Happiness versus Income Awareness

Will people be happier if they know each other's income?

Xiao Bai   Yichun Zhang

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Abstract

In 2001, tax records in Norwey becaome easily accessible online, which allows everyone to see their income level and make comparsion with other people's income. The populatiry of searching the word 'Skattelister' (tax record list) has increased significantly since the introduction of tax data in 2001. People has large interest in the tax lists: for every five searches for YouTube, there was about one for skattelister. However, the introduction of this tax record list would cause a negative effect on the public as the income comparision model reports that the visible income transparency can exntend the disparity in well-being between groups of people with higher and lower income.

Contents

Code and data are available at[1]

DOI of my replication is available at[2]

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[1] https://github.com/XiaoBai-blip/STA304-Paper-2
[2] https://doi.org/10.48152/ssrp-2dzq-6x71

Introduction

After the introduction of easy internet access to Norwegian tax data in 2001, it became possible for everyone in the nation to quickly and easily see the earnings of anyone else in the country. In Norway, everyone was just a few clicks away from discovering the average income of everyone else in the nation. In the busiest week of the year, these websites were more popular than YouTube. Because income transparency makes it easier to compare incomes, it has the potential to expand the disparity in well-being between wealthier and poorer people. Individuals with lower incomes often lose in this game of income comparisons.

Based on information gathered by the Norwegian Monitor Survey, an annual self-completion questionnaire was disseminated to an ethnically diverse sample of Norwegians between 1985 and 2013. In terms of several apparent qualities, this group seems to be typical of the broader population. According to one website, there were 29.4 million searches made in the first year after the 2007 tax data (Andersen, Ingunn, and Eisenträger 2008). Norway Ministry of Finance (2014) reported 920,896 unique users completed approximately more than 17 million searches. The mismatch may be attributed to the 2011 requirement that users check in to the official tax office website in order to search for tax data.

In this paper, we will first use various data sources to show the popularity of these online tax lists in both Norway and Sweden through comparing search volumes of different keywords. Then we will narrow down our topic to be more focusing on weekly search volumes in Norway between January 2010 and January 2011. We found that the first month of 2010 was the first time that the overall number of searches across all categories reached one million. Immediately after the release of the previous year's tax data, individuals began searching for tax lists in droves. Norway's tax lists outperformed YouTube searches during that month, demonstrating that Norwegians were more interested in learning about other people's income than they were in watching YouTube videos. In addition, since income transparency intents income comparison, it might also widen the gap between richer individuals and poorer individuals well-being. We will then discuss the effect of the increase in transparency using the gradient between subjective well-being and individual income rank. By doing so, we will conduct a regression model to test whether there is a positive relationship between an individual's income rank and its well-being. Ideally, conducting these three aspects can provide people a general understanding of how a higher income transparency can affect the well-being gap between different groups of people with different income level.

The analysis will be conducted in R (R Core Team 2020), and the package we will use is tidyverse (Wickham et al. 2019). All graphs will be created using function ggplot2 (Wickham 2016). The packages knitr (Friendly et al. 2020) are also used to generate the R markdown report.

Literature Review

Many researches have studies about the relationship between income transparency and happiness. Many suggested one's feeling of well-being is influenced by one's relative wealth. These findings contribute to the understanding of the Easterly Paradox, which states that an increase in wealth for everyone does not result in an increase in general happiness (PNAS 2010). Because utility is a matter of perspective, policymakers have been pushed to consider factors other than GDP. The so-called resource curse,' which refers to the propensity of resource-rich nations to underperform in a variety of social-economic outcomes, has piqued the public's attention in recent years. Recent research has gone beyond the usual influence on economic growth and instead examined the implications on wider indices of human well-being, such as infant mortality. In recent decades, a distinct empirical literature has investigated the factors of happiness and subjective well-being in more depth (using either country or household data).

In the paper "Happiness, Income, and Poverty," the author first presents some evidence that well-being is unquestionably related to income, but then explores two factors that imply GDP per capita may still play a role in happiness-based policy: subjective well-being inequality and the specific example of individuals who are in income poverty, both of which imply GDP per capita may still play a role in happiness-based policy (Clark 2017). Income inequality is a new component that is introduced in the study "The Effects of Income Levels and Income Inequalities on Happiness" by Tavor, Gonen, and Weber (2017), which examines the relationship between happiness and income inequality. Happiness has been shown to have a negative

impact at severe levels of inequality defined by the Gini index, independent of GDPppp per capita. This has been experimentally shown. On the other hand, across intermediate ranges of the Gini index, the relationship between index changes and pleasure is equivocal, as seen in Figure 1. These conclusions may be drawn independently of the actual figures of GDPppp per capita in the country. Bringing these two empirical lines of study together results in the publication "Happiness and the Resource Curse," by Ali, Murshed, and Papyrakis (2017), which is published in the Journal of Happiness Studies. This is the first research that we are aware of that takes use of a large panel dataset to investigate the relationships between changes in happiness across nations and different metrics of resource richness, according to the authors. Our findings, which are consistent with past empirical evidence of a resource curse in oil-rich countries, show that increases in oil rents are adversely related to increases in happiness over time. This 'resource curse' curse on happiness seems to be oil-specific, and it appears to hold true for both the levels and changes in levels of happiness.

Concepts and Terminologies

Subject Well-Being – the main outcome of interest. The Norwegian Monitor Survey contains questions about happiness and life satisfaction, which are the two most extensively used measures of subjective well-being (Easterlin and A 2004).

Happiness: Questions asked in happiness questions are: "Will you mostly describe yourself as: Very happy; Quite happy; Not particularly happy; Not at all happy."

Satisfaction: The life satisfaction question is, "How satisfied are you with your life? Very satisfied; Somewhat Satisfied; Neither satisfied nor dissatisfied; Slightly dissatisfied; Very dissatisfied." Researchers of the original paper.

Income Rank: Denotes the respondent's position in the distribution of household income for the current year. Respondents were questioned about their yearly gross household income using bins, as is customary in household surveys.

Perceived Rank: Based on the question: "Would you say that your economic condition is... in contrast to other Norwegians?" Slightly worse than average; Average; Slightly better than average; Much better than average.

Transparency: A dummy variable indicating the period of higher income transparency. Equal to 1 if time is in between 2001 and 2013, and 0 otherwise.

Linear regression: Linear regression is primarily used as the analysis model in the original paper and the reproduction paper, to analyze the association between individual well-being, income rank, and the impact of income transparency.

Dummy variable: Dummy variable was introduced in the OLS regression to account for the impact of the presence of income transparency. If the time period of data exists between 2001-2013 the dummy variable became 1 to account for such effect and vice versa.

Coefficient: Coefficient for the OLS regression represents the slope for income rank, indicating the degree of impact of income rank on one's well-being. It is mainly used in the original paper to compare the impact on individual well-being regarding presence of income transparency.

Data and Context

The findings are based on information gathered by the Norwegian Monitor Survey. The Norwegian Monitor Study was a cross-sectional study that was carried out on a repeating basis by the market research firm Ipsos MMI. An annual self-completion questionnaire, which was disseminated to an ethnically diverse sample of Norwegians between 1985 and 2013, gathered the data every other year between 1985 and 2013. The total number of observations included in our regression analysis was 48,570, which was collected over a 15-year period, suggesting an average of 3,238 observations each survey year for the 15-year period under consideration. In terms of several apparent qualities, this group seems to be typical of the broader population.

Perhaps the most compelling evidence comes from a Synovate poll done in 2007, which was representative of the whole taxable population of the United States at the time. Statistics on web traffic show that online tax listings are quite popular, which supports media reporting on their tremendous popularity in this area. According to one website, there were 29.4 million searches made in the first year after the publication of the 2007 tax data (which was published in January) (Andersen, Ingunn, and Eisenträger 2008). On top of all of that, there is information that is publicly available from a time when tax records could only be accessed via the tax agency's official website. As reported by the Norway Ministry of Finance (2014), 920,896 unique users completed slightly more than 17 million questions in the previous year, according to the most recent available data. 16 During that specific calendar year, only adults with a valid account were able to do searches on the official website. A total of 3,797,822 persons, or more than 24.25 percent of Norway's adult population, looked for at least one tax record in 2013, with the average user doing 18.46 searches. It is not feasible to directly compare figures from 2007 and 2013 since they are derived from a range of sources and are most likely based on different definitions, making direct comparison impossible. As a consequence of this restriction, the number of people doing searches, as well as the number of searches per capital, fell between 2007 and 2013. In most cases, this mismatch may be attributed to the 2011 requirement that users check in to the official tax office website in order to search for tax data, which was put in place in 2011.

Tax information is popular

Methods

Data from Google Trends may be used to compare the popularity of the income search tool with that of other similar services. It is taken into consideration when determining the popularity of the income search tool how many times a phrase has been searched in the Google search engine. In the main search category, skattelister, we include searches for the two words that are most frequently used to refer to tax records: "skattelister" and "skattelistene," which both translate literally to "tax list." In this category, we also include searches for the words "skattelister" and "skattelistene," which both translate literally to "tax list." Also included in this category are searches for the phrases "skattelister" and "skattelistene," which literally translate to "tax list" and "tax list list," respectively. In addition, searches for the terms "skattelister" and "skattelistene" are included in this section, which are both translated literally as "tax list" or "tax list list." Websites such as www.skattelister.no, which provided access to tax information, were well-known in Norway at the time of their creation. For our study, we will use statistics from two terms that have regularly been among the most popular in the world: "weather" and "YouTube." These two phrases, which are both related to the weather, will serve as the basis for our research. It is feasible to determine how much the general public is interested in learning about taxes based on the number of searches for the word "tax" on Google.

A bar plot, like depicted in the previous paragraph, depicts the popularity of chosen phrases in Norway in 2010. In addition, this report includes a line graph illustrating the distribution of Google searches over the course of each week in the year 2010. If you're searching during the first week of 2010, search volumes are normalized such that the total number of searches across all categories equals one in total.

Results

When looking for tax documents on the internet, it's necessary to be familiar with the most often used words, as seen in Figure 1. By inserting the word "YouTube," we've provided a jumping-off point for other users. Norway has been located, which signifies that the quest has come to an end. A skattelister's test in Norway is no longer solely dependent on weather predictions as of the year 2010. A skattelister search accounted for almost one out of every five YouTube searches. This indicates that there is a great deal of interest in the tax listings. Norwegians were found to be more prone than the overall population to look for tax paperwork, according to the study. While it is true that people have an increased interest in taxation, tax lists were searched approximately three times more often than actual taxes.

Figure 1: Search Volumes in Norway & Sweden (annually)
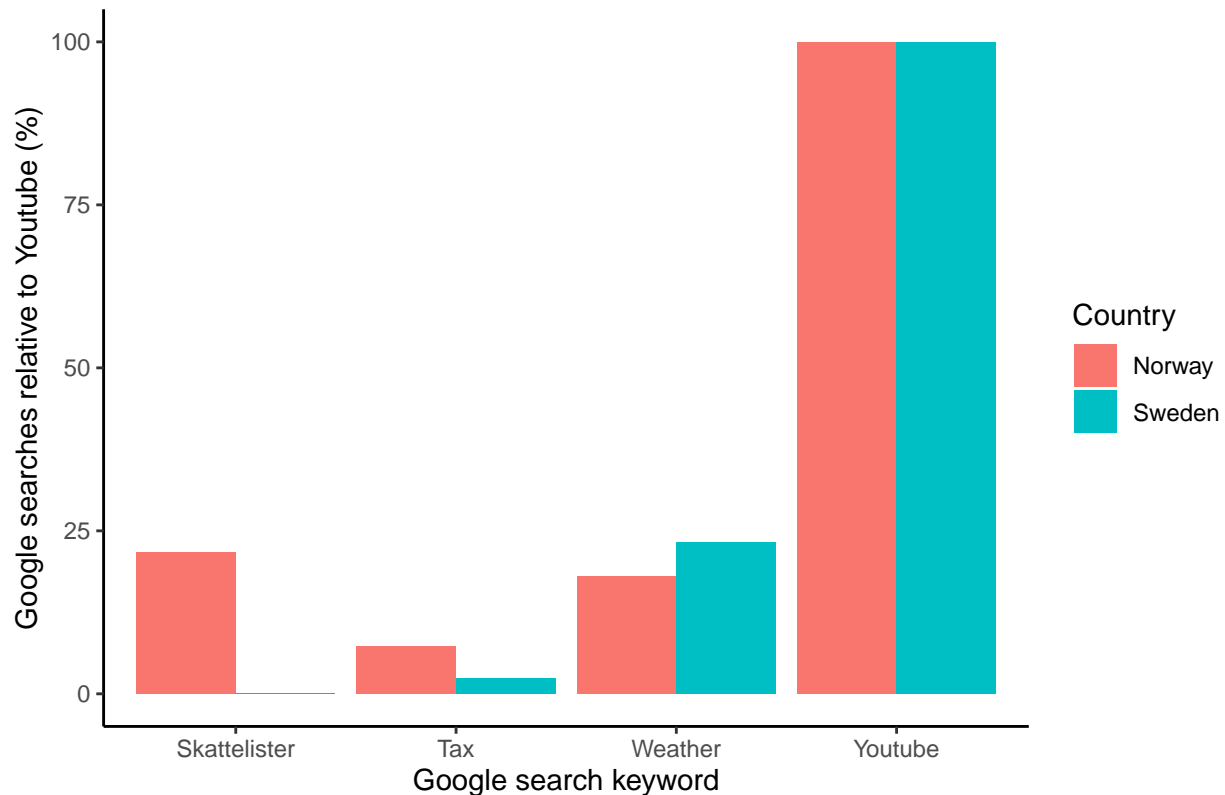
As seen in Figure 2, the distribution of Google searches by week in 2010 is broken out into separate weeks for each month. The first week of 2010 was the first time that the overall number of searches across all categories reached one million. The number of searches for tax-related information remained steady throughout the year, with the number of searches for weather-related information almost doubling. Immediately after the release of the previous year's tax data, which occurred during the third week of October, individuals began searching for tax lists in droves. Norway's tax lists outperformed YouTube searches during that week, demonstrating that Norwegians were more interested in learning about other people's income than they were in watching YouTube videos.

Figure 2: Search Volumes in Norway (bi–weekly)
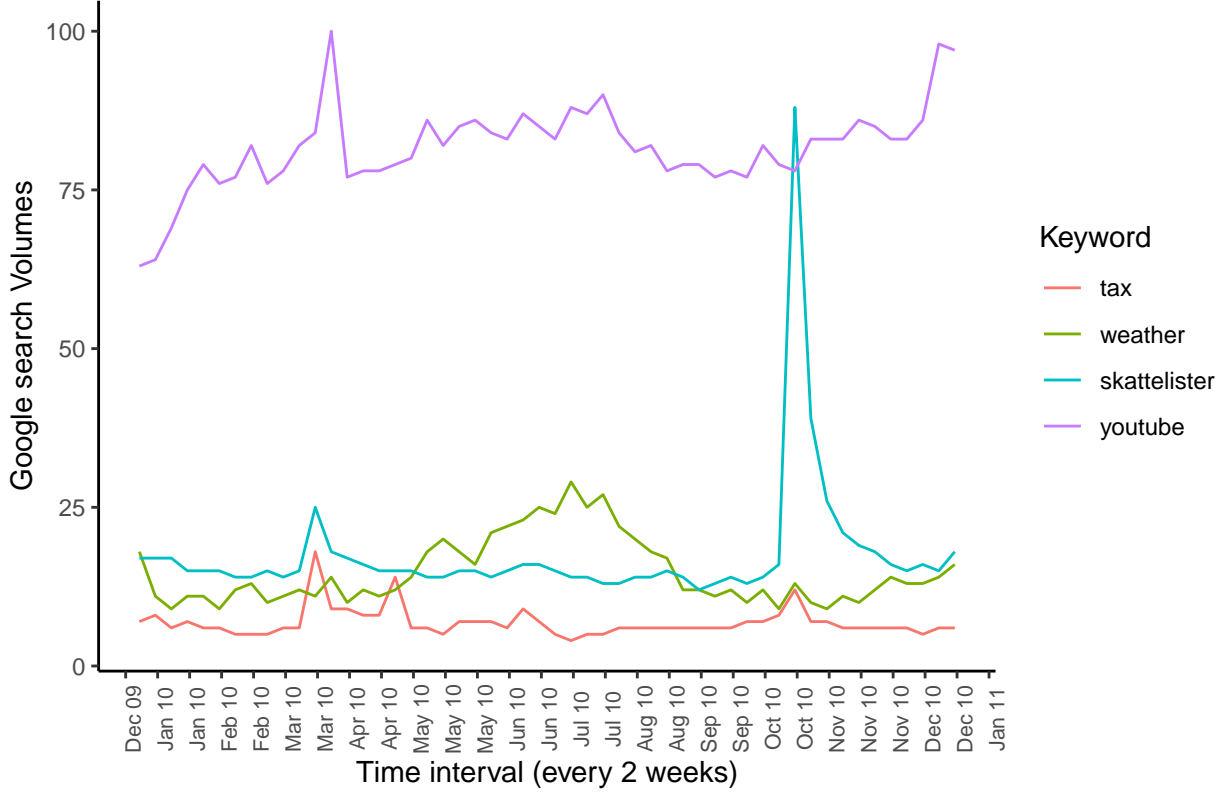
Income Transparency affects well-being

Methods

With the available tax records allowing the analysis, the income comparison model aims to demonstrate the hypothesis that income transparency allows individual well-being gap to be improved: as the poor individuals often lose this game of income comparison by losing social recognition and self-esteem while the rich benefits by learning how richer they are compared to others. We attempt to test this hypothesis by measuring the effect of increase in transparency on the gradient between subjective well-being and their respective income rank. Furthermore, according to the author's argument, the two most widely used measures of subjective well-being is happiness and life satisfaction. Therefore, in this paper, we try to use happiness level as a measure of subjective well-being of individual as our predicted variable and examine its relationship with income rank. We interpret the function as the following:

$$SWB_{i,t} = \alpha_1 * IncomeRank_{i,t} + \alpha_2 * IncomeRank_{i,t} * Transparency + e_{i,t} + X_{i,t}\beta$$

In this model, $SWB_{i,t}$ represents the subject well-being of individual i in year t, $IncomeRank_{i,t}$ is the income rank of individual i in year t, $Transparency$ is a dummy variable about the period of time with higher income transparency, equals to 1 when the time period is from 2001 to 2013, and 0 otherwise. $X_{i,t}\beta$ is a set of control variable used in the study, controlling the changing of age, age squared, and dummies for gender, education, marital status, total number of household members and number of working household members. ds is a year effect variable and $e_{i,t}$ is error term accounting for potential errors.

The coefficient α_1 represents the average change of happiness level (between the year 1985 and 2000) with one unit change of income rank, holding other variables constant. Based on our assumption, if the value of this coefficient is positive, we can say that there might be a positive relationship between income level and happiness level. Practically, the subject well-being of an individual at certain year is associated with "being

richer" as per the gain from purchases of better goods and services and the gain from "income comparison", one became more confident with higher income. Similarly, α_2 represents the additional happiness from the changing happiness-income gradient from 2001 to 2013 (as the dummy variable become 1 in this time frame. 0 when the period from 1985 to 2000). The positive value indicates that the higher transparency raises the gradient of happiness-income.

Results

Table 1: Results of Regression Model

Variable	Coefficient	P-value
(Intercept)	2.751	<2e-16
Income Rank	0.120	<2e-16
Income Rank*Transparency(2001-2013)	0.090	0.032

Table 1 shows the result of regression model using the same OLS regression. Given the dependent variable happiness, we can see that the estimated coefficient on Income Rank is 0.120, which is positive. Moreover, the p-value of the coefficient is smaller than 0.05, which indicates that Income Rank as explanatory variable is statistical significant to our dependent variable (happiness). This coefficient implies that going from the lowest to the highest income rank in Norway during 1985–2000 was associated with an increase in happiness of 0.120 standard deviations. In addition, this table reports that the coefficient of the interaction term is 0.090. The p-value of 0.032 also implies that this variable is statistical significant to our dependent variable happiness.

Discussions

This paper is reproduction of "The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment," written by Ricardo Perez-Truglia, is included in this publication (Perez-Truglia 2020). Because this is a replication research, the model used in this publication is not the same as the model used in the original work. There existed very limited used of the online tax lists for the purpose of learning salary. The actual percentage turned out to be only 26 percent of the individuals and may be only for the purpose of snooping not researching. Plus, the nature of the data was described as "completely useless" for salary comparisons practices (NRD 2008). On top of that, the Norwegian tax records reveal comprehensive income including gains outside of the payroll which puts additional uncertainties comparing to the benchmark of the website of state employees studied in (Card et al. 2012).

Limitations and Future

Due to our limited expertise of the subject matter, we chose two components of the paper for replication. We started with the first linear regression model and repeated it without using a control variable to see how it performed. The findings revealed an association between income transparency and well-being in the same manner that was indicated in the original study; however, the number we replicated was not precisely the same as the original paper. As a consequence of the minimal replication information supplied by the publication and the knowledge base, we have been successful in reproducing a bare-bone regression model utilizing the same OLS regression and obtaining the same outcome as before. I made several recommendations based on the constraints I saw. First and foremost, if at all feasible, the replication process should begin with data collection. Furthermore, certain fundamental demographic factors should be gathered and documented in the data so that I may include them into the model to account for any tiny variances across groups and therefore increase the accuracy of forecasts.

Ethics

On the 10 Simple Rules for Responsible Big Data Research, we will rely on the advice provided by M et al. (2017). The ten rules are as follows (according to M et al. (2017)). We acknowledge that 1) The data is based on survey and people, and these data can be harmful. 2) The data is privacy. 3) The share of the data package is ethical. 4) The study has limitations.

Conclusion

In this paper, we compare the popularity of Norwegian tax lists with YouTube searches from January 2010 to January 2011. This paper will also test whether the increase in income transparency affects the gap between richer and poorer people's well-being. Figure 1 shows that a skattelister in Norway was able to find tax documents on the Internet by inserting the word "YouTube". This indicates that a great deal of interest in the tax listings existed. Figure 2 shows that the first week of 2010 saw a rise in the overall number of searches across all categories, with the number of searches for weather-related information almost doubling. Table 1 shows that going from the lowest income rank in Norway to the highest income rank in Norway during 1985 - 2000 was associated with a 0.120 standard deviation increase in happiness. The online tax lists of Norwegian taxpayers reveal income including gains outside of the payroll, which makes the data useless for salary comparisons practices.

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