



Analysis of Digital Literacy Sources to Identify The Relationship Between Population Income, Socio-Economic and Subjective Well-Being

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Abstract

This research aims to analyze income inequality and subjective welfare in a region. This study uses microdata from household surveys to calculate income inequality. We conducted this survey using an identical questionnaire with a sample of adults. The sample size is around 100. One of the main findings of this study is that regions that were traditionally considered to have greater inequality no longer have this attribute when compared to regional and global levels. This reflects a shift in the pattern of inequality in the region. A positive correlation was also found between income inequality and subjective well-being, as well as a curve when comparing subjective well-being inequality with products. These results suggest that there is a complex relationship between these factors in the context of inequality. However, when compared with the level of subjective well-being, there is a very negative relationship, which may indicate an individual's preference to live in areas that are more egalitarian in terms of well-being. This indicates that subjective well-being perceptions are also influenced by factors other than income, such as access to facilities and services. Although these results are interesting, it is important to remember that this study has problems and limitations in terms of the survey and methods used. Therefore, these results should be interpreted with caution and can serve as a basis for further research to understand more deeply the relationship between income inequality, subjective well-being, and other factors that influence perceived well-being.

Keywords: Inequality, Income, Survey, Well-Being.

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1. Introduction

International comparison of income distribution has always been an important topic in economics. This is because an unequal distribution of income can have a significant impact on economic growth, social stability, and justice. He was one of the first figures to significantly contribute to the comparison of income distribution between European states and cities [1]. He then developed Pareto's ideas by writing a foundational article that compared inequality between countries with different levels of development. He also identified a pattern that describes the relationship between the level of economic development and the level of income inequality. He made an important contribution by developing an international database of the Gini coefficient, which is one way to measure income inequality. Additionally, they introduced the World Development Indicators, which incorporate inequality variables into the analysis of economic growth. All these contributions have helped to enrich the literature on economic growth and international income distribution. Researchers can better understand the relationship between income distribution and economic growth and identify policies that can promote a more equal distribution of income by paying attention to the developed framework [2].

This research introduces new concepts for understanding international and global disparities that are different from those studied. Unweighted international inequality is one of the concepts discussed. This concept accounts for unweighted inequality in the gross domestic product per capita of all countries in the world. The convergence/divergence literature closely relates to this concept as it assesses the convergence of average incomes across countries [3]. Apart from that, it also discusses the concept of weighted international inequality. This concept also uses national gross domestic product per capita but weights countries based on population size, making it closer to the concept of global inequality by taking into account the number of people living in different countries. Introducing these new concepts helps expand our understanding of the complexities of international and global income inequality [4]. The concepts of unweighted and weighted international inequality

help us understand not only the income gap between countries but also the distribution of income around the world by taking into account population differences in each country. This is important when designing policies that can reduce global income disparities and improve overall global economic prosperity [5].

The concept of global inequality is an attempt to integrate the concept of inequality in each country with the concept of weighted international inequality. We achieve this by considering various indicators of individual income inequality across the globe among world citizens [6]. By combining these concepts, we can create a more holistic framework for understanding global income inequality. With this approach, we can see not only disparities between countries but also disparities among individuals around the world. The concept of global inequality provides a more comprehensive understanding of the distribution of income at the global level, which is important for analyzing issues such as global poverty, the distribution of global wealth, and efforts to improve overall global economic well-being [7]. By using this approach, researchers and policymakers can have a better understanding of global economic issues and formulate more effective strategies to address inequality and improve global economic prosperity fairly and sustainably. Studying global inequality is important because income inequality can be an indicator of inequality in outcomes, which is considered evil for society. If we view inequality in outcomes as undesirable, then global inequality should also be considered an evil worthy of study [8]. Conversely, if we do not view inequality of outcomes as evil, as long as it does not stem from inequality of opportunity, we can infer that inequality of income stems from inequality of opportunities, including place of birth, training, and early education, which individuals cannot control. According to these principles, global inequality becomes relevant because the gap in opportunities between individuals around the world is considered a crime against humanity [9]. Citizenship is often considered the most defining factor that individuals cannot choose at birth and is difficult to change throughout their lives. Therefore, understanding and addressing global inequality is an important step in efforts to achieve social and economic justice around the world [10].

When considering a more individualistic position on global inequality, we can identify two possible positions. First, some people only care about the welfare of the people in their own country and do not care about global inequality [10]. They may think that governments' main task is to improve the welfare of their citizens and therefore are only interested in reducing inequality within their own country. Second, some people are not at all interested in reducing inequality, be it gaps in opportunities or outcomes. They may have strong individualist views and believe that each person is responsible for his or her destiny. In both cases, there are different externalities associated with indifference to global inequality [11]. For example, indifference to global inequality can lead to phenomena such as illegal immigration, where receiving countries must allocate resources to limit and control the influx of illegal immigrants without much success. This can cause social conflict within the country and worsen relations with other countries. Thus, it is important to consider the external implications of individualist attitudes towards global inequality, as the actions of individuals or countries in addressing or ignoring global inequality can have wider impacts than they might suspect [12].

The study of international and global inequality has become an increasingly important subject in recent literature. This can be due to several historical, theoretical, and empirical reasons. One of the main reasons is increasing inequality, as well as in many other countries around the world [11]. These developments drive the need to understand and address inequality in a global context. In addition, the development of theoretical models that introduce inequality in growth analysis has also greatly contributed to the increased interest in the study of inequality [12]. These models help us understand the relationship between income inequality and economic growth, as well as what factors can influence this inequality. In addition, the greater availability and processing capacity of data has also contributed to an increase in the study of inequality. Advances in information and communications technology have enabled researchers to access and analyze larger and more complex data more easily [13]. Generally, we can divide the current literature on international and global inequality into two major parts. The first uses aggregate distribution data and national accounts to analyze inequality, while the second uses national household surveys. Both approaches have their uses and advantages, and both are important for a thorough understanding of global inequality.

2. Research Methods

This study uses microdata from household surveys to calculate income inequality. We conducted this survey using an identical questionnaire with a sample of adults. The sample size was approximately 100 to ensure national representativeness. The survey includes basic questions about demographics, education, employment, household income, and various other subjective questions. Only randomly selected adults responded to this survey. Data from these surveys provide an opportunity to study a wide range of issues, as the samples are nationally representative and the questionnaires are similar. The average age of respondents in this survey is higher than other data sources. This survey provides a good picture of household income characteristics at the national level, although the sample size is limited. Thus, the results of this survey can provide valuable insight into income inequality at the national level.

3. Results and Discussion

Subjective well-being analysis is still a relatively new field in economics, but the amount of research studying this area has increased exponentially. Increasing everyone's income does not increase everyone's happiness. The main idea is that individuals tend to compare their level of well-being with that of other individuals, which has been a motivation for studies of the relationship between income and well-being. Previous research has found evidence of a negative relationship between individual well-being and the income of other groups considered as references. Conversely, other studies explore the potential for other people's income to positively impact an individual's well-being, particularly if their earnings serve as a beacon of hope. The main idea is that if another individual's income increases, this provides hope of being in a better situation in the future. Evidence suggests that countries with greater mobility and uncertainty are more likely to experience the latter impact, compared to developed countries. More recently, finding a clear positive relationship between the level of subjective well-being and a country's gross domestic product or income based on data from the survey has yielded support for the dominance of absolute income in determining happiness.

Empirical analysis of subjective well-being has become very productive in recent years, but analysis of inequality in this regard is still minimal. Previous research has made important contributions to this field by analyzing happiness inequality. In their analysis, they used subjective well-being data that measured levels of happiness in three categories: very unhappy, somewhat happy, and very happy. However, because these categories are ordinal data, they use a latent variable estimation strategy to analyze them. The results of the analysis show that although there has been no increase in average subjective well-being, inequality in subjective well-being has increased significantly. They also found major changes in the level of inequality between groups, such as a reduction in the gap between whites and blacks and between men and women, but an increase in the gap between levels of education. These findings demonstrate the importance of non-financial factors in the configuration of welfare distribution. We can conduct further analysis to gain a deeper understanding of the dynamics of subjective well-being inequality and its driving factors. In this context, equality of opportunity can be defined as a condition where there is no envy between individuals regarding their life and work choices. For example, consider two individuals who have different preferences one would prefer to have more free time rather than spend time working, while the other would prefer to work more to earn a higher income. In a situation where society values leisure overconsumption of goods, the first individual will probably choose to work less, resulting in a lower income than the second individual, who works more. However, since the first individual does not feel jealous of the second individual's higher income, this suggests that there is equality of opportunity in this context. Economic models that take into account individual preferences for leisure and income provide examples like this. In this analysis, income differences are not considered detrimental inequalities because they occur due to individuals' free choice. Thus, equality of opportunity is defined as the absence of envy or dissatisfaction with another individual's life or work choices that might result in a higher income.

The most important disadvantage associated with the difficulty of measuring subjective well-being is that available surveys often rely only on general or subjective questions. This approach has major limitations in terms of comparisons between individuals or between countries due to possible differences in the interpretation of the questions. Instead, experts have developed various questions to accurately measure income. This motivates the use of income as an objective approach to measuring well-being. However, it's crucial to keep in mind that income may not always accurately represent overall well-being, as subjective well-being factors like happiness and life satisfaction may not always have a direct correlation with income. Before analyzing subjective well-being, it is important to consider that comparisons between individual responses are limited. The primary issue is the inability to directly compare minimum and maximum values among individuals. Individuals' conceptions of the best and worst possible lives can differ significantly, making it impossible to directly compare any response between them. For instance, the perception of the worst and best life for a poor individual is likely to differ from that of a rich individual. However, in the literature, comparison and calculation of aggregate indicators of these types of indicators are often carried out.

However, there is a certain asymmetry in the interpretation of subjective well-being results. For instance, finding the subjective well-being reports of rich and poor individuals at the same level does not necessarily indicate that their levels of subjective well-being are similar. However, if research reveals that rich individuals, on average, report higher levels of subjective well-being than poor individuals, the findings become more intriguing. This is because it is challenging to imagine that the worst and best lives of poor individuals surpass those of the rich. In general, research results often point in the latter direction, namely that poor people tend to be less happy than rich people. For international comparisons, this discrepancy can be more complex: if individuals consider the well-being of their environment when determining minimums and maximums, the gap can become larger, especially when we compare people from different countries. For example, if residents of a rich country assume the worst possible life, the life of an individual who is considered the worst in one country may be the same or even better than the life of a very poor individual in another country. Therefore, we must be very careful in interpreting these results. In summary, differences in individual responses could stem from varying

interpretations of the question or varying levels of well-being among the groups, both of which are unfortunately difficult to distinguish. However, to ensure response compatibility, we should consider administering the same questionnaire to individuals in all countries and minimizing possible sources of discrepancies between answers. Finally, it is important to note that the observations made are relevant both for calculating level indicators and dispersion indicators.

As mentioned, previous research finds an inverted U relationship between inequality and development in terms of income. These important empirical results have motivated follow-up studies with a large number of works. Compare the Gini index of subjective well-being to the logarithm of average income and gross domestic product per capita, respectively. For the same reason, it does not cover a large number of low-income countries while it does. A quick look at these numbers makes us notice that there is an inverted U relationship in this case as well, and the relationship is more obvious. The analysis results show regression coefficients between these variables, and in all cases, the income or product coefficient is positive and the squared term is negative. Previous studies have sparked extensive and ongoing discussions about the causality between development and inequality, as well as whether the curve applies dynamically to a country. Although the causes of this relationship are not always clear, it is interesting to note that we can also find an important and similar relationship between inequality in terms of subjective well-being and the level of development in terms of the economies of these countries. In addition, we can note that in this case, it does not seem to have an advantage in subjective well-being inequality, which is a different result from the analysis of income inequality.

An inequality aversion effect could be one possible explanation for the strongly negative relationship between inequality and subjective well-being. Individuals who perceive welfare inequality negatively, whether for selfish or altruistic reasons, may experience lower levels of satisfaction, regardless of their income levels. This effect, also known as the inequality aversion effect, could potentially elucidate the disparities between the ranking of countries based on income and their ranking based on subjective satisfaction levels. The inequality aversion effect influences the average welfare of a country, leading to an increase in the average level of satisfaction in countries with low income and low inequality. Conversely, countries with middle income and high inequality will have lower levels of satisfaction, and ultimately, countries with high income and low inequality will experience higher levels of satisfaction. This effect can explain the transition from an inverted U curve to a curve with a strongly negative slope when we move from measuring income per capita to measuring average levels of satisfaction. In other words, when we view subjective well-being as a more important measure, the inequality aversion effect can produce a strong negative relationship between inequality and subjective well-being.

To further investigate how large this effect might be, we can create several variables that allow us to estimate the relationship between income level and subjective well-being. For example, we can calculate the ratio between subjective well-being and the logarithm of income, then subtract from each observation the average value among all countries. In this way, regions with a positive value for this variable will have a higher level of relative subjective well-being compared to the average income of countries in the world, while countries with a negative value will have a relatively lower level of subjective well-being compared to the average income of countries in the world. The results of the analysis show a relationship between the Gini coefficient on subjective well-being and this variable. Upon first glance, it is evident that regions experiencing greater inequality tend to have lower levels of subjective well-being relative to their income, whereas countries experiencing low levels of inequality tend to experience higher levels of subjective well-being relative to their income. The correlation also confirms this finding, with the negative result (-0.8) being significant at the 1% level.

Another alternative is to investigate whether there are identifiable patterns in the likelihood of changes in countries' rankings in terms of income and subjective well-being. The research findings show a relationship between the Gini coefficient and subjective well-being, as well as differences between each country in terms of subjective well-being ranking and income ranking. Regions with greater inequality tend to fare worse in subjective well-being rankings compared to their income rankings. In contrast, regions with low levels of welfare inequality tend to rank better in subjective well-being compared to their income. This again provides evidence in favor of the inequality avoidance effect. The correlation coefficient between these variables is again negative (-0.5). We can also replicate this analysis for the relationship between income inequality and the average level of subjective well-being. The relationship reveals a less convincing correlation (-0.2) for the first constructed variable, but a positive (0.3) and significant (5%) correlation for the ranking-based variable. These variations in results may be due to differences among the regions involved. Because this analysis does not include many low-income regions that are in the left-wing group of the curve's inverted U curve, their absence could be a problem of non-random observational omissions and could affect country rankings. We conducted the same analysis to shed light on this question. The findings are surprising, with the correlations for the first and second variables being equal at -0.8 and -0.5, respectively, and both significant at the 1% level.

Given the problems found in income measurement, we can use inequality data from sequential bases to ensure that income measurement problems do not explain the patterns found. The previous results remain valid. According to these data, the correlation between income inequality and the recalculated ratio and rank variables

for this subsample is -0.1 and 0.6, respectively. When analyzing subjective welfare inequality, there is a correlation of -0.8 and -0.3. The final analysis, which examined potential issues in the measurement of subjective well-being, yielded intriguing findings. Aversion significantly influences the inequality of subjective well-being, but it does not have a similar effect on income inequality. This indicates that populations with high levels of subjective welfare inequality tend to have lower levels of average welfare. However, analyzing this relationship in the context of income obscures or even reverses this trend. To determine whether individuals view inequality as evil and whether it affects subjective well-being more than income inequality, we need to conduct a more in-depth analysis to test this hypothesis. The results obtained from this study indicate the possibility that the subjective well-being variable is better at capturing this dimension than income. However, more in-depth analysis and further research are required to confirm this hypothesis.

The index's decomposition analysis at the regional level has provided interesting insights into regional inequality. Although the inequality component between regions is lower than that based on income, the differences between these variables are greater. This is because it is difficult to identify scale impacts between regions, and subjective variables have a limited nature. The analysis results reveal that the highest proportion of inequality exists between regions. This shows that subjective inequality has different patterns throughout the world. The analysis results show that the index decomposition of subjective inequality around the world, despite having limited interpretation, may be useful in the future as a newly conducted version of the survey. This can aid in assessing the evolution of these indicators over time, providing a better understanding of changes in subjective inequality across regions.

4. Conclusion

One of the main findings of this study is that regions that were traditionally considered to have greater inequality no longer have this attribute when compared to regional and global levels. This reflects a shift in the pattern of inequality in the region. A positive correlation was also found between income inequality and subjective well-being, as well as a curve when comparing subjective well-being inequality with products. These results suggest that there is a complex relationship between these factors in the context of inequality. However, when compared with the level of subjective well-being, there is a very negative relationship, which may indicate an individual's preference to live in areas that are more egalitarian in terms of well-being. This indicates that subjective well-being perceptions are also influenced by factors other than income, such as access to facilities and services. Although these results are interesting, it is important to remember that this study has problems and limitations in terms of the survey and methods used. Therefore, these results should be interpreted with caution and can serve as a basis for further research to understand more deeply the relationship between income inequality, subjective well-being, and other factors that influence perceived well-being.

References

- [1] Chauhan, C., Dhir, A., Akram, M. U. I., & Solo, J. (2021). Food Loss and Waste in Food Supply Chains: A Systematic Literature Review and Framework Development Approach. *Journal of Cleaner Production*, 1-14.
- [2] Peacock, D. (2017), "Institutional Ethnography, Critical Discourse Analysis, and the Discursive Coordination of Organizational Activity", Reid, J. and Russell, L. (Ed.) *Perspectives on and from Institutional Ethnography (Studies in Qualitative Methodology, Vol. 15)*, Emerald Publishing Limited, Leeds, pp. 91-106. <https://doi.org/10.1108/S1042-319220170000015007>
- [3] Sudirjo, F., Nurdiani, T. W., Boari, Y., Kraugusteliana, K., & Kurniawan, R. (2023). DIGITAL MARKETING AND SALES SUPPORT FOR HYDROPONIC MSME GROWTH THROUGH MOBILE BASED E-COMMERCE DESIGN. *Jurnal Ekonomi*, 12(3), 1750-1756.
- [4] Safari, A., Purwoko, P., Setiawan, Z., Noor, L. S., & Nurdiani, T. W. (2023). THE INFLUENCE OF BRAND IMAGE AND CUSTOMER EXPERIENCE ON CUSTOMER REPURCHASE INTENTION WITH PRODUCT QUALITY AS A MODERATING VARIABLE. *JURNAL ILMIAH EDUNOMIKA*, 8(1).
- [5] Liow, F. E. R., Hanafi, I., Judijanto, L., Nurdiani, T. W., & Munizu, M. (2023). Analysis Of The Influence Of Financial, Environmental Performance And Corporate Governance On Performance Of Corporate Social Responsibility Of Energy And Mineral Companies Listed In Indonesian Stock Exchange. *JEMSI (Jurnal Ekonomi, Manajemen, dan Akuntansi)*, 9(6), 2621-2626.
- [6] Nurdiani, T. W., Arum, R. A., Hasibuan, R. P. A., Silamat, E., & Anantadjaya, S. P. (2023). The Effect of Return, Cost, Financing Factors and Risk on Profitability of Sharia Banks in Indonesia. *JEMSI (Jurnal Ekonomi, Manajemen, dan Akuntansi)*, 9(2), 266-275.
- [7] Aulia, M. R., & Junaidi, H. E., Rizki, M., Mulyadi, & Abdullah, A. (2024). The Development of the Partnership Program and Business Performance: in Terms of Communication Behavior and Social Networks of MSMEs. *Journal of System and Management Sciences*, 14(1), 159-174.
- [8] Zunaiddi, A., Nofirman, N., Juliana, J., & Wurarah, R. N. (2022). The Impact Of The Development Of Cultural Tourism On The Cultural, Economic, And Social Aspects Of Local Communities. *Dinar: Jurnal Ekonomi dan Keuangan Islam*, 9(2), 88-105.

- [9] Aulia, M. R., Lubis, Z., & Effendi, I. (2023). Leveraging Quality Management and Partnership Programs for Technopreneurial Success: Exploring their Impact on MSME Performance. *Aptisi Transactions on Technopreneurship (ATT)*, 5(2), 157-168.
- [10] Yuni Dharta, F., Violin, V. ., Wahyono, T. ., & Wirabuana Putra, G. . (2024). Analysis of User Acceptance Levels Using the Unified Theory of Acceptance and Usage of Technology on Streaming Service and Video-On-Demand Channels Customers. *Jurnal Sistim Informasi Dan Teknologi*, 6(1), 1–6. <https://doi.org/10.60083/jsisfotek.v6i1.337>
- [11] Kanaya, I. G. A. K. Y., Putra, G. W., Putri, P. C. S., Pradnyani, P. E., Adiningsih, L. Y., & Vergantana, I. W. S. M. (2023). Analisis Faktor Penyebab Pengembalian Berkas Klaim BPJS Kesehatan Pasien Rawat Inap Di RSUD Tabanan. *MAINTEKKES: The Journal of Management Information and Health Technology*, 1(2), 63-70.
- [12] Rusmayadi, G., Nofirman, N., & Fadhlihi, A. (2023). Climate Change Mitigation and Adaptation Strategies for Sustainable Resource Management. *West Science Journal Economic and Entrepreneurship*, 1(08), 368-378.
- [13] Wibowo, T. S., Suhendi, D., Suwandana, I. M. A., Nurdiani, T. W., & Lubis, F. M. (2023). The Role Of Transformational Leadership And Organizational Culture In Increasing Employee Commitment. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 7(2).