How the economics of happiness complements the understanding of the effects of economic growth on population well-being

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Abstract

The literature on happiness economics has significantly enhanced the understanding of population well-being. The quantitative view of well-being, measured through classical indicators, overlooks fundamental elements related to individuals' welfare. There is no doubt that economic growth is an important avenue for improving societal well-being; however, its effect on subjective well-being is not linear. Furthermore, empirical evidence shows that beyond a certain income level, an increase in income does not necessarily translate into higher subjective well-being for the population. In light of this—and especially following the so-called Stiglitz Commission empirical evidence emerging from the happiness economics literature has expanded the understanding of the complex process of human well-being. Accordingly, the objective of this chapter is to present the main findings from empirical work in this field and to demonstrate how these results can serve as a relevant input for the design and implementation of public policies aimed at increasing society's subjective well-being. Additionally, novel and specific evidence for the case of Chile at the regional level is provided, highlighting the importance of incorporating a subnational perspective in the analysis of subjective well-being.

Keywords: Subjective well-being, life satisfaction, economic growth.

1. Introduction

It is no mystery today that economic growth is a relatively recent phenomenon in human history. For many centuries and millennia, economic activity did not expand, but rather remained at levels that barely allowed the population to survive. This began to change with the arrival of capitalism, which, coupled with the Industrial Revolution, enabled a rapid increase in countries' capacity for growth (see Table 1).

As the data show, economic growth has not been the norm throughout human history. In fact, over 1.700 years (from year 0 to 1700), Gross Domestic Product (GDP) per capita remained virtually unchanged—that is, the meager GDP growth was barely enough to keep up with population growth.[1] However, during the era of mercantile capitalism, despite a significant increase in the population growth rate, GDP per capita began to grow rapidly. This was due to a more dynamic performance of overall production.

Table 1: History of economic growth around the world.

	Population growth	**Growth of per cápita product**
Agricultural economics (0-1500)	0.04	0.01
Advanced agricultural economics (1500-1700)	0.16	0.04
Merchant Capitalism (1700-1820)	0.46	0.07
Capitalism (1820-2000)	1.00	1.31

Source: Larraín, F, & Sachs, J. D. (2013).

Thus, driven by economic growth, a new era began characterized by prosperity and the distribution of wealth to a broader segment

1 The growth rate of GDP per capita can be approximated as follows:

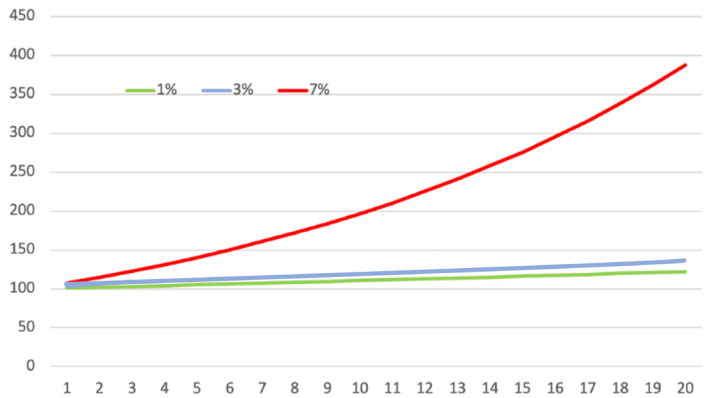
$$\Delta\%y \approx \Delta\%Y - \Delta\%N$$

Where y refers to GDP per capita, Y denotes total Gross Domestic Product (GDP), and N corresponds to the population size.

of the population. Today's developed countries were certainly early beneficiaries of this process and, as a result, now display excellent indicators in terms of well-being. Indeed, economic growth, acting as a kind of compound interest on a country's income, has a multiplicative effect over time, as illustrated in Figure 1.

The Figure clearly illustrates the results of growing at different rates over time. For example, if an economy grows at 1%, after 10 years its GDP will have increased by just over 10% from its original size (green line). In contrast, if the economy maintains an average growth rate of 3%, by the end of those 10 years, its GDP will have grown by around 35%. But both scenarios fall far short of what can be achieved with a sustained annual growth rate of 7%. Indeed, maintaining a growth rate of that magnitude allows the economy to double the size of its original GDP within 10 years. In this graphical exercise, this means that in year one the economy had a size of 100, but after 10 years, its size is 200. This represents, without a doubt, a qualitative change—not only in the scale of economic activity but also in income levels, which ultimately translates into a better average quality of life for the population. This concept is well summarized by the so-called "Rule of 70," which states that if an economy grows at a rate of "X%," it will take "70/X" years to double its GDP. From a macroeconomic perspective, 10 years is a relatively short period.

Figure 1: The Multiplicative Power of Growth.



Source: Own elaboration.

Unfortunately, the economic growth experienced by countries does not always translate into greater well-being for their populations. In fact, toward the end of the first decade of this century, significant social movements around the world revealed that economic growth was not benefiting everyone equally. French President Nicolas Sarkozy convened a commission of experts to better understand the complex process of social well-being, which is not always linearly enhanced by economic growth. This commission, known as the Stiglitz Commission, determined that there was considerable room for improvement in understanding the evolution of population well-being.

One of the commission's recommendations was that "both objective and subjective well-being measures provide relevant information about people's quality of life. National statistics offices should include survey questions that capture life evaluations, hedonic experiences, and individuals' priorities." Indeed, it is difficult to assess human progress solely in terms of economic performance, as both material and non-material goods contribute to people's well-being. This means that higher GDP or income levels do not necessarily imply greater subjective well-being [1].

Since then, a rich research agenda has emerged under the umbrella of happiness economics, which investigates the main drivers of subjective well-being. While this field existed prior to the Stiglitz Commission, it gained momentum after the publication of that revealing report. Since then, renowned economists, including Nobel Prize winners, have contributed to the development of this research, helping to better identify the variables that trigger virtuous cycles of improvement in the population's subjective well-being.

Thus, the objective of this chapter is mainly to highlight the key findings from the happiness economics literature and how these findings can serve as valuable inputs for the design and implementation of public policies—ultimately enabling a significant increase in the population's levels of subjective well-being. To begin, the next section briefly summarizes the methodological approaches used in the empirical work within this literature.

2. Understanding Subjective Well-Being

Following the conclusions of the Stiglitz Commission, there has been a growing body of information related to the subjective well-being of populations. Today, various surveys are regularly conducted in different countries around the world, where, among other things, people are asked about their satisfaction across different dimensions of their lives. For example, regarding life satisfaction, the question usually posed is: *Taking all aspects of your life into account, on a scale from 1 to 10, where 1 is completely dissatisfied and 10 is completely satisfied, how satisfied are you with your life?*

This question, which explores life satisfaction, seeks a subjective evaluation of long-term well-being—a sort of life balance from a structural perspective of the individual's lived experience. The responses are then systematized to carry out econometric analyses aimed at understanding which factors lead people to classify themselves as satisfied with their lives.

In addition, similar questions are asked regarding individual happiness, a concept that may be more momentary and transitory, related to short-term experiences. For this, the typical question is: *On a scale from 1 to 10, where 1 is completely unhappy and 10 is completely happy, where would you place yourself?*

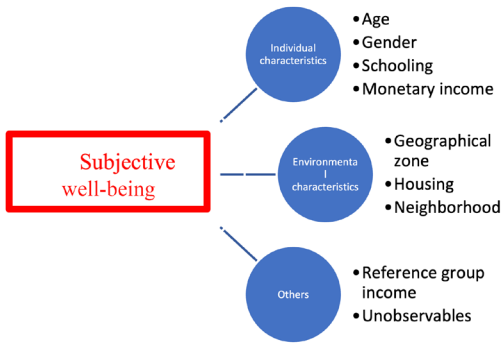
Following this logic, similar questions can be extended to other areas of people's lives, with one particularly important dimension being work. For instance, a commonly included question is: *On a scale from 1 to 10, where 1 is completely dissatisfied and 10 is completely satisfied, how satisfied are you with your job?*

It is also common to find survey instruments with questions about satisfaction with family life, neighborhood, friendships, health, financial situation, among others. Thus, today's surveys—especially those conducted in developed countries—include a range of questions that gather information on individuals' subjective well-being.

There are two main approaches to studying the determinants of subjective well-being, whether it is measured through life satisfaction, happiness, or another variable. The first is known as the orthodox approach, in which the dependent variable representing subjective

well-being is directly modeled as a function of a set of observable characteristics relevant to well-being. Figure 1 schematically presents what the orthodox approach entails.

Figure 1: The Orthodox Approach.



Under this approach, the explanatory variables of the model can generally be classified into three categories: individual characteristics, environmental characteristics, and others. More formally, the model to be estimated is the following:

Equation 1:

$$y_i = x_i'\beta + z_i'\gamma + w_i'\delta + u_i$$

where y_i represents a measure of subjective well-being (life satisfaction, happiness, mental health, or another), x_i' is a vector containing variables related to individual characteristics, z_i' is a vector containing variables related to environmental characteristics, w_i' is a vector containing variables related to other relevant characteristics, u_i is a well-behaved stochastic shock, and β, γ, and δ are parameter vectors to be estimated.

Among individual characteristics, variables commonly included are the person's age, gender, level of education (e.g., measured by years of schooling), and income level.[2]

2 It is essential to include all sources of income, not only those derived from the labor market.

Regarding environmental characteristics in which individuals operate, commonly included variables relate to geographic location (region, municipality, state, county, urban or rural), housing conditions (number of rooms, overcrowding indicators, construction materials), and neighborhood conditions (availability of services such as proximity to public transportation, shopping centers, hospitals, schools, among others).

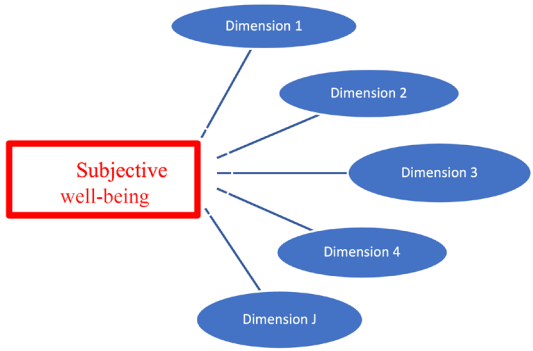
Finally, in the "other" category, variables related to recent phenomena studied in the literature are included. For example, it has been found that what matters to an individual is not only their absolute income but also their income relative to a reference group.[3] To assess this, the reference group with which the individual compares themselves must be identified, and thus relative income can be constructed. This category may also include variables related to individual personality traits—although these are difficult to incorporate since they are unobservable (from the researcher's standpoint), there is a wide body of literature attempting to build proxies for personality traits in order to avoid bias in estimators.

A second approach to studying the determinants of subjective well-being is known as the aggregation approach. Under this approach, it is assumed that an individual's subjective well-being is a consequence of the satisfaction they achieve in different areas or domains of their life, such as satisfaction with family life, friends, housing, neighborhood, work, health, etc. In other words, an individual's well-being is built from the satisfaction they attain in each of these life dimensions or domains [2].

Figure 2 schematically presents how individual subjective well-being is modeled in the context of the aggregation approach.

3 In general, the reference group is constructed exogenously. That is, certain variables are arbitrarily selected to define a comparison group. These variables typically include age, education level, gender, and geographic region of residence. Based on these variables, cells are constructed to classify individuals—for example, one cell might consist of men aged 30 to 39, with 13 to 17 years of schooling, living in an urban area. The average income of this subgroup is then calculated, and this figure represents the reference group income for the individual in question.

Figure 2: The aggregation approach.



Therefore, under the aggregation approach, subjective well-being is considered the result of the well-being an individual experiences across different dimensions of their life, assuming here that there are "*J*" relevant dimensions that explain it. More formally, the model estimated is the following:

Equation 2:

$$y_i = \sum_{j=1}^{J} \alpha_j d_{ij} + u_i$$

where, once again, y_i represents a measure of subjective well-being, d_j are the relevant domains, u_i is a well-behaved stochastic shock, and the α_j are the parameters to be estimated.

There is extensive literature regarding which dimensions determine individuals' subjective well-being, and these do not necessarily coincide across different countries, cultures, or time periods. Generally, the dimensions identified as relevant include those related to work, health, housing, family, friends, and the neighborhood.

In this context, there is one particular dimension that draws significant attention from researchers: job satisfaction. This is not surprising, given that work represents a highly important dimension in people's lives. Therefore, it is essential to understand the factors that lead to increased job satisfaction, which in turn contributes to increased labor productivity. Accordingly, there is ample empirical evidence on

the determinants of job satisfaction. This body of literature mainly follows the orthodox approach, in which job satisfaction is established as the dependent (or explained) variable, influenced by a set of characteristics, both individual and job-related.

There is one final aspect that must be carefully considered when conducting estimations aimed at explaining subjective well-being: personality traits. This variable is relevant in explaining individuals' satisfaction and, therefore, efforts should be made to include it in some way. In this context, it is worth noting that in the Happiness Economics literature, there are essentially two types of data used in empirical research: cross-sectional data and longitudinal (time-series) data.

Cross-sectional data are generally not optimal for incorporating variables related to individuals' personality traits. However, the methodology proposed by [2] can be applied, which allows for the construction of a proxy variable for personality traits. In this way, an explanatory variable is incorporated that accounts for all unobservable factors assumed to be fixed over time, cutting across the different life dimensions, thereby approximating a measure of individual personality traits.

On the other hand, there is longitudinal data, which is abundant in developed countries. This allows for panel estimations with fixed effects, enabling the consideration of unobservable factors when explaining individuals' subjective well-being.

Following this brief methodological explanation, the next section presents a review of the main elements that have emerged from empirical evidence as determinants of individuals' subjective well-being. It should be noted that, since developed countries have a longer history of collecting this type of data, the available empirical evidence is more abundant for them.

3. Review of Empirical Evidence

As previously mentioned, since the release of the Stiglitz Commission report, there has been significant debate regarding how subjective well-being can be incorporated into the regular measurements conducted by countries. Indeed, the report led by Joseph Stiglitz and Amartya

Sen provided recommendations on how countries could complement GDP measurements with subjective indicators. While progress in terms of public policy has been limited, the available empirical evidence has grown rapidly.

One of the main concerns arising from the happiness economics literature—particularly within the field of economics—relates to how reliable these measures are in practice, considering the role subjectivity plays in the analysis. In this context, the evidence presented by [3] is interesting, as it demonstrates a strong relationship between objective conditions of well-being and subjective well-being measures. Consequently, subjective well-being indicators can be trusted as robust measures of a population's overall well-being.

3.1. Orthodox Approach

Pioneering studies in the area of subjective well-being were conducted by Richard Easterlin, who analyzed the relationship between subjective well-being and monetary income. His most important finding, known as the "Easterlin Paradox," revealed that there is no positive correlation between subjective well-being and income over time, although such a correlation exists in cross-sectional data [4-8]. [9] complemented the empirical evidence in this area, showing that while per capita income has increased in countries such as the United Kingdom, the United States, and Japan, average happiness has remained relatively constant. Nonetheless, when using cross-sectional data, evidence shows that the relationship between income and happiness is positive, significant, and concave—thus identifying a diminishing marginal utility of income with respect to happiness.

One explanation for why the positive relationship found in cross-sectional data disappears in time-series data is related to the phenomenon known as the aspiration gap. As individual income grows, so does the income of the reference group one aspires to match, and thus the aspiration gap does not close with income increases.[4] What matters for explaining subjective well-being is not only absolute

4 The aspirational gap is defined as the disparity between an individual's actual income and their desired income level.

income, but also the aspiration gap. If that gap remains, there is no reason to expect an increase in subjective well-being as income rises.

Another explanation for the Easterlin Paradox is the adaptation phenomenon, where individuals adapt to their new income levels after an increase. [10] provide evidence of this adaptation process in Germany. Using German Socio-Economic Panel Data (GSOEP), the authors found a full adaptation to the new income level within four to five years. Interestingly, they also found that the degree of adaptation increases as income rises.

A third explanation lies in the fact that individuals care not only about their absolute income but also their relative income (which is also somewhat related to the aspiration gap). [11], using GSOEP data, shows that relative income is just as important as absolute income in explaining subjective well-being in Germany. [12] add an interesting dimension to this, showing that personality traits influence how relative income affects individuals.

Using U.S. data, [13] present evidence of how neighbors' income affects individual subjective well-being. They conducted analyses at county, ZIP code, and street levels, finding a negative relationship between neighbors' income and individual well-being at the county and street levels. However, this relationship is reversed at the ZIP code level. They argue that people prefer living in wealthy ZIP codes with little or no poverty because of preferences for high social status.

For Latin America, [14] analyzed the relevance of relative income using the 2007 Gallup survey. The author examined two measures of subjective well-being: life evaluation and economic satisfaction. Constructing the reference group's income based on age and gender, he found that relative income is crucial in explaining both life evaluation and economic satisfaction. In fact, 60% of the gains in life evaluation were due to increases in relative income, while only 40% were due to increases in absolute income.

On the other hand, [15] present evidence for Europe regarding the intensity and direction of income comparisons among individuals. Their results reveal that coworkers are the most common comparison group. The authors show that reference groups are endogenous—individuals are more likely to compare themselves with those they interact with frequently.

Clearly, as mentioned in the introduction (Figure 1), monetary income is only one of many factors affecting or determining people's well-being. [16] found that women, white individuals, married people, and those with high education levels generally report higher happiness. Conversely, unemployment and divorce negatively affect happiness. Moreover, [17] show that unemployment rates also negatively impact subjective well-being. Finally, [18] found that the relationship between subjective well-being and age follows a U-shape; in other words, high levels of well-being are achieved in both early and late stages of life.

As previously mentioned, a particularly relevant dimension of subjective well-being is related to work, and thus there is a broad literature exploring the determinants of job satisfaction. The modeling strategy used here follows the orthodox approach, and again, international empirical evidence is dominant.

Following [19], many articles have been published on the determinants of job satisfaction. For instance, reference group wages affect individual job satisfaction [20]. Evidence also shows that, on average, women are more satisfied with their jobs and prefer part-time work over full-time employment [21-22]. However, using data for Chile, [23] found that part-time work negatively affects job satisfaction due to its relative precariousness compared to full-time jobs, but that this effect is completely reversed for women. They interpret this result as showing that part-time work allows women to better reconcile work and family life, thus fulfilling the dual role prescribed by societal cultural norms [24-25].

There is also evidence regarding how income shocks affect the distribution of job satisfaction [26], and how peer wages—i.e., reference group income—affect it. From a theoretical perspective, there is a proposed negative relationship between relative income and individual job satisfaction, which is known as the "comparison effect" [20], [27-29].

However, other authors have proposed a different relationship between relative income and subjective well-being. [30], for example, argue that higher reference group income may increase job satisfaction because it provides valuable information about individual future prospects. That is, the better the future wage prospects (understood as the wage of the reference group), the greater the individual's job

satisfaction. This is known as the "information effect" [31]. In this regard, [20] show that UK workers' well-being depends on their relative income, which is determined by their relevant reference group. [32] also provide evidence for the UK, showing that the effect of relative wage on job satisfaction differs between men and women.

For the United States, [27] estimate an asymmetric effect of reference wages. They show that when an individual's wage is below the reference wage, job satisfaction decreases and job search activity increases. However, when the individual's wage is above the reference group's, there are no significant effects.

Finally, [33], using Chilean data, present evidence on the relationship between job satisfaction, individual wage, and reference group wage. Using a semi-nonparametric estimation of ordered probit models, they show that a 10% increase in the reference group wage would require a 24,9% increase in one's own wage to maintain the same level of job satisfaction.

Analyzing the determinants of job satisfaction is also crucial for the overall economy, as empirical evidence shows that job satisfaction predicts turnover, absenteeism, and labor productivity—factors that may significantly influence employment levels and economic growth. In particular, understanding the link between job satisfaction and wage structure is key for human resource managers, as workers' effort, and hence their productivity, may depend on the gap between wages perceived as "fair" and actual wages [34]. A fair wage can be understood as the average income of a worker's reference group, which may be defined as individuals with a similar level of human capital.

More recently, particularly in the wake of the Covid-19 pandemic, a growing body of research has examined the relationship between working from home and subjective well-being. It is worth noting that the effect of remote work on well-being is theoretically ambiguous. On the one hand, well-being may improve due to reduced time and financial costs associated with commuting, greater flexibility, and a better work–life balance. On the other hand, well-being may deteriorate due to limited interaction with colleagues, lack of recognition, poor-quality interactions with direct supervisors, increased multitasking, and time fragmentation resulting from blurred boundaries between work and

family life—issues that may be especially significant for women with young children. Therefore, the net effect of this work modality on subjective well-being remains unclear [35-37].

In this context, [38], using UK data, found a positive effect of teleworking on life satisfaction among individuals in relationships without children. [39], in turn, identified various health-related effects associated with teleworking. The authors highlighted the complexity of the work–health relationship and emphasized the need to consider broader factors to account for telework's impact on workers' health. Along similar lines, [40] analyzed the evolution of feelings of loneliness in Germany. Their estimates indicated that both men and women experienced increased loneliness during the Covid-19 pandemic. Moreover, using data from Italy, [41] provided evidence of technostress among workers as a consequence of teleworking. [42] found that the increase in telework due to lockdowns in the UK was most acutely felt by higher-paid and more highly skilled workers, as well as by those living in London and the southeast. The authors showed that the shift to telework negatively affected individuals' mental health; however, this effect diminished as workers adapted to the new working conditions. [43] tracked individuals' well-being across five European countries throughout the course of the Covid-19 pandemic.[5] They measured well-being across five dimensions: life satisfaction, perceived life meaningfulness, loneliness, depression, and anxiety. Their results showed that well-being was lower among those working from home and lowest among those not working at all. Notably, the loss of well-being due to working from home was more pronounced among older individuals, those with higher educational attainment, individuals with young children, and those living in more crowded housing.

The importance of family structure was also examined by [44]. Using data from the German Socio-Economic Panel (GSOEP), the authors demonstrated that working from home had a negative average effect on life satisfaction during the first two years of the Covid-19 pandemic. However, reduced life satisfaction was only observed among single men and women with school-aged children. Furthermore, the authors found that this negative effect disappeared by 2021, suggesting

5 The countries included were France, Italy, Germany, Spain, and Sweden.

adaptation to the newly imposed constraints. Lastly, [45], using data from Chile, assessed the relationship between working from home and life satisfaction, job satisfaction, and mental health problems. Their findings show that women working from home report greater life satisfaction, and both men and women report higher job satisfaction. On the other hand, they find a positive relationship between remote work and mental health problems in the case of men.

3.2. Aggregation Approach

As previously mentioned, the second strategy for empirically understanding the determinants of subjective well-being corresponds to the aggregation approach. In this regard, there is also abundant literature for both developed and developing countries. For example, in a study conducted by [46], which uses an aggregation approach to analyze the determinants of life satisfaction in Mexico, it was shown that satisfaction in personal, economic, health, work, and family domains were relevant predictors of life satisfaction. In a similar study using data from the United States, [47] observed that, on average, individuals' satisfaction with their finances, health, work, and family life were important for their overall life satisfaction.

On the other hand, using data from Germany, [2] identified the main domains that affect subjective well-being. The authors concluded that work, personal finances, housing, health, leisure, and the environment were areas whose satisfaction contributed significantly to overall satisfaction. [48] reached similar conclusions by analyzing data from the British Household Panel Survey (BHPS): satisfaction in the areas of work, finances, housing, health, amount and use of free time, marriage, and social life contribute to life satisfaction.

Thus, the evidence suggests that finances, health, and work are very important domains for life satisfaction. [49], using data from Canada, show that satisfaction in areas related to social, cultural, and land-use factors are the most relevant determinants of well-being. They also observed that these social, cultural, and land-use factors contribute to satisfaction in all other domains (education, employment, income, health, and housing).

There is also evidence for developing countries. [50] show that happiness in Bangladesh depends on different life domains and income. In fact, the authors find that income explains much of the variation in overall happiness and is closely related to domain-specific happiness, even in domains that are not economic. They conclude that financial and work satisfaction, as well as happiness in the domain of social life, are relevant to people's life satisfaction.

Additionally, using a sample of Latin American countries, [51] analyze dimensions of subjective well-being related to a wide range of domains, such as institutional and social circumstances, satisfaction with access to medical care and education, availability of green areas and public spaces, municipal services, roads and paving, public transport, garbage collection, sewage services, and the pension system. They also study satisfaction regarding democracy and the economy. The results of their analysis suggest that these dimensions also help explain happiness levels.

Finally, [52] provide evidence for Chile, identifying the domains that contribute to life satisfaction among the employed. Based on their results, they conclude that satisfaction in the areas of money, privacy, leisure, family life, health, and work positively affects life satisfaction. It is shown that satisfaction with family life, leisure, health, and work has a greater effect on life satisfaction than satisfaction with money and privacy.

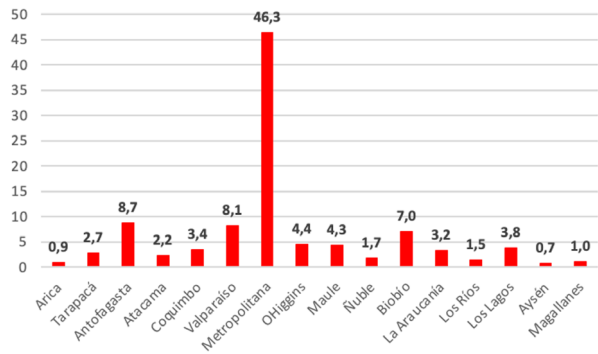
4. The Relevance of a Regional Perspective: Evidence from the Case of Chile

As is the case with various socioeconomic variables, the average well-being level for a country may offer limited insight into the heterogeneity of life experiences among the inhabitants of specific geographic areas. Therefore, it is essential to adopt a subnational perspective that accounts for the diverse realities existing within a given country. This approach enhances the availability of information and contributes to a more comprehensive understanding of the dynamics of subjective well-being—whether in terms of mental health, life satisfaction, happiness, or other dimensions. Accordingly, this section

places particular emphasis on examining subjective well-being in the specific case of Chile, with a focus on the internal variation across its geographic regions.[6]

Chile presents a unique case due to its distinctive geography: a long and narrow strip of land encompassing diverse realities and ecosystems. The country is divided into 16 regions, which differ significantly from one another. As an illustration, consider Figure 2, which shows the contribution of each region to the country's total GDP.[7]

Figure 2: Regional GDP Contribution in Chile.



As can be observed, there is substantial variation in the contribution of each region to the national GDP. While the country's capital (Region Metropolitana) accounts for 46,3% of GDP, the contribution of the Aysén Region amounts to just 0,7%. It is also noteworthy that following the Region Metropolitana is Antofagasta, though at a considerable distance, with 8,7%, closely followed by Valparaíso at 8,1%. Together, these three regions account for 63,1% of total national output—a highly significant figure. This concentration is important to highlight, as disparities in GDP levels ultimately translate into differences in income levels and, consequently (and potentially), into differences in indicators of subjective well-being.

6 Chile is composed of a total of 16 regions, which are as follows: Arica y Parinacota, Tarapacá, Antofagasta, Atacama, Coquimbo, Valparaíso, Metropolitana, O'Higgins, Maule, Ñuble, Biobío, La Araucanía, Los Ríos, Los Lagos, Aysén, and Magallanes.

7 The analysis was conducted using GDP data from the year 2023.

To illustrate this point, we estimate the annual income level that maximizes happiness for residents in each of the aforementioned regions.[8] In a widely cited study, [53] conducted a similar exercise using data from the United States and found that the income level that maximizes happiness is approximately US$80.000 per year. Moreover, they show that individuals earning US$160.000 annually report nearly the same level of subjective well-being, indicating diminishing marginal utility of income with respect to well-being.

Similarly, [54], using Chilean data, estimate this threshold to be slightly above US$60.000 per year. That is, beyond this income level, subjective well-being remains constant, confirming the decreasing marginal utility of income in relation to individuals' well-being. Within this context, it is worth asking whether there is regional heterogeneity in this threshold when the analysis is carried out at the subnational level.

To address this question, we extend the work of [54] by estimating the model parameters for each of the country's regions in order to identify the income level that maximizes life satisfaction.[9] Figure 3 presents the results of this exercise.

As can be observed, there is considerable regional heterogeneity in the level of income that maximizes life satisfaction.[10] As expected, the

8 The methodological strategy to identify the value that maximizes life satisfaction for a given data sample is as follows; first, an econometric model is estimated in the following form:

$$f_i = \beta_0 + \beta_1 y_i + \beta_2 y_i^2 + x_i'\beta + u_i$$

where f is a measure of individuals' subjective well-being (on a scale of, for example, 1 to F), y is the individual's income, x is a vector of characteristics that affect the individual's subjective well-being (controls), u is a well-behaved stochastic shock, and the β are parameters to be estimated. Then, the expected value of subjective well-being conditional on individual characteristics is given by:

$$E(f|y, x') = \beta_0 + \beta_1 y_i + \beta_2 y_i^2 + x_i'\beta$$

Finally, the income value (y^*) that maximizes expected subjective well-being is obtained by differentiating the expression with respect to "y" and setting the derivative equal to zero:

$$\frac{\partial E(f|y, x')}{\partial y} = y^* + 2\beta_2 y^* = 0$$

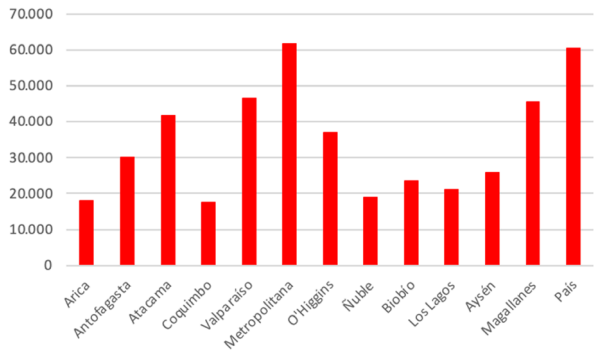
9 See footnote 8.

10 It should be noted that this econometric exercise could only be carried out for 13 of the 16 regions that make up the country. The reason for this is that in some regions, the low number of observations leads to a loss of efficiency, and the estimated coefficients become noisy.

Región Metropolitana requires the highest income level to maximize life satisfaction (US$61.686 annually), followed by the regions of Valparaíso and Magallanes, with US$46.352 and US$45.556 annually, respectively.

On the other hand, the regions that require the lowest income levels to maximize life satisfaction include Coquimbo (US$17.572), Arica (US$17.885), and Ñuble (US$18.849).

Figure 3: Income Level that Maximizes Life Satisfaction in Chile by Region.



When interpreting these figures, it is important to take into account certain factors, one of which relates to the differences in the cost of living across regions. Although the cost of living is a relevant determinant of the income level that maximizes life satisfaction, it cannot be incorporated into the current analysis due to the fact that Chile only provides a national-level consumer price index.[11] It should also be noted that other factors not included in the econometric model may also contribute to differences in the estimated income levels that maximize life satisfaction.

Therefore, the analysis carried out opens up interesting avenues for future research, which could shed further light on the determinants of subjective well-being at the subnational level and thus contribute to the design and implementation of more effective public policies.

11 This task is carried out by the Instituto Nacional de Estadísticas de Chile: www.ine.gob.cl.

5. Reflections and Policy Implications

The following presents three reflections on the main findings from the literature on Happiness Economics, focusing primarily on how this evidence complements the understanding of the relationship between economic growth and people's subjective well-being.

The first aspect refers to the relative importance of monetary income as a determinant of individuals' subjective well-being. As expected, income has a positive effect on individual well-being; however, its impact diminishes as a person's income increases. From the perspective of economic growth, greater growth does not necessarily translate into increased well-being for the population; it is not an inexhaustible source of subjective well-being, but rather, there is a ceiling. This threshold has been estimated for some countries, and it is known that beyond a certain income level, additional income growth does not result in higher well-being [53].[12] Similarly, it is noted that individuals not only care about their absolute income, but also their relative income — that is, their salary or monetary income compared to that of their reference group, the group they identify with. In general, the evidence points to a negative effect of relative income on subjective well-being, as the comparison effect tends to dominate. This result is relevant for understanding income distribution within an economy. It reflects that higher levels of inequality tend to negatively impact subjective well-being, as such inequality does not necessarily imply future income gains for individuals (as proposed by the so-called "information effect" logic). Nonetheless, important challenges remain in understanding the mechanisms by which individuals construct their reference groups — that is, the group against which they compare themselves. Some evidence exists for developed countries, but for developing countries, this evidence is still scarce or even non-existent [15].

A second reflection relates to recognizing that subjective well-being is a complex and multifactorial phenomenon. Therefore, there is a significant challenge in continuing to generate evidence (especially

12 As previously mentioned, [53] place this threshold at US$80.000 per year for the United States. In contrast, [54] estimate this threshold to be slightly above US$60.000 per year in the case of Chile.

for developing countries) that can enrich our understanding of this complex phenomenon. For example, as highlighted in the previous point, people care deeply about how they are positioned relatively within society. While individual and family variables, such as age, education, gender, and working conditions, affect subjective well-being, individuals also conduct analyses and comparisons when evaluating their overall subjective well-being. Thus, not only personal variables play a role, but also those of others and, importantly, the way this information is perceived and processed [12]. This brings to light the fundamental role played by unobservable elements in studying the determinants of subjective well-being. Personality traits are a key factor in the subjective evaluations people make about their life trajectories. Therefore, understanding these variables well also represents a challenge for the literature and is crucial to include in empirical analysis [2].

The third reflection concerns the public policy implications of the findings from Happiness Economics. Once the main drivers of subjective well-being are understood, the next step is to propose concrete measures for policymakers to strengthen it. In this context, three tentative recommendations can be made.

The first recommendation is to reinforce the message from the Stiglitz Commission regarding the need for national statistics institutions to make a particular effort to collect qualitative information about people's well-being [1]. In this way, the evolution of subjective well-being can be monitored, and it is possible to anticipate potential dissatisfaction that could trigger larger problems, for example, due to a mismatch between the progress shown by quantitative and qualitative well-being indicators.

The second recommendation is that economic growth should never be neglected. While it is true that it is not an inexhaustible source of society's subjective prosperity, the evidence clearly indicates a relationship between monetary income and subjective well-being. Therefore, economic growth, as a means of strengthening individual incomes, should always be on the public agenda. That said, it must not be forgotten that its effect diminishes — that is, once a certain threshold is crossed, its contribution to subjective well-being rapidly declines [53]. For this reason, other areas that also contribute to individuals' well-being

— and which have been highlighted by empirical evidence — should not be neglected. In fact, studies indicate the importance people place on family life, friends, their neighborhood, and surroundings. Therefore, a major public policy challenge lies in the need to create adequate infrastructure that enables people and their significant environments to interact and thrive in the best possible way, allowing them to enjoy so-called "relational goods," which will help improve societal levels of subjective well-being. Ultimately, access to these resources will once again depend on the economy's capacity for growth.

Finally, a third recommendation arises particularly from the relevance of the labor market in people's lives. Comparative evidence shows that the work domain is a key determinant of individuals' subjective well-being. That is, what happens in the labor market in terms of job satisfaction translates into different well-being levels for the population. The literature clearly identifies the factors that drive job satisfaction. Here, factors such as labor flexibility — represented by part-time work or remote work — stand out. Also important is wage equity, meaning that companies should implement pay policies that are equitable both horizontally and vertically within the organization.

And of course, employment formality is also a vital factor. Elements related to social protection and the existence of formal and stable long-term contractual relationships also enhance workers' well-being, and consequently, their overall life satisfaction. It should also be noted that all these elements contribute to increasing individuals' labor productivity.

6. Bibliography

[1] Stiglitz, J. E., Sen, A., & Fitoussi, J. P. (2009). Report by the commission on the measurement of economic performance and social progress.

[2] Van Praag, B. M., Frijters, P., & Ferrer-i-Carbonell, A. (2003). The anatomy of subjective well-being. Journal of economic behavior & organization, 51(1), 29-49.

[3] Oswald, A. & S. Wu (2010). Objective confirmation of subjective measures of human well-being: Evidence from the USA. Science, 327, 576-79.

[4] Easterlin, R. (1973). Does money buy happiness? The Public Interest, Vol. 30, pp. 3-10.

[5] Easterlin, R., P. David & M. Reder (1974). Does economic growth improve the human lot? Some empirical evidence. Nations and Households in Economic Growth, Academic Press.
[6] Easterlin, R. (2001). Income and happiness: towards a unified theory. The Economic Journal, Vol. 111, No. 473, pp. 465-84.
[7] Easterlin, R. & O. Sawangfa (2009). Happiness, growth and the life cycle. Oxford University Press.
[8] Easterlin, R., L. McVey, M. Switek, O. Sawangfa & J. Smith (2010). The happiness-income paradox revisited. Proceedings of the National Academy of Sciences.
[9] Frey, B. S., & Stutzer, A. (2000). Happiness, economy and institutions. The economic journal, 110(466), 918-938.
[10] Di Tella, R., J. Haisken & R. McCulloch (2007). Happiness adaptation to income and to status in an individual panel. NBER working paper No. 13159.
[11] Ferrer-i-Carbonell, A. (2005). Income and well-being: An empirical analysis of the comparison income effect. Journal of Public Economics, Vol. 89, pp. 997-1019.
[12] Budria, S., & Ferrer-i-Carbonell, A. (2019). Life satisfaction, income comparisons and individual traits. Review of Income and Wealth, 65(2), 337-357.
[13] Brodeur, A., & Flèche, S. (2012). Where the streets have a name: Income comparisons in the US. Available at SSRN 2149727.
[14] Rojas, M. (2012) Relative income and well-being in Latin America. Documento de trabajo Facultad Latinoamericana de Ciencias Sociales y Universidad Popular Autónoma del Estado de Puebla.
[15] Clark, A. E., & Senik, C. (2010). Who compares to whom? The anatomy of income comparisons in Europe. The Economic Journal, 120(544), 573-594.
[16] Blanchflower, D. G., & Oswald, A. J. (2011). International happiness: A new view on the measure of performance. Academy of Management Perspectives, 25(1), 6-22.
[17] Di Tella, R., R. MacCulloch & A. Oswald (2001). Preferences over inflation and unemployment: evidence from survey of happiness. American Economic Review, Vol. 91, No. 1, pp. 335-41.
[18] Blanchflower, D. G., & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? Social science & medicine, 66(8), 1733-1749.
[19] Freeman, R. (1978) Job satisfaction as an economic variable. The American Economic Review. Vol. 68 No 2.
[20] Clark, A. & A. Oswald (1996). Satisfaction and comparison income. Journal of Public Economics, Vol. 61, pp. 359-381.
[21] Booth, A. & Van Ours, J. (2008) Job satisfaction and family happiness: the part-time work puzzle, The Economic Journal 118, 77-99.
[22] Clark, A. (1997) Job satisfaction and gender. Why are women so happy at work? Labour Economics 4(4), 341–372.
[23] Montero, R., & Rau, T. (2015). Part-time work, job satisfaction and well-being: Evidence from a developing OECD country. The Journal of Development Studies, 51(4), 370–385.
[24] Alesina, A., Giuliano, P., & Nunn, N. (2013). On the origins of gender roles: Women and the plough. The quarterly journal of economics, 128(2), 469-530.

[25] Asadullah, M. N., & Fernandez, R. M. (2008). Work-life balance practices and the gender gap in job satisfaction in the UK: Evidence from matched employer-employee data (No. 3582). IZA Discussion Papers.
[26] Hamermesh, D. (2001) The changing distribution of job satisfaction. Journal of Human Resources 36(1), 1–30.
[27] Card, D., A. Mas, E. Moretti & E. Saez. (2012) Inequality at work: the effect of peer salaries on job satisfaction. The American Economic Review, 102(6), 2981-3003.
[28] Montero, R., & Rau, T. (2016). Relative income and job satisfaction in Chile. Handbook of happiness research in Latin America, 205-217.
[29] Mumford, K., & Smith, P. N. (2012). Peer salaries and employee satisfaction in the workplace.
[30] Clark, A. E., Kristensen, N., & Westergård-Nielsen, N. (2009). Job satisfaction and co-worker wages: Status or signal? The Economic Journal, 119(536), 430-447.
[31] Manski, C. (2000) Economic analysis of social interactions. Journal of Economic Perspectives, vol. 14, pp. 115-136.
[32] Mumford, K., & Smith, P. N. (2015). Peer salaries and gender differences in job satisfaction in the workplace. The Manchester School, 83(3), 307-313.
[33] Montero, R., & Vásquez, D. (2015). Job satisfaction and reference wages: evidence for a developing country. Journal of Happiness Studies, 16, 1493-1507.
[34] Akerlof, G. & J. Yellen. (1990) The fair wage-effort hypothesis and unemployment. The Quarterly Journal of Economics, vol. 105, No 2.
[35] Henke, R. M., Benevent, R., Schulte, P., Rinehart, C., Crighton, K. A., & Corcoran, M. (2016). The effects of telecommuting intensity on employee health. American Journal of Health Promotion, 30(8), 604–612.
[36] Lu, Z. & Zhuang, W. (2023). Can teleworking improve workers' job satisfaction? Exploring the roles of gender and emotional well-being. Applied Research in Quality of Life, 1–19.
[37] Powell, A., & Craig, L. (2015). Gender differences in working at home and time use patterns: Evidence from Australia. Work, Employment and Society, 29(4), 571–589.
[38] Gueguen, G., & Senik, C. (2023). Adopting telework: The causal impact of working from home on subjective well-being. British Journal of Industrial Relations, 61(4), 832-868.
[39] Oakman, J., Kinsman, N., Stuckey, R., Graham, M., & Weale, V. (2020). A rapid review of mental and physical health effects of working at home: How do we optimise health? BMC Public Health, 20(1), 1–13.
[40] Lepinteur, A., Clark, A. E., Ferrer-i-Carbonell, A., Piper, A., Schröder, C., & D'Ambrosio, C. (2022). Gender, loneliness and happiness during COVID-19. Journal of Behavioral and Experimental Economics, 101, 101952.
[41] Molino, M., Ingusci, E., Signore, F., Manuti, A., Giancaspro, M. L., Russo, V., ... & Cortese, C. G. (2020). Wellbeing costs of technology use during Covid-19 remote working: An investigation using the Italian translation of the technostress creators scale. Sustainability, 12(15), 5911.

[42] Reuschke, D., & Felstead, A. (2020). Homeworking in the UK: before and during the 2020 lockdown. WISERD Report, Cardiff: Wales Institute of Social and Economic Research.
[43] Schifano, S., Clark, A. E., Greiff, S., Vögele, C., & d'Ambrosio, C. (2021). Well-being and working from home during COVID-19. Information Technology & People (ahead-of-print).
[44] Senik, C., Clark, A. E., d'Ambrosio, C., Lepinteur, A., & Schröder, C. (2024). Teleworking and life satisfaction during COVID-19: the importance of family structure. Journal of Population Economics, 37(1), 1-24.
[45] Montero, R., & Bernal, N. (2024). Gender and Well-Being Disparities Among People who Work from Home in Chile. Journal of Happiness Studies, 25(6), 71.
[46] Rojas, M. (2006). Life satisfaction and satisfaction in domains of life: Is it a simple relationship? Journal of happiness studies, 7, 467-497.
[47] Easterlin, R. A., & Sawangfa, O. (2007). Happiness and domain satisfaction: Theory and evidence.
[48] Ferrer-i-Carbonell, A. & B. van Praag (2008). Happiness Quantified: a Satisfaction Calculus Approach, Nueva York, Oxford University Press.
[49] Kant, S., Vertinsky, I., Zheng, B., & Smith, P. M. (2014). Multi-domain subjective wellbeing of two Canadian First Nations communities. World Development, 64, 140-157.
[50] Mahmud, M., & Sawada, Y. (2018). Happiness in life domains: evidence from rural Bangladesh. Economic and social development of Bangladesh: miracle and challenges, 233-250.
[51] Ateca, V., García-Muñoz, T., & Moro Egido, A. I. (2016). Individual and social dimensions of subjective well-being: evidence across Latin-American Countries. Handbook of Happiness Research in Latin America, 357-388.
[52] Montero, R., & Miranda, A. (2020). The determinants of life satisfaction among Chilean workers. CEPAL Review, August, Nº 131.
[53] Kahneman, D. & A. Deaton (2010). High income improves evaluation of life but not emotional well-being. Proceedings of the National Academy of Sciences of the United States of America (PNAS), vol. 107, N° 38, septiembre.
[54] Montero, R., & Vásquez, D. (2024). Does the decision to participate in the labour market affect people's subjective well-being? Thank you for your interest in this ECLAC publication, 149.