Q1 2020 EH Research Article: How much do public finances influence wellbeing?

At Exploring Happiness, at the end of 2019 we made the decision to reduce the frequency of our research article publications from monthly to quarterly, with the aim being that this would allow more time to produce unique and insightful research. This article is the first of these quarterly publications, and it is focusing on assessing the relationship between governments public finances and its citizens wellbeing.
By public finances, for the most part we are referring to, government spending (e.g. spending on education, healthcare or public infrastructure) and government taxation (e.g. taxation of consumers, people's income or businesses profits). Some governments believe that it is necessary to have a high level of government spending in order to provide a helping hand when things don't go so well. In order for this to remain sustainable over a long period of time, government taxation also needs to be quite high in these countries, as this is used to fund the spending. However, in other countries they believe that is not the place for governments to get too involved and that the market will sort itself out in the end and therefore tend to have lower taxes and spending. In this article we are looking to assess which of these two approaches tend to lead to a greater level of wellbeing, based on the data we have available. The article is split into three sections: first, we start with discussing some of the literature on this topic, then second, we explain our approach to answering our research question and lastly, we'll explain our results.

Section 1: A brief discussion of public finances and wellbeing

It's rare with any research question that we can be absolutely certain of the direction of causation. It's probably even more rare within wellbeing research and in this paper, regardless of the results, we don't plan to suggest we know the certain direction of causation. We do, however, have a good amount of data, covering a lot of countries, meaning we can look at correlations between variables and make educated inferences from these. Given that historically data hasn't been as readily available, as it is now, and that the direction of causation often becomes an issue, the literature on this topic is quite limited. From the evidence produced thus far, some of this has focused on whether short-term fluctuations in public finances impact a countries wellbeing, on average. These studies concluded that it most likely doesn't.[1]

The data presented in this paper compares changes in public finances against changes in wellbeing scores over time, across a range of countries. However, the focus is more towards longer-term shifts in public finances than short-term fluctuations. Intuitively, it makes a good amount of sense that short-term fluctuations in governments spending and taxation will have a limited impact on the country's wellbeing. Mostly because, the average citizen isn't likely to be all that interested in the government's spending and taxation decisions, unless it has a direct and significant impact on their daily life. As such, if people aren't paying much attention to these changes, then it's not possible to have much of an impact on their wellbeing. However, when looking over a longer time horizon, this may change for two main reasons. First, it allows us to pick up on broader shifts in public policy. And secondly, once you aggregate all the shorter-term policy changes, this is likely to have made a direct and significant impact on enough citizens lives to offer a meaningful result. Along a similar train of thought, but not something included in this paper, would be to focus on periods when countries have made a significant change to its fiscal policy which will have impacted a large amount of lives within that country and compare this with changes in wellbeing. The approach taken in this paper is more generalised and doesn't focus on individual countries or specific events.

One of the areas of wellbeing research that has received the most attention has been the relationship between employment and wellbeing. It is well understood that employment is very important for a person's wellbeing, as is job satisfaction and your relationships with your co-workers. In some research that has touched on governments labour market policies, which is of course part of their fiscal policy, it has been found that increases in unemployment benefits tend to increase the average wellbeing within that country.[2] Greater unemployment benefits provide a greater safety net for those at the bottom end of the income distribution, meaning that losing a

[1] See "Happiness and Economics: How the Economy and Institutions Affect Human Well-Being", Frey and Stutzer (2002).
[2] See "The Macroeconomics of Happiness", Di Tella, MacCulloch & Oswald (2003).

job has less of an impact on a person's overall wellbeing. As we have mentioned in the past, unemployment has a significant impact on a person's wellbeing, and this impact can be split into two halves: the income effect and the social effect. The social effect is often actually larger than the income effect, especially for those in longer term unemployment, and this is related to the loss of purpose that a person without employment is likely to feel. However, policies such a generous unemployment benefits limit the income effect and can have other positive knock-on effects too. For example, countries like Denmark, who score very highly in happiness indexes, have a model of "flexicurity", which is popular with policymakers.[3] It allows for full labour market flexibility, meaning that individuals can be laid off quite easily whenever they aren't needed anymore, but these individuals are subsidised so that they don't suffer much of an economic loss. In addition, there is a concerted effort by the government to get the worker back into employment (often after meaningful retraining). This compares positively to a system where workers are essentially on their own (like in the United States), whilst flexicurity is meant to ensure job loss is not a tragedy, but a normal phase of life. It also compares positively to a system that makes it difficult to fire workers on permanent contracts (like in France) since flexicurity makes it possible for employers to adjust to changes in circumstances. This is all consistent with all economist basic instincts: we should allow the market dynamics to do their job and then insure people who end up getting the short straw. By allowing this insurance to take the form of unemployment benefits and job re-training the government is assisting in reallocating labour to the most productive sectors of the economy.

This slight detour from the main topic at hand helps us to explain a key point that we wanted to make clear within this discussion: policy design matters much more than absolute spending or taxation. This matters now more than ever, at the time of writing this, advanced economy governments all around the world are announcing significant stimulus packages in order to help combat the COVID-19 pandemic.[4] As a result, we should expect to observe a significant increase in government expenditure as a percentage of GDP, which is unlikely to be matched on the government revenue side. In fact, government revenues are likely to fall as households pay less consumption and income tax and businesses pay less corporation tax. These stimulus packages are currently necessary, in order to restore confidence, reduce the amount of people being laid off and the number businesses going into insolvency. However, whilst necessary, they are not likely to be well designed. These policies are more a case of throwing significant sums of money at the problem than anything else. It will not be efficient and much of this spending will have limited knock-on effects on the economy.[5] Well-designed government policies, such as the Danish model of flexicurity, consider how the government can play a role in the market in order to allow innovation to develop, in an environment that is stable and secure. Through policies such as this, citizens wellbeing is considered, as is the desired economic outcome. As such, it is important to take some of the analysis presented in this paper with some caution, considering we are looking at the relationship between absolute spending and taxation decisions of governments and how this relates to wellbeing. The evidence from our research does suggest that there is an interesting relationship between these two factors however strong policy design will always be more important than this relationship.

Section 2: Explaining our approach

In order to complete our analysis, we needed to merge two datasets. To get wellbeing scores for all countries around the world we used the recently updated data from the UN's World Happiness Report.[6] The measures produced in this report provide life satisfaction scores, on average, for citizens within each country, which are more stable than day-to-day happiness scores and therefore more relevant for this research question.[7] To get public finances data, we used the data published in the IMF's October World Economic Outlook.[8] We then needed to filter

[3] See Anderson and Svarer (2007) for an in-depth analysis of this model or Banerjee and Duflo (2019) for a short discussion of this policy on pages 302-305 of their book "Good Economics for Hard Times".

[4] See "The fiscal response from the economic fallout of the Coronavirus", a dataset publication from Bruegel (2020).

[5] Some fiscal policies generate greater "multiplier effects" in the economy than others. For example, policies focussed towards generating innovation can have huge amplification effects on the rest of an economy if they allow businesses to produce goods cheaper than they otherwise could. Stimulus packages in crises have smaller multiplier effects as they are simply aimed at reducing the amount that businesses and households balance sheets go under water.

[6] The most recent report was released on the 20th March 2020.

[7] Further analysis of this measure can be found in one of our previous articles on measures of wellbeing. In this, we outline some of our reservations with this measure but do show that it has been used to find statistically significant and intuitive results.

[8] Our analysis uses data published in the October 2019 update, but new data will come available in mid-April.

for all countries that had both sufficient public finances data (>10 years) and that are included in the UN's World Happiness Report and as such, our final sample came to 146 countries.

Very few low income and developing countries report Net Debt-to-GDP figures and therefore this variable was excluded in the analysis when using the whole sample of 146 countries.[9] We chose to complete the analysis on a smaller sub-group of advanced economies (AE's; n=23, see Annex 3) in order to remove some of the income effect in the analysis and allow for a more consistent comparison. It is well known that AE's have higher wellbeing scores, meaning it is difficult to draw accurate conclusions when comparing countries with vastly different economic circumstances. Our main goal is to find a large enough group of countries that are similar in nature and wealth but choose to take different approaches for their public finances in order to observe how these different approaches may affect their citizens wellbeing. Figures 1 and 2 show the distribution of absolute wellbeing scores in the most recent data release in the left-hand panel for 2019 and 10-year relative wellbeing scores on the right-hand panel – this is the most recent score minus the score 10 years ago for the same country. As such, positive values represent a wellbeing improvement, on average, over the 10-year period. It is important to note that the distribution is far wider for the whole sample, highlighting the huge range of life satisfaction across all these countries. For the sub-sample of AE's, wellbeing scores do not differ substantially and changes through time are smaller due to a greater amount of stability in these countries.

A last point to mention is that less developed economies tend to be less able to extract tax revenues from their citizens, mainly due to less sophisticated policy frameworks and governmental institutions and a greater proportion of workers and businesses that operate in the underground or shadow economy. Considering that government revenues are used to finance government expenditure, clearly this is also structurally lower for these countries. In addition, government debt markets, like any debt market, are based on the foundation of trust. Countries that are less likely to default on their debt pay a smaller amount of interest on their government bonds because investors believe that they are highly likely to be able to repay their debt. This means that AE's have a greater ability to accumulate larger amounts of public debt, without the concern that it will soon default on this, than compared with developing economies. These concepts should be kept in mind when considering the results below.

Section 3: Explaining the results

Starting with Figures 3 and 4, where the focus is on public debt amounts against wellbeing scores, the difference in the results between the all country sample and the sub-sample of AE's is a good example of what was discussed in the previous section. There is a small and positive correlation equal to 16% for the all country sample, compared to a much stronger negative correlation equal to -63% for the AE's.[10] As discussed above, more developed countries are able to accumulate greater amounts of debt as a proportion of GDP than developing ones and this is an example of the income effect dominating, due to richer countries reporting higher wellbeing scores. This effect is removed in the AE sub-sample and we observe that countries that haven't been able to manage their public finances effectively, and therefore have higher debt-to-GDP ratios, report lower wellbeing scores.

For Figures 5 and 6, we can obtain a view of whether governments that adopt a "big government" approach through higher proportional spending and taxation, as a percentage of GDP, report higher wellbeing scores. To be clear, we have taken the average values for all three public finance metrics reported in each panel of both Figures 5 and 6, across a 10-year period and all are reported as a percentage of GDP. It is important to take averages for these metrics as they can be quite volatile, especially on the government revenue side for countries that's economic performance is reliant on exports of commodities. If the price of that commodity falls dramatically within a year, government tax revenues are also likely to fall too as businesses pay less corporation tax due to smaller profits and households pay less income tax due to lower salaries. In Figures 5 and 6 there is a fairly strong positive correlation across all 6 panels, with the correlations being generally stronger in the all country sample than for the AE's.

[9] Net debt simply subtracts financial assets owned by the government from its gross debt amount and is often a greater reflection of the government's fiscal position. Although often the governments assets are not very liquid (e.g. public infrastructure) which makes it difficult to sell if the country got into financial difficulty.

[10] Both correlation coefficients are reported using gross debt-to-GDP figures, for the AE sub-sample this was also calculated using net debt-to-GDP figures and the correlation coefficient was very similar at -63.05%. All correlation coefficients are reported to two decimal places in the tables below.

Starting with the primary balance, to be clear, this shows net borrowing for a country and doesn't include interest expenditure on its current stock of public debt, such that a positive primary balance represents a fiscal surplus within a country. The correlation coefficient for the all country sample is equal to 25%, compared to 39% for the AE's. This is fairly consistent with the evidence found in Figure 4, in that AE's that are better able to manage their public finances tend to report higher wellbeing scores. However, clearly the pattern is slightly different across the whole sample, as the income effect is less prevalent here. In the left-hand panel of Figure 5, a significant amount of the observations are clustered between a primary balance of minus five to zero. A primary deficit of this size typically allows a country to keep their public debt level as a proportion of GDP broadly constant, as the countries growth rate is moving in line with absolute amount of debt that it is accumulating each year in its budget deficit.

As for government revenues and expenditures, the correlation coefficients are greater in the all country sample than the AE sub-sample. For government revenues this is equal to 52% across all countries compared with 41% for the AE's and for government spending the correlation is 46% for all countries compared with 28% for the AE's. Meaning at a high level, across both samples and for both metrics, there is a positive relationship with wellbeing scores suggesting in countries where governments that play a larger role in society, their citizens report, on average, higher wellbeing scores. We believe that the reason the correlation is stronger for both metrics in the all country sample can also be attributed to the income effect. As mentioned in the previous section, more developed countries with more sophisticated institutions and a smaller shadow economies, are able extract a greater amount of tax from their citizens. Since wealthier nations tend to report higher wellbeing scores, the true relationship is likely to be closer to the one that we observe in the AE sub-sample.

As discussed in Section 1 previous studies have found a limited relationship between short term fluctuations in public finances and its citizens wellbeing. In Figures 7 and 8 we are looking to test the relationship between longer term changes in public finances and wellbeing. In the left-hand panels, we take the 10-year absolute change in Gross Debt-to-GDP, where positive numbers represent an increase in public debt and on the right-hand panels, we are using the 10-year average primary balance. For both panels we are comparing this against the change in wellbeing for a country between 2009 and 2019, where positive values represent an improvement in wellbeing, on average, for a given country. The first point to notice is that the relationships across the two samples are the opposite however all of the correlation coefficients are relatively close to zero, suggesting none of these relationships are strong.

Starting with Gross Debt-to-GDP, the correlation coefficient is -16% in the all country sample, compared with 8% for AE's. Notably, a far greater amount of AE's have seen their Gross Debt to GDP ratios increasing over the last 10 years, largely in response to the 2008-09 financial crisis. At the same time, as Figure 2 shows there has been limited change in AE wellbeing scores over the last 10 years, especially when compared against the all country samples distribution in Figure 1, which may help to explain the weak relationship. Nevertheless, the slightly positive relationship for AE's suggests that for countries with increasing public debt as a proportion of GDP, its citizens wellbeing is also increasing. The opposite is true in the all country sample. We are approaching the risk of reading too much into these relationships however, anecdotally several AE's have put in place austerity policies in an attempt to reduce their public debt levels after they climbed sharply following the financial crisis. This may help to explain the weak relationship over the 10-year period in the AE sample due to the fact that, despite many countries increasing their public debt level when comparing 2009 with 2019, many countries have been slowing reducing this gap for the majority of the period. Public debt ratios spiked sharply following the financial crisis and these have been slowly declining or remaining broadly constant since. As such, citizens in this case have not felt the benefits of its country's increasing public debt ratio and this is reflected in the weak relationship between this and the change in wellbeing over the period.

Consistent with this, the correlation coefficient in the right-hand panel of Figure 8 is equal to -19%, which shows that countries that have had greater fiscal deficits over the last 10 years have seen increases in the citizens reported wellbeing. This offers some evidence to suggest that recent austerity policies in AE's have been a strain on its citizens wellbeing. For the all country sample, the evidence is the opposite, countries that been able to manage their fiscal position better, and therefore reduce public debt and the size of their fiscal deficits have seen their citizens wellbeing scores increase.

Annex 1: Histograms and Scatter plots

Figure 1: Current Wellbeing and Changes in Wellbeing, All Countries

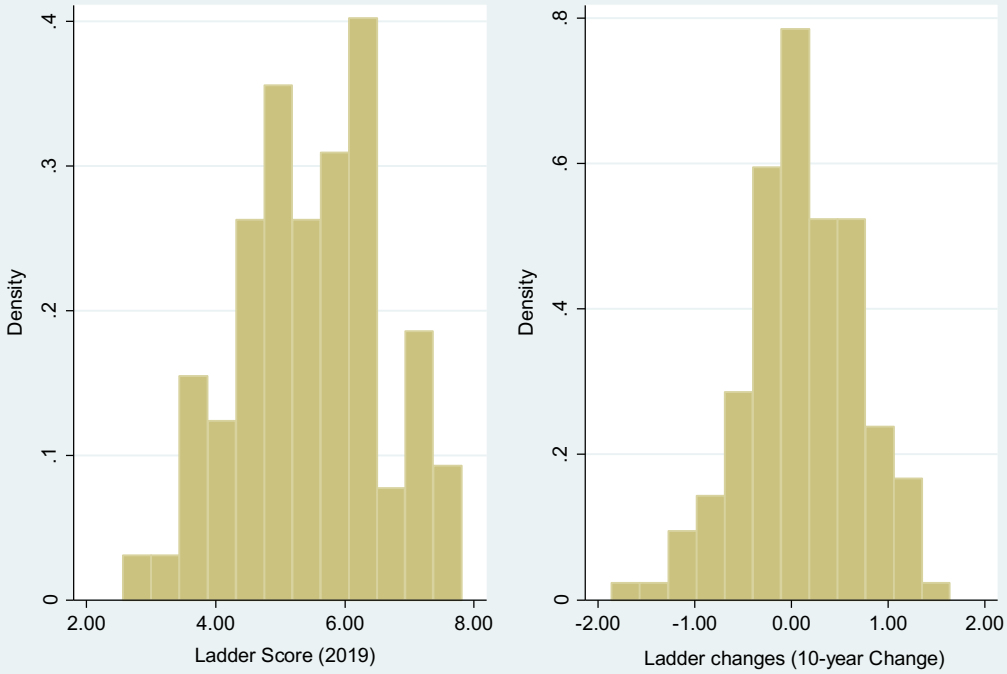


Figure 2: Current Wellbeing and Changes in Wellbeing, AE's

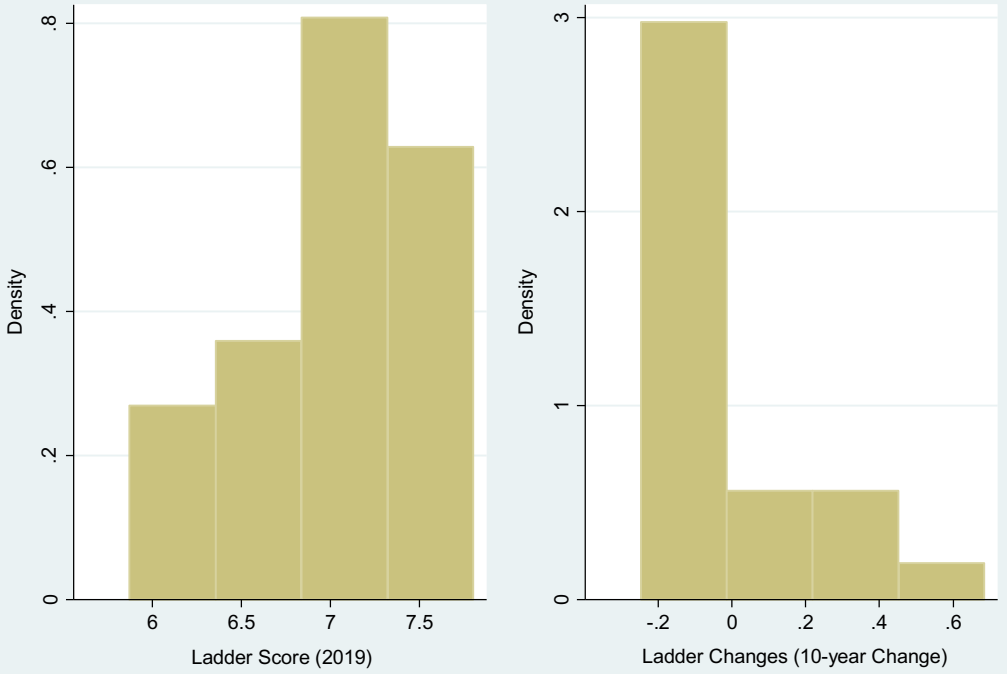


Figure 3: Wellbeing Scores against Gross Debt to GDP, All Countries

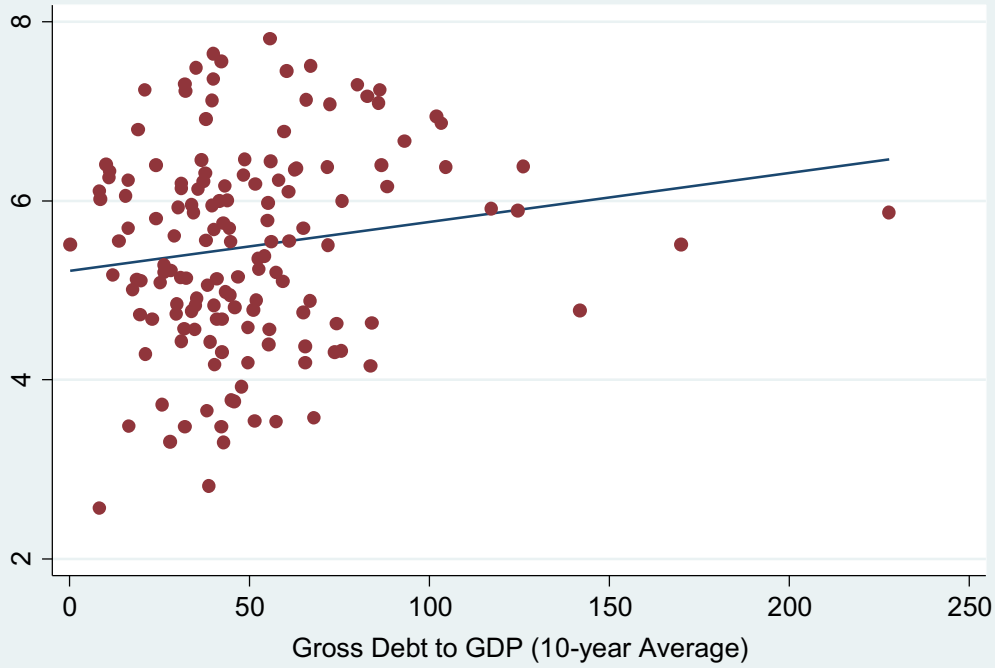


Figure 4: Wellbeing Scores against Gross and Net Debt to GDP, AE's

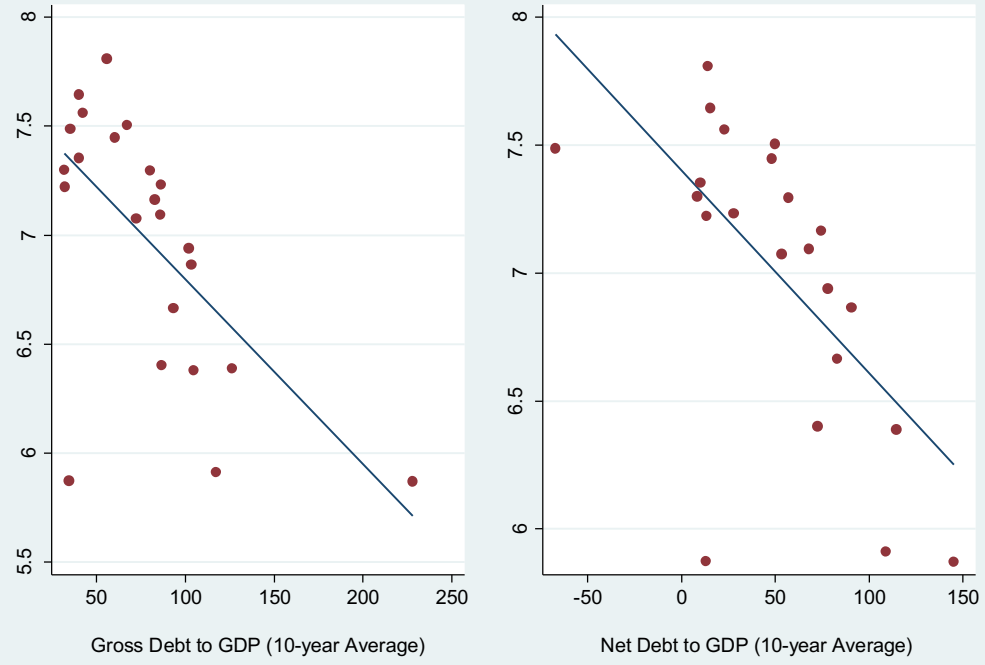


Figure 5: Wellbeing Scores against Public Finances, All Countries

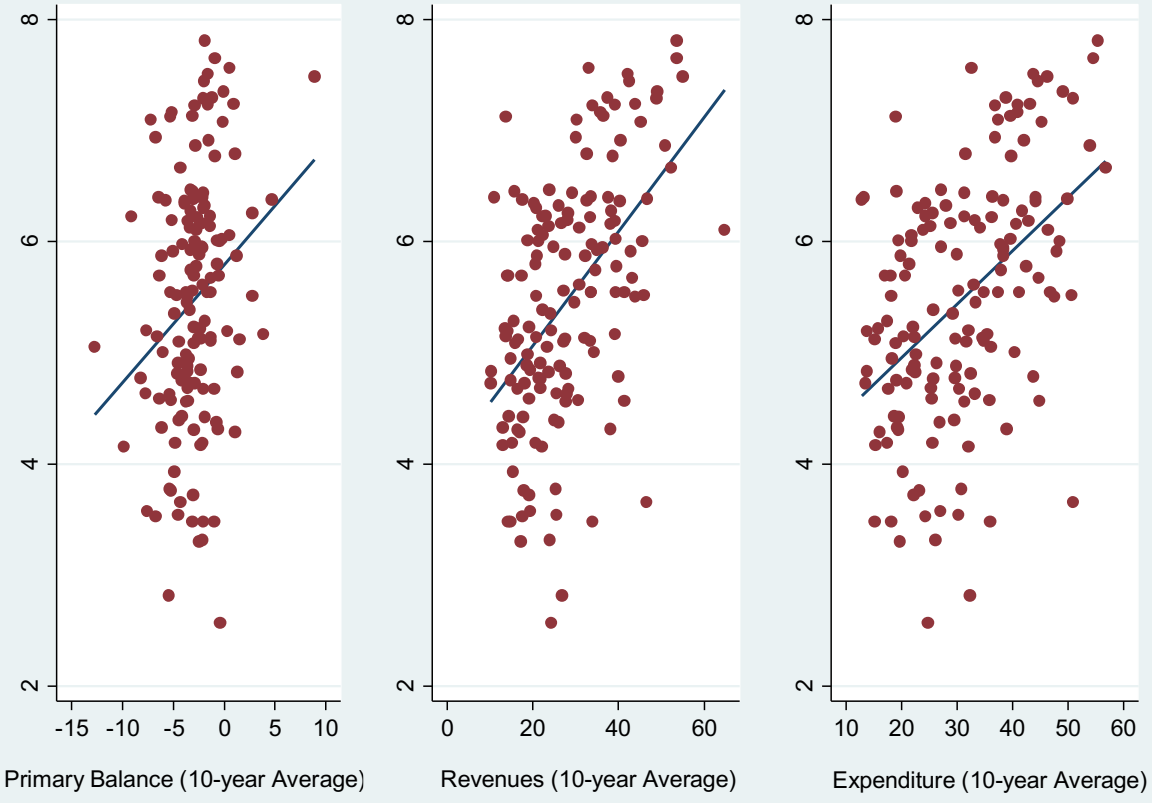


Figure 6: Wellbeing Score against Public Finances, AE's

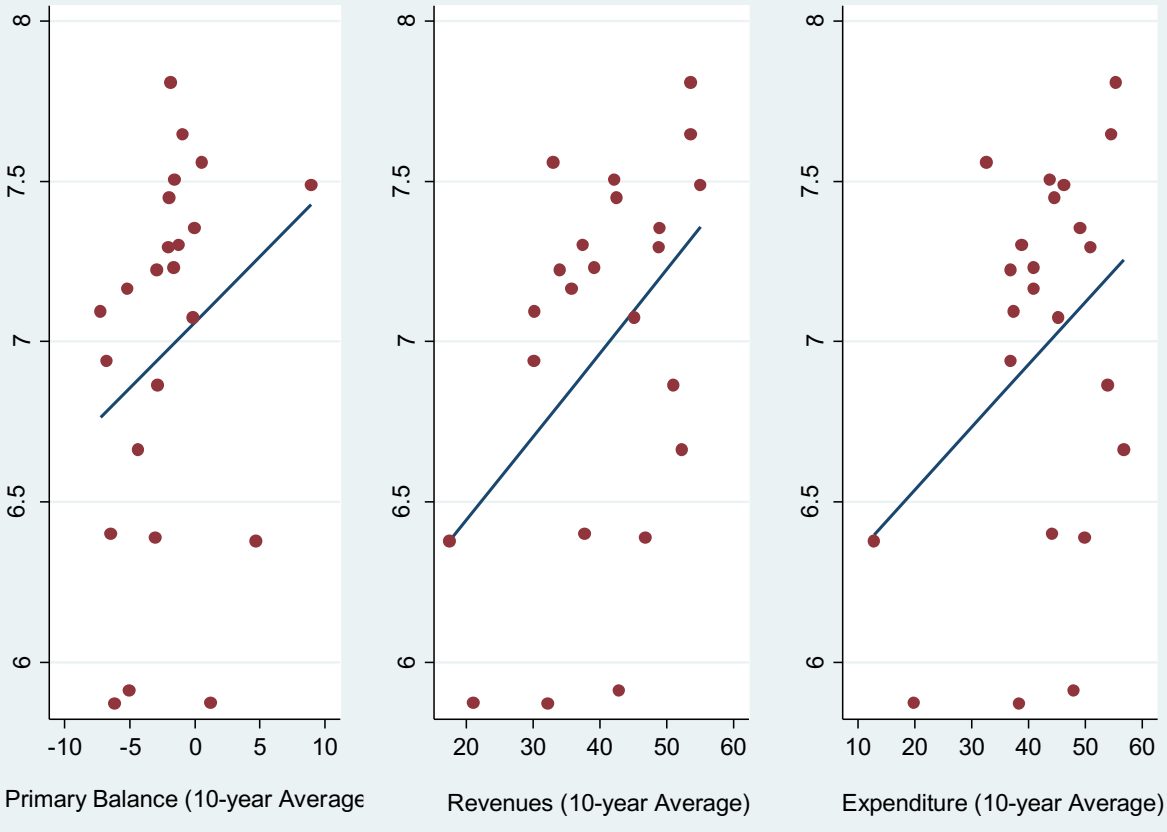


Figure 7: Changes in Wellbeing against Changes in Public Finances, All Countries

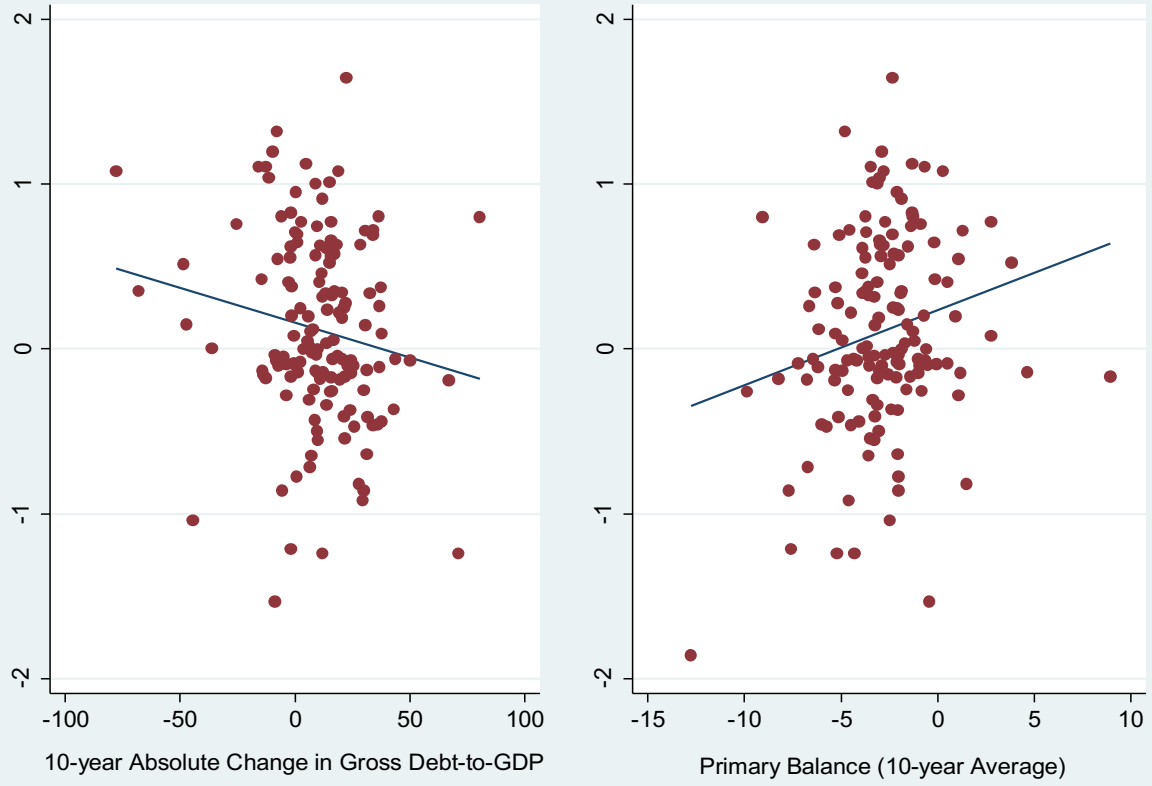
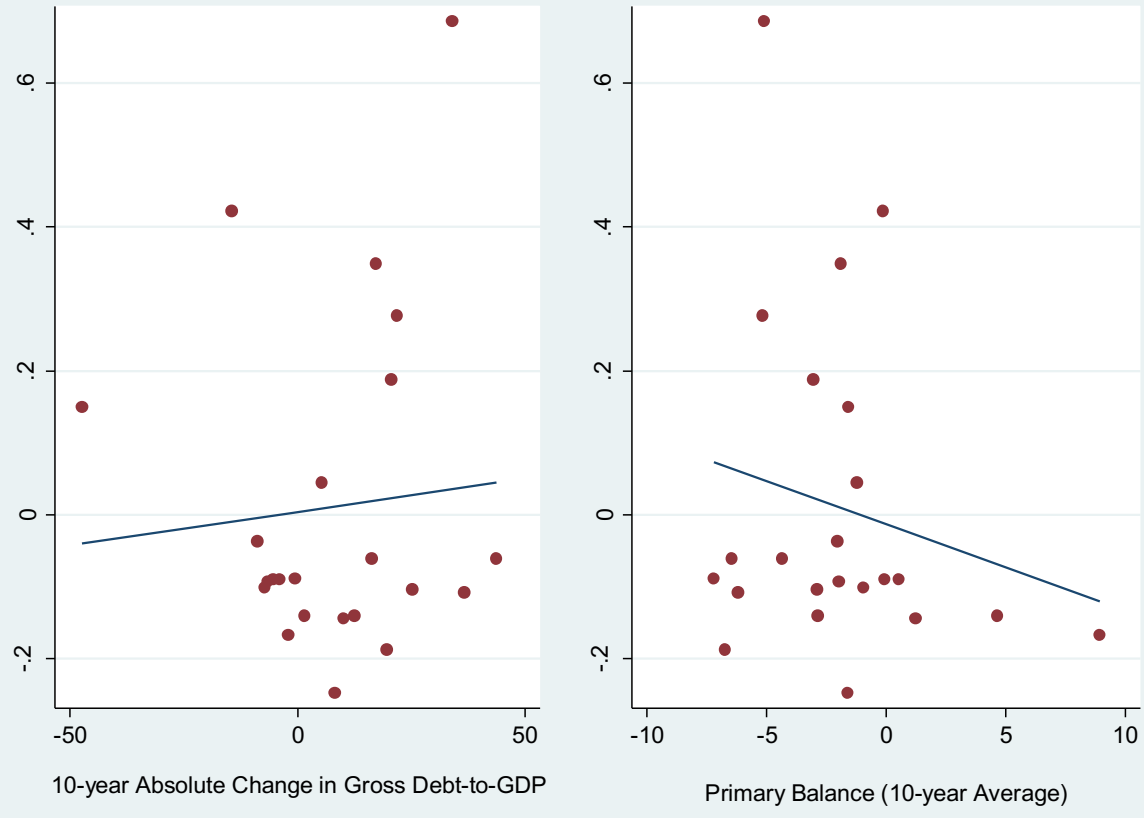


Figure 8: Changes in Wellbeing against Changes in Public Finances, AE's



Annex 2: Tables of Correlations

*Note: All variables with * are a 10-year average from 2009-2019 and all variables with ** are 10-year absolute changes from 2009-2019.*

Table 1: 2019 Correlation Data, All Countries

	Wellbeing Score	Gross Debt-to-GDP*	Primary Balance*	Revenues*	Expenditure*	GDP PC*
Wellbeing Score	100.00%					
Gross Debt-to-GDP*	15.56%	100.00%				
Primary Balance*	25.49%	-37.66%	100.00%			
Revenues*	51.96%	27.07%	16.16%	100.00%		
Expenditure*	45.99%	36.86%	-9.01%	96.83%	100.00%	
GDP PC*	73.47%	21.66%	29.30%	55.12%	48.21%	100.00%

Table 2: 10-year Change Correlation Data, All Countries

	Wellbeing Change*	Gross Debt-to-GDP Change*	Primary Balance**
Wellbeing change*	100.00%		
Gross Debt-to-GDP Change*	-16.33%	100.00%	
Primary Balance**	13.32%	-34.62%	100.00%

Table 3: 2019 Correlation Data, AE's

	Wellbeing Score	Gross Debt-to-GDP*	Net Debt-to-GDP*	Primary Balance*	Revenues*	Expenditure*	GDP PC*
Wellbeing Score	100.00%						
Gross Debt-to-GDP*	-62.53%	100.00%					
Net Debt-to-GDP*	-63.05	85.89%	100.00%				
Primary Balance*	38.94%	-58.13%	-80.63%	100.00%			
Revenues*	41.36%	-11.90%	-18.41%	35.68%	100.00%		
Expenditure*	28.44%	10.88%	13.05%	-2.44%	92.52%	100.00%	
GDP PC*	60.02%	-32.51%	-51.04%	43.89%	7.95%	-9.32%	100.00%

Table 4: 10-year Change Correlation Data, AE's

	Wellbeing Change**	Gross Debt-to-GDP Change**	Primary Balance*
Wellbeing change**	100.00%		
Gross Debt-to-GDP Change**	7.96%	100.00%	
Primary Balance*	-19.42%	-41.41%	100.00%

Annex 3: A list of the 23 countries included in the Advanced Economy (AE) sample

Australia
Austria
Belgium
Canada
Denmark
Finland
France
Germany
Iceland
Ireland
Italy
Japan
Korea
Netherlands
New Zealand
Norway
Portugal
Singapore
Spain
Sweden
Switzerland
United Kingdom
United States