

EXERCISE ANSWERS UNIT 13

UNIT 13

coreecon

EXERCISE 13.1 BETTER LIFE INDEX

The Better Life Index (tinyco.re/2887644), was created by the Organisation for Economic Cooperation and Development (OECD). It lets you design a measure of the quality of life in a country by deciding how much weight to put on each component of the index.

The OECD is an international organization based in Paris, with 35 member countries, most with high levels of GDP per capita. It was formed in 1948 to facilitate postwar reconstruction in Western Europe. The OECD is an important source of internationally comparable statistics on economic and social performance.

1. Should a better life index include the following elements: income, housing, jobs, community, education, environment, civic engagement, health, life satisfaction, safety, or work-life balance? For each of these elements, explain why or why not.
2. Use the Better Life Index tool to create your own better life index for the country where you are living. How does this country score on the topics that are important to you?
3. Rank the countries in the database using your newly created better life index, and compare it with a ranking based exclusively on income.
4. For both of these indices, choose two countries with contrasting rankings and briefly suggest why this may be the case.



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Introduction

The aim of this question is to get students to think about how to define how “well-off” a country is. Much of the rest of the unit will refer to standard economic outcomes like GDP, consumption, investment, unemployment, and inflation, so this question is an acknowledgement of the fact that other (and broader) measures of wellbeing exist.

Answer

1. The inclusion of each metric is justified below, with some caveats.
Income: Higher income may lead to greater well-being, e.g. due to improved access to education, healthcare, or diet. On the other hand, beyond certain levels of income/wealth the importance of income for well-being may diminish.
Housing: Determines the conditions where people live, and has an impact on the basic needs we have, such as safety and privacy, which in turn affect our well-being.

Jobs: Apart from the obvious benefit of wage (see income above), jobs have positive externalities stemming from creating networks. They may also build self-esteem and develop skills. The fulfilment and personal development that some people derive from their jobs is a source of well-being.
Community: Quality of our relationships is an important determinant of well-being. The way we interact with others affects our mental health.
Education: Builds knowledge, skills, networks, and increases expected wages. There are also social benefits, such as civic participation and lower crime rates.

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As with jobs, the fulfilment and personal development from education can be an important source of well-being.

Environment: Just as our personal space (housing) affects our well-being, so does the communal environment. Having access to green spaces or clean air may reduce stress and improve mental health.

Civic engagement: Transparency is an efficient way to fight corruption. Hence, the risk of public funds' mismanagement and fraud are diminished. These funds can be spent on projects that improve well-being e.g. sports facilities, infrastructure.

Health: There are clear benefits to a healthier society, such as longer life expectancy, increased productivity, and reduced healthcare costs.

Life satisfaction: There is no objective measure of happiness. Nevertheless, subjective surveys on overall life satisfaction may be an important complement to the objective measures above. People's perception of their living situation also affects their well-being.

Safety: Physical pain, loss of property, or feelings of vulnerability have adverse impacts on our well-being.

Work-life balance: Finding a balance between work and family commitments may be an important determinant of our well-being.

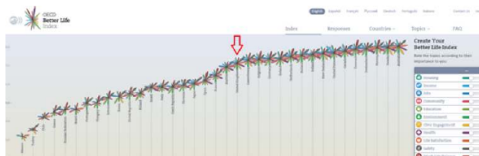
An important factor that may be missing is the level of income/wealth inequality since surveys have shown that our level of income/wealth relative to others can matter more than the absolute level.

Students may also note that income is a necessary condition for most of the other dimensions, but not a sufficient one. This may be true of other elements as well, e.g. societies with highly educated members tend to have better environmental safeguards.

A2. Students may choose a variety of different weights, a selection of which are discussed below (taking the UK as the home country):

Index 1: Equal weights

The UK ranks somewhere around the average. It lies below the Scandinavian countries, which are widely perceived to be more socially oriented.



Index 2: High weights on income, education, health, and safety

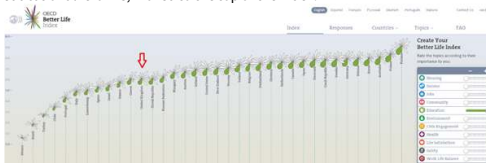
The UK moves up slightly, but still lies below Finland, Sweden, and Norway.

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Index 3: All weight on education

This is interesting, because the UK moves to the lower half of the index (below the Russian Federation). Finland and Poland, countries that underwent major educational reforms, moved to the top of the index.



Index 4: All weight on income

The UK stays around the average, moves slightly higher than in Index 2. Notice how the US dominates the index. Most of the variables are ultimately dependent on income, which is why the UK does not move much compared to Indices 1 and

2.



Marking guidance

A good answer will:

- Provide a justification for including or not including each of the elements
- Discuss any possible relationships between the elements (e.g. without sufficient income, high levels of education are rarely possible)

Teaching ideas

This is an excellent question to use as preparation for a lecture on how to measure whether an economy is doing well or not. In the class, students might be asked to compare the elements they included and their relative weights, and get deeper into explaining their reasons with real-world examples e.g. from their own countries.

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EXERCISE 13.2 DEFINING RECESSIONS

A recession can be defined as a period when output is declining, or as a period when the level of output is below normal, sometimes referred to as its potential level. Look at this [\[article\]\(tinyco.re/2305833\)](https://tinyco.re/2305833), especially Figures 5, 6, and 7, to find out more.

1. Consider a country that has been producing a lot of oil and suppose that from one year to the next its oil wells run out. The country will be poorer than previously. According to the two definitions above, is it in a recession?
2. Does knowing whether a country is in recession make a difference to policymakers whose job it is to manage the economy?

Introduction

The aim of this question is to get students to think about what a recession is as a prelude to discussing these in more detail in U13 (and discussing policies to address recessions in U14 and U15).

Answer

1. It would definitely be in a recession according to the first definition (declining output). According to the second definition, it may not be in a recession. If there is no oil in a country, the country has no potential of producing and selling the oil, hence the potential level of GDP would decrease. Whether the country would actually be in a recession depends on how much the actual level of GDP decreased relative to the new potential level of GDP.
2. Yes. In a recession, the policymakers may adopt measures to stimulate economic growth (e.g. lowering tax rates, subsidies, government investments, lowering the policy rate), which would be inappropriate (e.g. potentially destabilising) if the economy were not in a recession.

Marking guidance

A good answer will:

- Be able to use the two definitions given
- Give examples of how detecting a recession helps policy makers do their job

Teaching ideas

The Great Recession is an excellent example to use to discuss this question. The question itself is a straightforward use of the definitions, but in real life, some events like the Great Recession are just as easy to detect, while other recessions might be harder to spot. Examples from FRED for example, for recessions in the 1980s or the dot-com bust might be used to illustrate this point.

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EXERCISE 13.3 OKUN'S LAW

1. Look at the regression lines (the lines of best fit) in Figure 13.5. What prediction does the regression line show for unemployment when the economy is not growing? Are the results the same for all the countries?
2. Assume that the population in the economy is growing. Can you use this assumption to provide an explanation for your results in question 1? What else might explain the differences between countries?

Introduction

This question tests understanding of Okun's law and the ability to draw deductions from scatterplots and regression lines.

Answer

1. In each economy apart from Japan the line of best fit predicts rising unemployment when growth is zero. This result suggests that unless GDP is growing, the unemployment rate will be rising. The prediction increase in unemployment varies widely across the countries.
2. If the population is growing and if the participation rate is constant, then for the unemployment rate to remain constant, employment must grow in line with population. One explanation for the finding that unemployment increases when growth is zero is that the population is growing in the economies in Figure 13.5. Other possible explanations could relate to the functioning of labour markets in different economies. In Spain, for example, temporary employment contracts are important. This means that when growth slows, temporary workers are not replaced and unemployment rises. The ease of laying off workers in the US is also consistent with this. Germany and Japan are contrasting cases, where workers tend to be retained during downturns in the economy to a greater extent.

Marking Guidance

A good answer will:

- Show an understanding of Okun's law
- Explain the relationship underlying the regressions

Teaching Ideas

In the class, the lecturer may want to delve a little deeper into the history and economics of the countries shown in Figure 13.5 to figure out why the slopes are different. A2. If the population is growing and if the participation rate is constant, then for the unemployment rate to remain constant, employment must grow in line with population. One explanation for the finding that unemployment increases when growth is zero is that the population is growing in the economies in Figure 13.5. Other possible explanations could relate to the functioning of labour markets in different economies. In Spain, for example, temporary employment contracts are important. This means that when growth slows, temporary workers are not replaced and unemployment rises. The ease of laying off workers in the US is also consistent with this. Germany and Japan are contrasting cases, where workers tend to be retained during downturns in the economy to a greater extent.

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EXERCISE 13.4 HOW TO USE FRED

If you want real-time macroeconomic data on the German unemployment rate or China's output growth, you do not need to learn German and Chinese, or struggle to get to grips with national archives, because FRED does it for you! FRED is a comprehensive up-to-date data source maintained by the Federal Reserve Bank of St Louis in the US, which is part of the US central banking system. It contains the main macroeconomic statistics for almost all developed countries going back to the 1960s. FRED also allows you to create your own graphs and export data into a spreadsheet.

To learn how to use FRED to find macroeconomic data, follow these steps:

- Visit the FRED website (<http://tinyco.re/8136544>).
- Use the search bar and type 'Gross Domestic Product' (GDP) and the name of a major global economy. Select the annual series for both nominal (current prices) and real (constant prices) GDP for this country. Click the 'Add to Graph' button at the bottom of the page.

Use the graph you created to answer these questions:

1. What is the level of nominal GDP in your chosen country this year?
2. FRED tells you that the real GDP is chained in a specific year (this means that it is evaluated in terms of constant prices for that year). Note that the real GDP and the nominal GDP series cross at one point. Why does this happen?

From the FRED graph, keep only the real GDP series. FRED shows recessions in shaded areas for the US economy using the NBER definition, but not for other economies. For other economies, assume that a recession is defined by two consecutive quarters of negative growth. At the bottom of the graph page, select 'Create your own data transformation' and click on 'Percent change from one year' (FRED gives you a hint about how to calculate a growth rate at the bottom of the page: notes on growth rate calculation and recessions). The series now shows the percentage change in real GDP.

3. How many recessions has your chosen economy undergone over the years plotted in the chart?
4. What are the two biggest recessions in terms of length and magnitude?

Now add to the graph the quarterly unemployment rate for your chosen economy (click on 'Add data series' under the graph and search for 'Unemployment' and your chosen country name).

5. How does the unemployment rate react during the two main recessions you have identified?
6. What was the level of the unemployment rate during the first and the last quarter of negative growth for those two recessions?
7. What do you conclude about the link between recession and the variation in unemployment?

- Note: To make sure you understand how these FRED graphs are created, you may want to extract the data into a spreadsheet, and create a graph showing the growth rate of real GDP and the evolution of the unemployment rate since 1948 for the US economy.

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Introduction

This question is an introduction to empirical work, using FRED, which is a fairly user-friendly platform for developed country data.

Answer

Here we use the US as an example.

FRED Graph

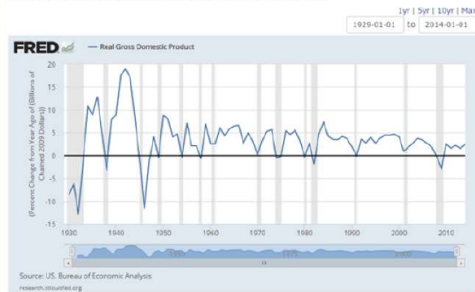


1. In 2014, the nominal GDP in the US was \$17,348.1bn.
2. They cross in the year that real GDP is chained to (2009 in this case). 2009 is the reference year for calculating all other data for the real GDP. Hence, for this year, nominal and real GDP are equal.

Real Gross Domestic Product

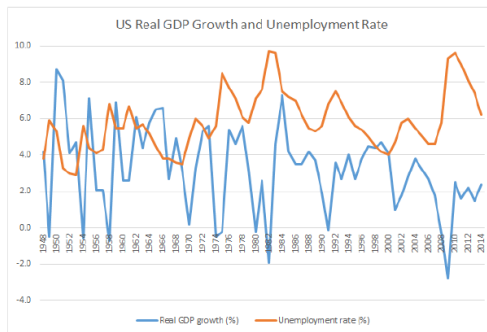
2014: **15,961.7** Billions of Chained 2009 Dollars (+ see more)

Annual, Not Seasonally Adjusted, GDPChA, Updated: 2015-07-30 9:03 AM CDT



3. The US economy has undergone 11 recessions since 1950.
- A4. Since 1950, the two biggest recessions were Q3 1981 to Q4 1982 and Q1 2008 to Q3 2009.

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5. The FRED database shows unemployment rising in both recessions.

6. Using the civilian unemployment rate from FRED it appears that the unemployment rate rose from 7.3% to 10.4% in the 1981-82 recession and from 4.8% to 9.1% in the 2008-09 recession. It is worth noting that in both cases the unemployment rate continued to rise for approximately 3 months after the end of the recession.

7. Unemployment follows Okun's law, i.e. increases during recessions and decreases during booms.

Marking guidance

A good answer will:

- Download the data in Excel, and show using graphs how to answer each question.
- Be able to comment on the connection to Okun's empirical observations.

Teaching guidance

The first few part of this question could be assigned as preparation for the class discussion of the last few, and also for the later FRED questions. It is a good idea for students to download the data in Excel so they can get a feel for how the graphs are produced, but for those unused to Excel, all of these questions can be answered using manipulations on the FRED platform. In order to do so, once they have located the data of interest as indicated in the instructions in the question, they should click on the "Export" tab.

EXERCISE 13.5 HEALTH INSURANCE

1. Think about the health insurance system in your country. Is this an example of co-insurance or self-insurance?
2. Can you think of other examples of both co-insurance and self-insurance? In each case, consider what kinds of shocks are being insured against and how the scheme is financed.

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Introduction

This question is an opportunity for students to think about insurance (and smoothing) as they may have encountered it in their own lives.

Answer

1. The insurance system in most developed countries is a combination of both self-insurance and co-insurance. Most people save a portion of their income in order to have funds available when they are too ill to work, and/or to meet medical bills (self-insurance). At the same time, they pay taxes for health, social and other types of insurance, and may, in some cases, take out a private (commercial) insurance policy (both examples of co-insurance).

2. People save for retirement and to smooth consumption over time if their income is likely to be volatile (self-insurance). At the same time, the government provides a basic retirement income in exchange for taxes paid on income and expenditure (co-insurance). They may also save against unforeseen shocks like theft, fire, or personal accident (self-insurance) but these risks are more commonly handled by buying a commercial insurance policy (co-insurance). Helping out family members when bad luck strikes is co-insurance.

Marking guidance

A good answer will:

- Be able to recognize that health insurance typically involves self-insurance as well as co-insurance
- Give examples of co- and self-insurance e.g. travel insurance, life insurance, informal co-insurance via families, etc.

Teaching ideas

This question is a good one for any lecturer interested in teaching financial literacy as many young people don't have a clear idea about how insurance schemes of various types (including pension schemes) work.

EXERCISE 13.6 CHANGES IN INCOME, CHANGES IN CONSUMPTION

Consider a credit-constrained household type and a consumption smoothing household type.

1. For each household type, use a figure with time on the horizontal axis and income and consumption on the vertical axis to explain the relationship between the change in income and the change in consumption when income returns to normal after an unexpected temporary decline.
2. Based on this analysis, explain the predicted relationship between temporary changes in income and consumption for an economy with a mixture of the two household types.

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Introduction

The aim of this question is to strengthen students' understanding of the model developed in U10 and what it implies about the aggregate fluctuations described in U13.

Answer

1. For the credit-constrained household, the return to the original budget constraint would simply mean a change of endowment. Income and consumption would increase until they return to their original level, both increasing in proportion. (See Figure 13.11 below, where the blue line represents the path of income and the orange line represents the path of consumption). For the consumption-smoothing household, current consumption will have fallen less than the fall in income and so the increase in consumption once income returns to the original level will be smaller than the change in income. (Compared with Figure 13.11 for credit-constrained households, the orange line before 'Actual income rises' should be higher.)

2. In an economy with a mixture of constrained and unconstrained households, a temporary fall in income would be followed by a fall in consumption of a lower magnitude than would be the case if all households were credit-constrained. The reason is that consumption-smoothing households would prefer to borrow and consume now relatively more than the constrained households. This effect would mitigate the impact of the temporary shock. How much consumption would fall depends on the proportion of consumption smoothing households in the economy and their preferences for consumption smoothing.

**Marking guidance**

A good answer will:

- Explain why the fall in consumption (and subsequent rise) is proportional to the fall in income for the credit-constrained households.
- Explain why the fall in consumption (and subsequent rise) is smaller than the fall in income for the consumption-smoothing households.

Teaching ideas

It is a good idea to return to U10 to make sure that students understand what is happening in Figure 13.12 and how it relates to the path of income and consumption in Figure 13.11. Looking at some aggregate cross-country data on income and consumption may also supplement the discussion of the second part of the question.

