et al, 2021). However, GDPD takes into account government intervention like subsidies while PPI does not (Ha et al, 2021). Finally, FCPI and ECPI captures the price change in specific sectors, which are food and energy sectors respectively (Ha et al, 2021).

The reasons why this paper uses HCPI to represent the inflation figure is due to the fact that HCPI reflects consumer's experience (Ha et al, 2021). It gives the overall insight to inflation felt by average consumer (Ha et al, 2021). Furthermore, building on previous research where inflation effects happiness negatively mainly through perceived instability (Blanchflower, 2007; Di Tella et al, 1999; Blanchflower et al, 2014), the HCPI can reflect the perception of prices instability from the consumer's point of view. This is crucial from two perspectives: firstly, consumers are individuals, and secondly, the individual dimension of inflation captured by HCPI is on the same level as happiness captured by the Happiness Score.

The Happiness Score itself provided by World Happiness Report utilizes the surveys on individuals in different countries, with happiness as likened to a "ladder" where the higher the number the happier it represents (Helliwell et al, 2020 in Ulkhaq, 2020). There are six predictors of happiness: GDP per capita, social support, healthy life expectancy, freedom to make life choices, perception of corruption, and generosity (Helliwell et al, 2020 in Ulkhaq, 2020). Similar to HCPI, Happiness Score thus captures the data on individual-level.

For country classification, IMF classifies countries into three hierarchies: advanced economies, emerging market economies, and low-income developing countries (IMF, 2024b). They are differentiated into these classifications based on three factors: per capita income level, export diversification, and degree of integration into the global financial system (IMF, 2024b). Specifically for low-income developing countries, the income level threshold is US$2,700 (IMF, 2024b). The data used in this paper only takes into account two of the three economic hierarchies: advanced economies and low-income developing countries. This is done to make sure that they are categorically distinctive from one another.

There are 33 countries selected for each groupings. For low-income developing countries, they are Bangladesh, Benin, Burkina Faso, Cambodia, Cameroon, Chad, Ethiopia, Ghana, Guinea, Honduras, Kenya, Kyrgyzstan, Madagascar, Malawi, Mali, Mauritania, Moldova, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Tajikistan, Tanzania, Togo, Uganda, Uzbekistan, Vietnam, Zambia, and Zimbabwe. Meanwhile, advanced economies consist of Austria, Belgium, Canada, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, South Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and United States.

The method used in this paper is statistical analysis using R software. The analysis employed is panel linear regression, especially random effects. Furthermore, hausman test results to determine the significance of random effects will also be reported. There are one respond variable and two predictors modelled, spanning across two models. The first model contains happiness as respond variable and inflation as predictor. The second model is the same as the first model, only

adds GNI per capita PPP-adjusted as a second predictor. This is to make sure that the inflation's effect on happiness is captured in the first model, then it will be evaluated again after adjusting for GNI per capita PPP-adjusted in the second model.

RESULT AND DISCUSSION

The results of panel linear regression are as follows:

Table 1. Results of Panel Linear Regression in R

Economic Groupings	**Low-Income Developing Countries**				**Advanced Economies**			
Model	Model 1: INFLATION → WHR		Model 2: INFLATION (+ GNI) → WHR		Model 1: INFLATION → WHR		Model 2: INFLATION (+ GNI) → WHR	
Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects
Inflation Coefficient (P-Value)	-0.00156041 (0.02518)	-0.00161477 (0.01912)	-0.00159321 (0.01849)	-0.0016798 (0.01216)	0.0282513 (<0.001)	0.0281869 (<0.001)	0.021771 (<0.001)	0.019059 (<0.001)
GNI Coefficient (P-Value)	-	-	0.00010653 (<0.001)	0.00014582 (<0.001)	-	-	4.569e-06 (0.0084)	6.4363e-06 (<0.001)
Intercept (P-Value)	-	4.56448 (<0.001)	-	4.0241 (<0.001)	-	6.57697 (<0.001)	-	6.2916 (<0.001)
Adjusted R^2	-0.0928	0.0135	-0.0279	0.1561	0.0307	0.114	0.05	0.1422
P-Value of F-Statistics	0.0252	0.0191	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

The results of the hausman test are as follows:

Table 2. Results of Hausman Test in R

Economic Groupings	**Model**	**P-Value**	**Interpretation (at 0.05)**
Low-Income Developing Countries	Model 1: INFLATION → WHR	0.4844	Random Effects Preferred
	Model 2: INFLATION (+ GNI) → WHR	0.01446	Fixed Effects Preferred
Advanced Economies	Model 1: INFLATION → WHR	0.7929	Random Effects Preferred

	Model 2: INFLATION (+ GNI) → WHR	<0.001	Fixed Effects Preferred

In Table 2, it is reported that for first model where only inflation is the predictor for happiness, the random effects models are preferred for both economic groupings of low-income developing countries and advanced economies. Meanwhile, for the second model where the predictor is added with GNI per capita PPP-adjusted, the fixed effects model are preferred for both economic groupings. This paper, however, will use random effects for both single- and double-predictor models to provide consistency across all models since inter-model comparisons will be done. The random effects model over fixed effects model are chosen due to its theoretical assumption the random effects model has that the fixed effects model does not, which is capturing the between-group phenomenon (Ketokivi et al, 2021). In this paper, the between-group phenomenon observed is the observation between countries. The hausman test results, however, are reported for academic honesty.

From Table 1, it is worth noting that all of models and coefficients are significant (<0.05) Furthermore, the adjusted R2 specifically for random effects model show an increase from model 1 to model 2, suggesting that adjusting for income per capita on the relationship between inflation and happiness does provide a better explanatory power. This happens across both economic groupings.

Based on the random effects model of the panel linear regression results, below are the equations extracted:

$$WHR_{LIDC1} = 4.56448 - 0.00161477\,.INFL + \in_1$$

$$WHR_{LIDC2} = 4.0241 - 00168\,.INFL + 0.00015\,.GNI + \in_2$$

$$WHR_{AdvEco1} = 6.57697 + 0.02819\,.INFL + \in_3$$

$$WHR_{AdvEco2} = 6.2916 + 0.01906\,.INFL + 0.000006\,.GNI + \in_4$$

The comparison of intercept between low-income developing countries and advanced economies show that consistently advanced economies have higher figure, which translates to better happiness overall in the baseline where all predictors are zero. Furthermore, when comparing between model 1 (inflation's influence on happiness without adjustment to income per capita) and model 2 (with adjustment to income per capita), the intercept shows decrease from model 1 to model 2, wherein low-income developing countries it goes from 4.56 to 4.02 and wherein advanced economies it goes from 6.58 to 6.29, which suggests that the unexplained part of happiness by inflation without adjustment decreases with adjustment, showing that income per capita plays a role in explaining happiness in both economic groupings.

In terms of the specificity of how income per capita explains happiness, model 2 needs to be looked at for both economic groups. Specifically, the coefficient of GNI per capita needs to be

observed. For low-income developing countries, it is 0.00015 which is higher than for advanced economies on 0.000006. This means that in low-income developing countries, the effects of GNI per capita is stronger than in advanced economies.

In the context of inflation, there are several phenomenon observed from the equations. Firstly, the effect of inflation on happiness differs according to the economic groupings. In low-income developing countries, the coefficient is negative (-0.00161 for model 1 and -0.00168 for model 2), which is contrary to advanced economies where it is positive (0.02819 for model 1 and 0.01906 for model 2). Secondly, in terms of absolute value, the inflation's coefficient is consistently higher for advanced economies than for low-income developing countries. Thirdly, it must be noted that, in terms of absolute value, there is a contrast between the economic groupings, where the absolute value of inflation coefficient of low-income developing countries remains somewhat the same (~0.0016) from model 1 to model 2 while of advanced economies it decreases (0.02819 to 0.01906).

To interpret, the first observation suggests that the effect of inflation on happiness is negative for low-income developing countries and positive for advanced economies. For low-income developing countries, this finding strengthens the already-established thesis of inflation's negative effect on happiness. Meanwhile, for advanced countries, the counter-intuitive nature of positive effect of inflation on happiness might be puzzling at first, but it can be understood that the inflation is an indicator of healthy economy (Oner, 2021). Furthermore, the effect of inflation is mitigated by well-established economic institutions present in advanced economies through resilient economic policies (Ha et al, 2019). Besides, in advanced economies, the perception on future inflation is more strongly anchored (Ha et al, 2019), implying that people view inflation as a component of economic stability.

The second observation shows that inflation has stronger effect on happiness in advanced economies than in low-income developing countries, both before and after adjusting for income per capita. This shows that inflation plays a stronger role in influencing happiness for advanced economies than for low-income developing countries. Combined with the third observation where the absolute value of inflation's coefficient remains consistent for low-income advanced economies while it drops for advanced economies after adjusting for income per capita, it shows that adjusting for income per capita does not alter the inflation's role on happiness while for advanced economies, it does (specifically, it weakens). Statistically, it could be because in low-income developing countries, the effect is already low enough (0.0016), as compared to in advanced economies, that introducing income as a new predictor to the equation does not effect it. However, the fact that there is a weakening effect of inflation on happiness after adjusting for income per capita is noteworthy.

This observations are especially important if one looks at the coefficient of GNI per capita and makes a comparison of it between economic groupings. By itself, the GNI coefficient for low-income developing countries are higher than for advanced economies. However, if put against the backdrop of changes in inflation's coefficient, this shows that although the effect of income per capita on happiness in advanced economies is lower than in low-income developing countries, its

effect on altering the role of inflation on happiness is stronger in advanced economies than in low-income developing countries.

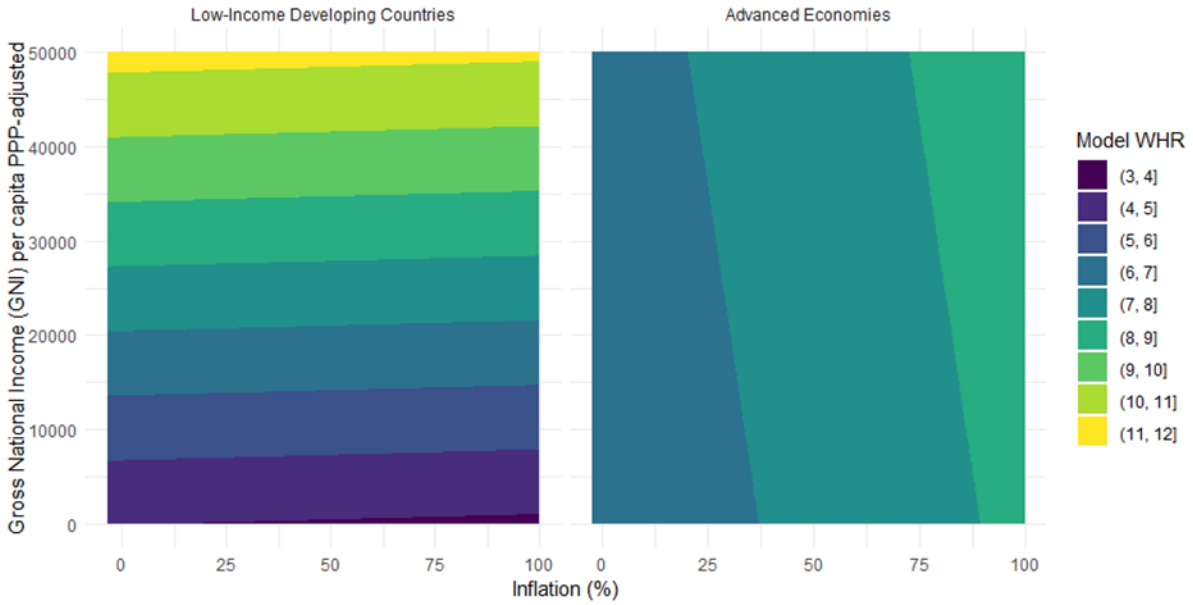

Figure 1. Happiness influenced by inflation and income per capita (difference between low-income developing countries and advanced economies)

Figure 1 illustrates how happiness levels changes when influenced by inflation and income per capita, compared side-by-side between low-income developing countries and advanced economies. The x-axis represents inflation, while the y-axis represents income per capita. The changes in happiness level for low-income developing countries are visible adjacent to the y-axis, while for advanced economies are to the x-axis. This shows that inflation has a more pronounced effect on happiness in advanced economies than in low-income developing countries. In contrast, in low-income developing countries, the effect of income per capita is more pronounced than in advanced economies.

These findings show the importance of policy focus tailored to countries that belong to different economic classifications. For low-income developing countries, the focus should be on increasing income levels while building resilience to mitigate the negative effect of inflation. This can be done through multiple ways: by focusing on basic necessities such as infrastructure, education, and healthcare, as well as alleviating financial hardships for consumers, such as subsidies for foods and energy for the poorest in the country and targeted financing for small businesses. This should also be accompanied with efforts to increase financial literacy, so people could have better understanding about inflation.

For advanced economies where the income per capita is already high and the financial literacy especially on benefit of inflation as an indicator of economic growth is already existing, people could benefit from policies that focus on promoting the quality of institution and its effort in managing the economy. Besides, policies in these countries should also facilitate wage growth

so real income could have the same pace as economic growth indicated by the inflation rate. Furthermore, there should be a robust framework on addressing pressures caused by inflation, such as progressive taxation scheme. This way, inflation does not hurt anyone in the society and trust in inflation as a good measurement of economic well-being is maintained.

CONCLUSION

This study provides a nuanced understanding of the relationship between inflation, happiness, and income, revealing significant differences between low-income developing countries and advanced economies. In low-income developing countries, inflation negatively impacts happiness, a finding that aligns with existing literature emphasizing the destabilizing effects of inflation in these contexts. Conversely, in advanced economies, the positive relationship between inflation and happiness suggests a counterintuitive perspective where inflation reflects economic vitality, supported by strong institutions and well-anchored inflation expectations. The role of income per capita also varies significantly, exerting a stronger direct influence on happiness in low-income countries while playing a moderating role in advanced economies.

These findings highlight the importance of considering economic development levels when examining the determinants of happiness. While income remains a critical driver of well-being in less developed countries, the interaction between inflation and institutional factors becomes more pronounced in advanced economies. By capturing these dynamics, this research contributes to a deeper understanding of the complex interplay between macroeconomic variables and subjective well-being, offering insights that extend the scope of previous studies and open avenues for future exploration into micro-level impacts and regional differences.

BIBLIOGRAPHY

D. Blanchflower, Is Unemployment More Costly Than Inflation?. NBER Working Paper 13505, 1-42 (2007).

R. Di Tella, R. MacCulloch, A. Oswald, The Macroeconomics of Happiness. ZEI Working Paper, 2-32 (1999).

D. Blanchflower, D. Bell, A. Montagnoli, M. Moro, The Happiness Trade-Off between Unemployment and Inflation. Journal of Money, Credit, and Banking 46, 117-141 (2014).

Ł. Below, Does inflation matter? The influence of perceived price changes on well-being. SGH KAE Working Paper Series 2023/086, 1-29 (2023).

J. Arge, Inflation, Unemployment, and Happiness: Misery Index Weights in Europe. Lund University, 1-42 (2022).

R. Di Tella, R. MacCulloch, A. Oswald, Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness. The American Economic Review 91, 335-341 (2001).

World Bank, GNI Per Capita, PPP (current international $). World Bank (2024a).

World Happiness Report, World Happiness Report. World Happiness Report (2024).

World Bank, A Global Database of Inflation. World Bank (2024b).

IMF, Economy Groupings. IMF (2024a).

J. Ha, M. Kose, F. Ohnsorge, One Stop Source: A Global Database of Inflation. World Bank Group: Policy Research Working Paper 9737, 1-42 (2021).

M. Ulkhaq, Clustering Countries According To The World Happiness Report. Statistica & Applicazioni 13, 197-220 (2020).

IMF, World Economic Outlook (WEO). IMF (2024b).

M. Ketokivi, P. Bromiley, A. Awaysheh, Making Theoretically-Informed Choices in Specifying Panel-Data Models. Production and Operations Management 30, 2069-2076 (2020).

C. Oner, Inflation: Prices on the Rise. Finance & Development (Back to Basics: Economic Concepts Explained), 1-2 (2021).

J. Ha, M. Kose, F. Ohnsorge, Understanding Inflation in Emerging and Developing Economies. World Bank Group: Policy Research Working Paper 8761, 1-33 (2019).