Outline for recorded lecture on the science of subjective wellbeing

Introduce myself

What is well-being?

Well-being is often called “happiness” in everyday speech, and you often see the results of well-being research interpreted as being about happiness, especially in the media.

There are many different ways of looking at well-being, depending on the academic field and what it is being used for. I’ll give two examples here so that you can get a sense of the breadth of different approaches to wellbeing that exists.

Some researchers and organisations use an approach called “objective lists”. That consists of a list of things they judge that people need access to, which can include material, social and psychological needs. For example things like, food, clean water, safety, and participation in the local community.

Within the field of development, Amartya Sen’s capability approach has been influential. Sen argues that rather that wellbeing is best captured with functionings, which Sen (1985: 6-7) defines as “what the person succeeds in doing with the commodities and characteristics at his or her command. [...] It is an achievement of a person: what he or she manages to do or to be. [...]”.

And there are many more frameworks for looking at well-being. This lecture is going to focus on subjective wellbeing. This approach does not presume to know what is important for people’s wellbeing, instead it asks the respondents to assess their own well-being. This has the benefit of reducing the disciplinary and cultural biases of the researcher. There are several different ways to ask this question, depending on exactly what aspects of well-being the researcher is interested in, but a very common one is to ask about life satisfaction.

This is typically done through a simple question:

“Overall, how satisfied are you with your life nowadays? (please consider of all aspects of your life: health, work, finance, family life and so on)”

The participants choose the number on the scale that they believe best reflects their wellbeing.

What can it be used for: understanding happiness, valuation, policy

So imagine we go out and ask a thousand people this question. We then have a data set showing how satisfied each person is with their life. Why can this be used for? In fact its incredibly useful, and the last ten years have seen a sharp surge of research into wellbeing.

Wellbeing has also made its way into the agendas of governments, intergovernmental organisations and NGOs.

Example: academic and national government

In the UK, the Coalition Government’s Budget 2010 Report (HM Treasury, 2010) stated that ‘the Government is committed to developing broader indicators of well-being and sustainability, with work currently underway to review how the Stiglitz [Commission] ... should affect the sustainability and well-being indicators collected by Defra, and with the ONS [Ofﬁce of National Statistics] andtheCabinetOfﬁceleadingworkontakingforwardthereport’sagendaacross the UK’.

Bhutan has coined the term “Gross National Happiness” as an alternative indicator to GDP (gross national product) as an indicator of national progress. This comes from the understanding that the aim of their government should not just be to maximise economic indicators, but instead to maximise the happiness of their people. Measures that improve the economy of the country often increases wellbeing, but not always. Some measures might inadvertently reduce wellbeing. An example would be increased work hours. It might improve the output of the economy but people might overall be less happy. So to avoid economic decisions that accidentally reduce wellbeing in the country, rather than increase it, Bhutan has moved away from GDP as the primary indicator of progress, and is instead using Gross National Happiness.

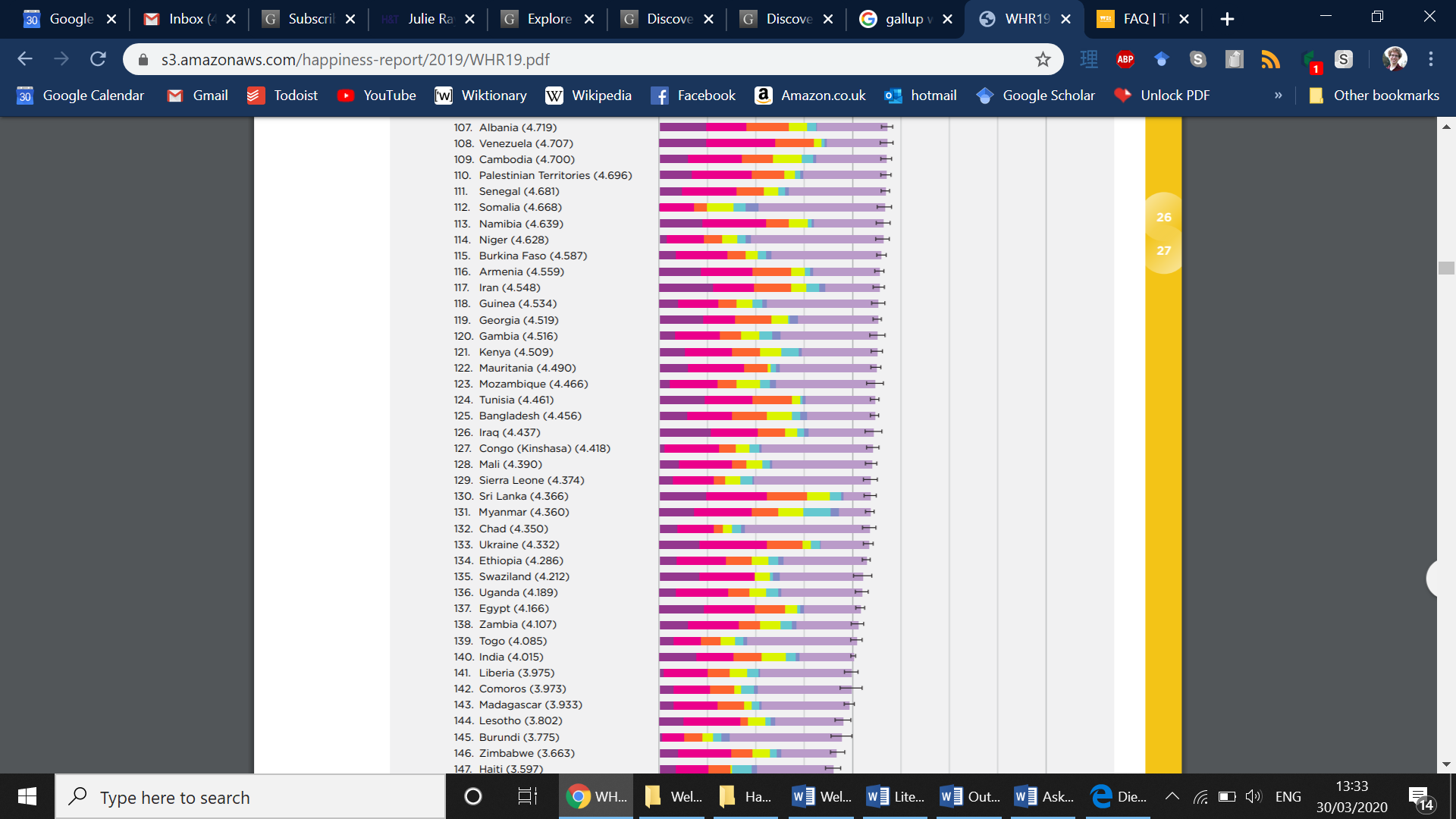
List examples from wide variety of fields

This question of people’s wellbeing has been used to study infrastructure, environment, crime, development and many more topics. Within the field of infrastructure, wellbeing has been used to quantify the impact of access to train services. With regards to the environment, researchers, including my collaborator Susana Mourato, have estimated the positive impact that nature and green spaces contribute to people’s wellbeing.

Rail access was found to significantly contribute to people’s wellbeing & People were found to experience higher wellbeing in natural than urban environments

EXAMPLES FROM MYANMAR

There are world wide surveys that let us see how countries differ in their happiness levels. Here we the average of the happiness ratings, on a scale from 0 to 10, of 156 countries in the time period 2017-2018.





We see here that Myanmar is number 131 out of 156 countries. That’s quite low, so that indicates that there is a real need for wellbeing science, like you are learning in this lecture, in Myanmar to be able to tackle this.

In this graph, the bar for each country is divided into seven segments, showing what their analysis has determined to be the contributing factors to happiness in these countries. We see that in Myannmar, good social support from family and friends is the biggest contributor to wellbeing captured in this analysis (that’s the pink part of the bar).

How does the method work?

The method works by asking people how satisfied they are with their life, and the using other information about that person’s life to see how big each thing has. These explanatory variables are things like age, marital status, income, and many other variables that we know influences people’s happiness. But how do we know how big a piece of someone’s happiness is determined by each variable? We can estimate that using regression models. We use our life satisfaction question (which the measure of wellbeing that we are using) as a response variable and use the variables that we think influences someone’s happiness as explanatory variables.

Here is a simplified version to illustrate:

Life satisfaction ~ age + income + martial status + health

Here we’re seeing how much of life satisfaction in our sample of 1000 respondents is explained by age, income, martial status and health. Then we can introduce some variable that is key to whatever research question we are interested in. If we have the hypothesis that access to clean water has an important effect on people’s wellbeing in the area we are studying, we can include a measure of water quality into this regression to see how much (if anything at all) that explains wellbeing.

Life satisfaction ~ age + income + martial status + health + clean water (litres)

However, this is a somewhat simplified version of a SWB regression model. In order to get accurate results we need to control for many other variables that we know influences people’s happiness, such as social capital (which includes various measures of how much interaction and support people get from their social network of family, friends and community members), safety (from crime, natural disasters or other threats) and more. Exactly which variables that are important will depend on the context of your study location.

We’re going to work through a complete example later in this lecture.

What kind of regression models are used to achieve this? The two most common ones are:

* OLS
* Ordinal models

Ordinary least squares regression is just the very straightforward linear regression that I’m sure you all did in school. This assumes that our response variable (life satisfaction) is linear. That assumption is very unlikely to be true. When presented with a scale ranging from 1 to 10, people are unlikely to perceive the distance from, say, 4 to 5 to be exactly the same as from 9 to 10. For many, it seems like a bigger deal to move between scores in the extremes than between scores in the middle of the scale. Choosing 1 (complete unhappiness) or 10 (complete happiness) can seem more extreme, so there is a greater distance between 1 and 2 and 9 and 10. In order to correct for that, we can use ordinal models.

Ordinal models are suitable for data where we know the order of the categories of the explanatory variable (we know that after 1 comes 2, and after 2 comes 3 etc) but we don’t know exactly what the thresholds are: we don’t know how happy someone will feel they have to be before they can make the transition between a 9 and a 10 on the scale. Ordinal models can deal with this.

The two most common forms of ordinal models are probit and logit models. The results from each are usually very similar.

So, the ordinal models seem to be better suited for our life satisfaction response variable, right? Yes, strict statistical terms it is. However, in real life, the results tend to be very similar regardless of whether you use an OLS or and ordinal models.

Example results

The kind of results you get will look like this: (these are just some example results I invented to use as a simple illustration, we’ll have a look at a real study in a second)

|  |  |  |
| --- | --- | --- |
| **Variable** | **Coefficient** | **p-value (cut-off: 0.05)** |
| Age | 0.03 | 0.45 |
| Income (annual) | 0.02 | 0.005 |
| Marital status | 0.2 | 0.04 |
| Health | 0.4 | 0.000009 |
| Clean water access (litres) | 0.1 | 0.03 |

It’s important to note that all these variables are in different units (i.e. age is in years, and income is in dollars or kyats) so we can’t say that age is more influential than income on wellbeing because the coefficient for that larger (because it doesn’t make much sense to say that one year influences wellbeing more than a dollar). In order to say anything about which variable is more important in determining wellbeing we need to estimate effect sizes. I won’t go into how to calculate that here, but there is lots of guidance online, and most statistical programming language (like R), there will be existing packages that can do that for you.

So looking at these results we see that regression models of subjective wellbeing can be used to see what variables significantly influence wellbeing, and, by using statistical software to estimate effect sizes, we can determine which variables have the biggest effect. But there is something else that’s really neat that we can use these regressions for: economic valuation.

Can be used for valuation

Economic valuation is about finding the monetary value of the benefit (or harm) caused by a variable. Let go back to my simplified example to illustrate. We see from the table that for each additional litre of clean water a person has access too, their SWB increases with 0.1.

And we can see that for each dollar a person earns, their SWB increases with 0.02. So we can see how many dollars does the income of a person have to increase to increase that persons SWB as much as having access to one additional litre of clean water? We calculate this by dividing the coefficient of the variable we want to value (in this case access to clean water) by the coefficient for income: 0.1/0.02 = 5. That equals 5, which means that having access to one additional litre of clean water improves people’s wellbeing as much as earning 5 more dollars annually.

This method allows us to value things that don’t have a price: air quality, beautiful scenery, freedom from crime and so on.

Why do valuation

But why would we want to attach a monetary value to some of these things that don’t have a price? Well, the first reason is a pragmatic one. Dollars, kyats or other currency can provide a convenient unit for comparing the effect of variables. How do you compare clean water in litres and age in years, when the units are totally different?

However the most important reason is probably cost-benefit analyses and policymaking. Analyses that weighs the cost of a policy versus the benefits are routinely used by governments for most areas of policy. For example, when deciding whether to invest in improving the safety of a road, they weigh the benefits of reducing accidents with the cost of doing those improvements. You might say that saving lives from traffic accidents is worth any amount of money, but the fact is that more lives might be saved by investing that same amount of money in something else, like hospitals for example and governments need to decide where to allocate their limited funding.

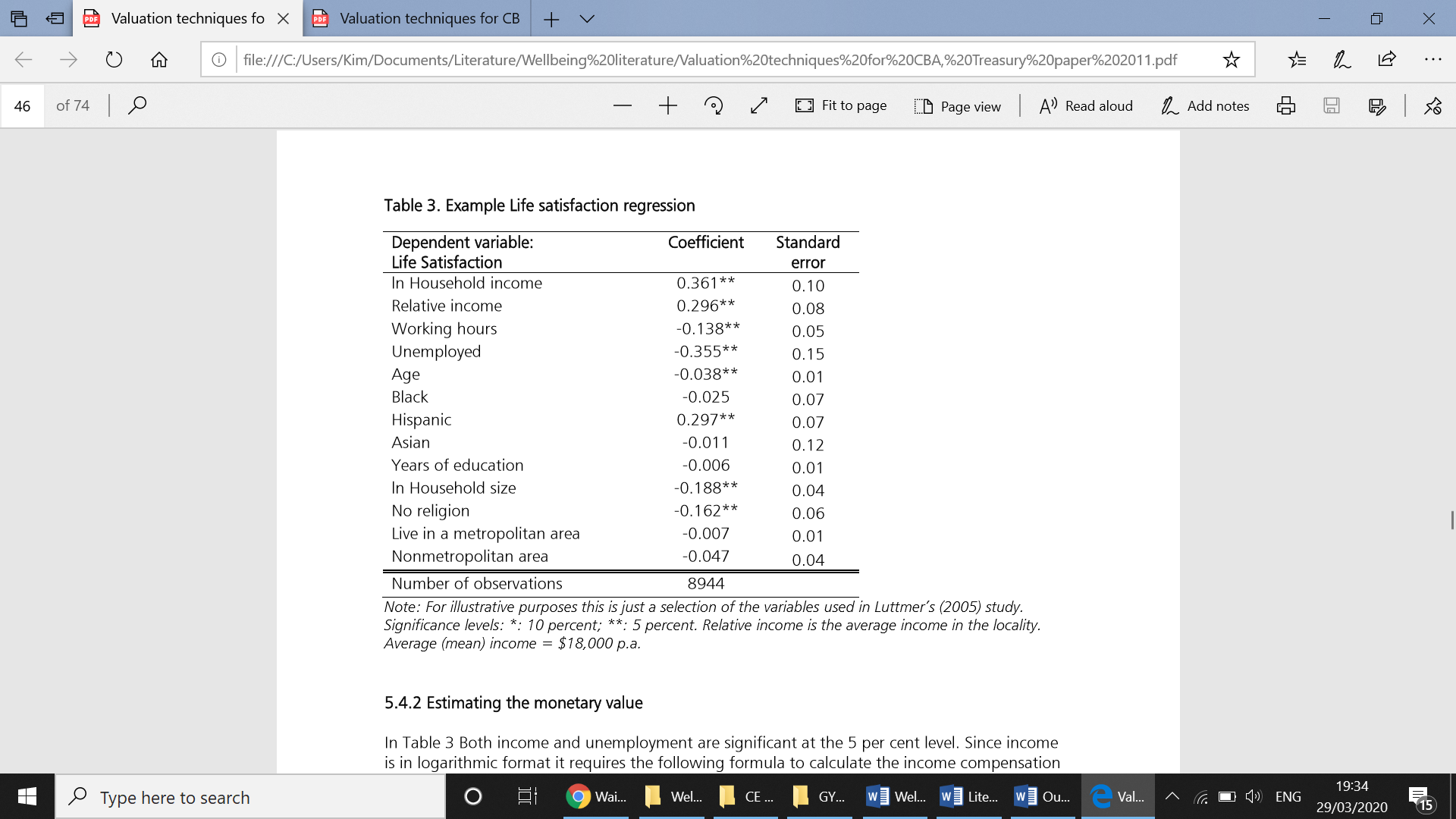
The unfortunate thing that usually happens in cost-benefit analyses, is that things that don’t have a readily available market price, such as air quality, is excluded from the analysis because it has not monetary value that can be included in the cost-benefit calculation. Therefore, you might get some very harmful policies, because they underestimate the harms caused or benefits lost. For example, policymakers might decide to build a factory to provide employment without being aware that the damage form air pollution that is caused to the population living around the factory are much greater than the benefits in income from the factory.

Economic valuation allows for better decisions in policymaking.

Worked example

Ok, so let’s look at a real life example. This is from Luttmer, E.F.P., 2005. Neighbors as Negatives: Relative Earnings and Well-Being. Quarterly Journal of Economics 120, 963-1002

Luttmer is estimating the cost of unemployment for the person in question, based on a large survey of people in the United States.

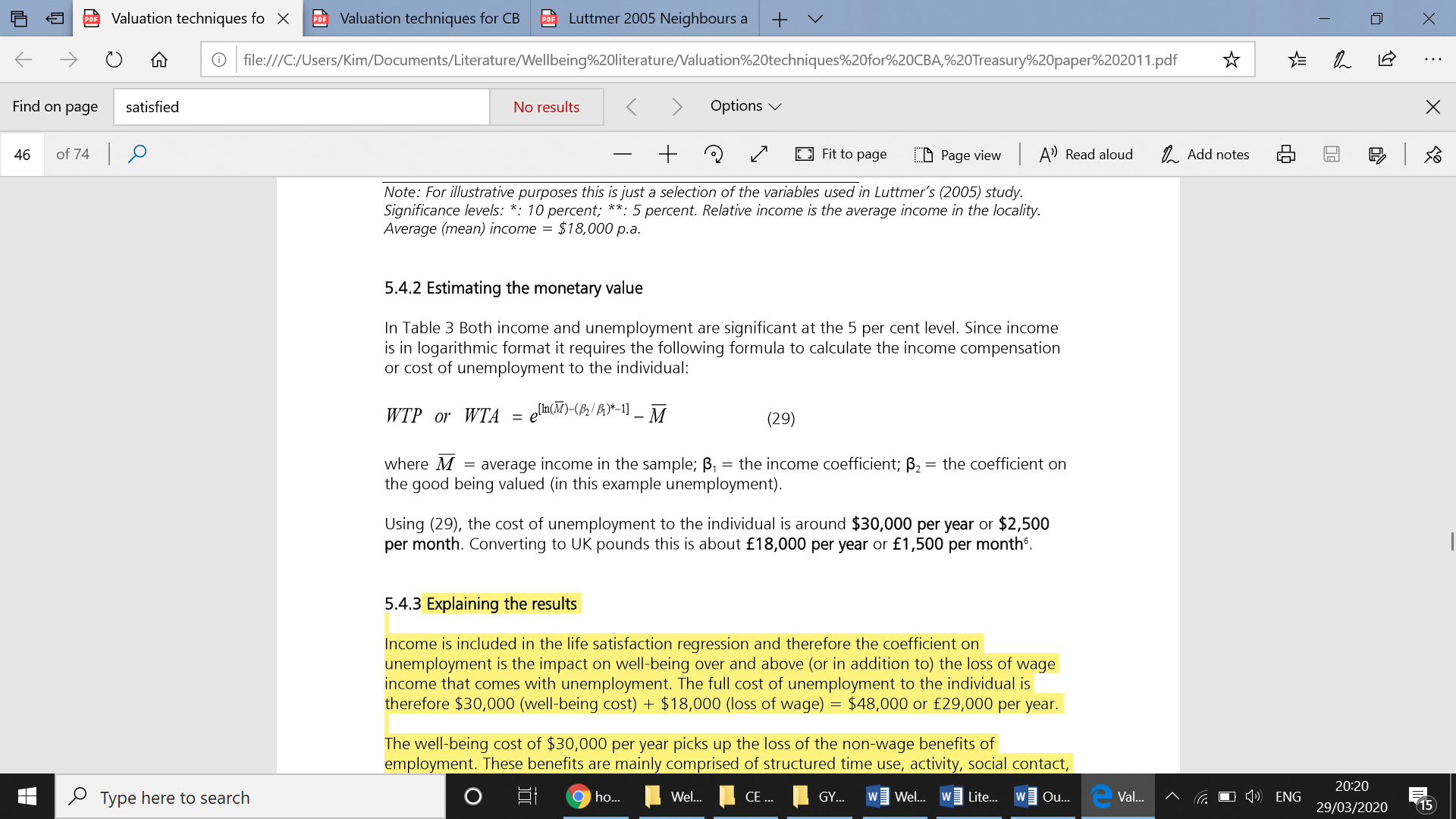


(for illustrative purposes, only a sub-selection of the variables included in the regression are displayed here). The variables marked with \*\* are statistically significant at the 0.05 threshold.

You can see here some of the variables that they control for in their regression: working hours, age, ethnicity, education, living situation etc. From these results we can see that household income, relative income (that is how wealthy you are compared to your community), being Hispanic and being religious increases wellbeing, while working hours, being unemployed, age and household size reduces wellbeing. Some of the ethnicities had no significant effect, and whether you live in a metropolitan or non-metropolitan area had no effect. Ok, that’s really interesting. It tells us something about what makes people happy. We see that earning more makes people more happy but that increased work hours makes people less happy. So we have to be careful with the trade-off between income and hours.

Ok, so now lets derive the economic value of unemployment in terms of its impact on happiness. Both the variables income and unemployment are significant (we can tell because they are marked with two stars, which in the output of this statistical software indicates that a variable is significant).

We learnt earlier in this lecture that we get the economic value estimate by dividing the variable that we want to value by the coefficient of the income variable. That is still true, but in this model they used log income. There is some economic theory that supports this choice, but we won’t go into the details, here, it just means that the calculations have to be adjusted to include the exponential of income. For those of you who like maths, I’ve included the formula we use when income is logged. For those of you who don’t like maths that much, just feel free to ignore these details!



The result of this calculation is that the cost of unemployment to the individual is around $30,000 per year. Which is a lot! Just to emphasise, this is the cost of employment beyond the loss of money in income (because the income variable for the individual is included in the regression). So this cost comes in the form of the harmful effect of loss of purpose, loss of social contact, status and the positive activities that come along with being employed. So this demonstrates that protecting people’s employment gives large benefits beyond just the protecting peoples incomes, so the impact of job loss is going to be a lot larger than you would think if you just looked at the wages lost.

Divide variable in question by the income coefficient

Example from my work

Let’s look at another example. This is from my work in Zimbabwe. My study site was Hwange national park, in Western Zimbabwe. The national park has a range of animal species in it, like lions, elephants, zebras and giraffes.

Do my usual background slides

But living alongside lions entails costs beyond just the monetary value of lost livestock. It also causes people a lot of fear, stress and extra work to take precautions to prevent loss of livestock. So the total cost perceived by local people is in fact much larger than it appears looking at just the market value of livestock. But how do we estimate the cost of things like fear and stress? These are intangible things and they have no market value. By now of course you know the answer: valuation using a wellbeing regression!

So I made a large regression, including all the important variables that we think affect happiness in this area.

You can see here that I’ve included the usual variables, like health, age, gender and indicators of social capital (how often they see friends, if they feel the local community helps each other) and I’ve also included variables that are specific to this context: for example the question about traditional religion, and crop raiding (crop raiding is when for example an elephant comes into the fields and destroy a lot of the crops). And very importantly, I have included variables that describe the problems caused by lions: without that I couldn’t do a valuation of the impact of lions. Here I included three variables describing various aspects of lion damage: whether they have ever lost livestock to lions, the number of livestock they have lost to lions and the conflict level in the village (the conflict level is the number of livestock that is lost in total by everyone in that village. Some villages experience high levels of livestock and some experience low levels). We can see from the results here that the only of those three variables that

From the results we can see what the variables that significantly affect people’s wellbeing (and we can see this from looking at the p value, which needs to be below 0.05 for the effect to be statistically significant). Some variables affect happiness in a positive way and some in a negative way (and some of them can be surprising! We see here that the variables that are associated with higher wellbeing are:

Being the ethnicity Tonga

Physical condition

Wealth

Perceived wealth relative to rest of community

Shared ownership of wealth with the other members of the household

Not owning livestock

Perceived benefits to the household arising from the presence of the national park

Frequency of social interactions with friends and family (need to reverse order)

The variables that are associated with lower levels of wellbeing were:

Age

Ethnicity Nambya relative to Ndebele

Education

Fear of lions

Whether have ever lost livestock to lions

So the good news here is that both the coefficient for total wealth and for ever having lost livestock to lions are significant. That means we can do the valuation! And as you remember, that is very simple, just divide the coefficient of the thing we want to value (having lost livestock to lions) by the coefficient for income (or in this case, wealth, which is practically the same). The resulting dollar value we get is 20.88. That’s a lot more than 3.5 dollars! This shows that the intangible costs, such as fear and stress, are much larger than the tangible cost which is the market value of the lost livestock (which is just average of 3.5 dollars).

Use total\_wealth 0.012476

^ Put a disclaimer: I have simplified the results a bit for the sake of the presentation

So we can see that if the government or a conservation organisation wanted to make sure they provide sufficient benefits from conservation of lions that they don’t have a negative impact on local people, they would have to compensate about USD21 or more per year to every person.

Potential areas for use in Myanmar

What are the potential areas of use for this in Myanmar? Well it can be used to evaluate pretty much any government policy. For example it is very useful to evaluate the effects of large infrastructure developments, such as roads and train lines, and projects with big impacts, such as building of dams.

I tried to look for examples of where this subjective wellbeing approach had been used in Myanmar, but I couldn’t find any (though maybe there are some that I just didn’t find). But it seems like there is big potential for this kind of research in Myanmar, so if anyone would like to collaborate, then get in touch with me.

If you need any help or have any questions, don’t hesitate to get in touch with me