

Tax and Wellbeing

The impact of taxation on economic wellbeing

It has been claimed that higher levels of taxation weaken the economy but a comparative study of 188 economies shows that higher levels of taxation are correlated with higher average income. The positive correlation also exists with other measures of economic wellbeing.

Discussion paper

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Introduction

Former Prime Minister Tony Abbott regularly said: “No country has ever taxed or subsidised its way to prosperity.”¹ He is not alone in believing this. The Coalition Government regularly describes taxation as a burden on the economy and a drag on growth. The Treasurer, Josh Frydenberg, has said that higher taxes would be a “real wet blanket over the Australian economy.”²

It is not just the Treasurer and Tony Abbott that believe higher taxes slow economic growth. Prime Minister Scott Morrison told the Business Council of Australia:

Now our opponents think you can do this [pay for Medicare] by putting taxes up. It doesn't work. It's a big wet blanket on the economy. It retards growth, it holds the economy back.³

The Prime Minister also talked about the ability of lower taxation to transform countries and economies around the world. He claimed that a country focused on lower taxation could lift its people out of poverty.

I was at APEC on the weekend and we were reflecting on the fact that since the early 1990s a billion people have come out of poverty, in the world. They didn't get there by higher taxes, by the way. They didn't get there by increased Government regulation. They didn't get there by bigger sized Government, they didn't get there by any of those things.⁴

During the delivery of the 2019-20 budget in April 2019 the Treasurer talked constantly about the need for a strong economy. In his budget speech he was clear that “a strong economy requires lower taxes.”⁵ This belief has been used to justify substantial tax cuts as

¹ Williams P (2014) *Tony Abbott uses address to World Economic Forum in Davos to promote virtues of free trade*, ABC News, 24 January, available at <<https://www.abc.net.au/news/2014-01-23/abbott-vows-to-promote-free-trade-as-g20-chair/5216230>>

² Insiders (2018) *Josh Frydenberg joins Insiders*, ABCTV, 9 December, available at <<https://www.abc.net.au/insiders/josh-frydenberg-joins-insiders/10598048>>

³ Morrison S (2018) *Address to the Business Council of Australia*, 21 November available at <<https://www.pm.gov.au/media/address-business-council-australia>>

⁴ Morrison S (2018) *Address to the Business Council of Australia*, 21 November available at <<https://www.pm.gov.au/media/address-business-council-australia>>

⁵ Frydenberg J (2019) *Budget speech 2019-20*, 2 April, available at <<http://ministers.treasury.gov.au/ministers/josh-frydenberg-2018/speeches/budget-speech-2019-20>>

seen in the 2018-19 and 2019-20 budgets. These tax cuts will have the effect of flattening the income tax system and reducing how progressive it is.⁶

The Government justifies large tax cuts – the majority of which go to high income earners⁷ – because they will grow the economy, which increases people’s incomes and their economic wellbeing and creates additional jobs. Rather than reducing Government services the Treasurer claims that lower taxes will deliver a strong economy, and this guarantees Government services. “With a strong economy, we can guarantee the essential services that Australians need and deserve.”⁸

Lower taxes and smaller government have been a central tenet of much of the political debate in Australia over the past 30 years. Evidence is rarely provided to support these frequent political restatements that lower taxes lead to a stronger economy and that higher taxes leads to a weaker economy. On the rare occasions when politicians are challenged to provide evidence, they usually fall back on sweeping claims that this is what economics shows or that it is simply common sense. When Prime Minister Morrison went on ABC TV’s 7.30 program, he was asked by presenter Leigh Sales to provide evidence that higher taxes weaken the economy. The following exchange took place.

LEIGH SALES: While we're on Labor, you have said repeatedly today that the Australian economy will be weaker under a Labor government because it will impose higher taxes.

SCOTT MORRISON: Correct.

LEIGH SALES: Where is your evidence that higher taxes weaken an economy?

SCOTT MORRISON: Well, I think it's just fundamental economics 101, Leigh.⁹

Prime Minister Morrison’s claim is not correct. The idea that lower taxation strengthens an economy or that high taxation weakens an economy is not a fundamental proposition in economics.

⁶ Grudnoff M (2019) *A bit rich: A Government plan to make tax less progressive*, The Australia Institute, April, available at <<https://www.tai.org.au/sites/default/files/A%20bit%20rich%20making%20income%20tax%20less%20progressive%20-%20%255bWEB%255d.pdf>>

⁷ Grudnoff M (2019) *Tax targets*, The Australia Institute, June, available at <<https://www.tai.org.au/sites/default/files/P758%20Tax%20targets%20%5Bweb%5D.pdf>>

⁸ Frydenberg J (2019) *Budget speech 2019-20*, 2 April, available at <<http://ministers.treasury.gov.au/ministers/josh-frydenberg-2018/speeches/budget-speech-2019-20>>

⁹ 7.30 (2019) *Scott Morrison on creating jobs, the banking royal commission and the upcoming election*, ABC TV, 29 January, available at <<https://www.abc.net.au/7.30/scott-morrison-on-creating-more-jobs,-the-banking/10760724>>

There are some problems with the Government's theory of the effects of taxation on the economy. There are economies around the world that have relatively high levels of taxation but also strong economies. The Nordic countries of Denmark, Finland, Iceland, Norway and Sweden are often used as examples. These countries would appear to counter the theory that high levels of taxation impede economic growth. In her interview with the Prime Minister, the Nordic country of Norway was used by Leigh Sales as an example of a high tax country that had a strong economy.

LEIGH SALES: But by your logic, if higher taxes in and of themselves generally weaken an economy, a country like Norway should be weak, but it has some of the highest taxes in the world, and yet the average Norwegian is richer and has a higher standard of living than the average Australian.

SCOTT MORRISON: Australia has had 27 years of continuous economic growth. We are at the top of the leader pack when it comes to advanced developed economies in the world for economic growth.¹⁰

This is again not a satisfactory answer. Nor is it evidence that the Government's theory on taxation is correct. The fact that Australia has experienced a sustained period of economic growth is not evidence that low levels of taxation is the cause. A larger comparison of countries is needed.

MEASURES OF ECONOMIC WELLBEING

The Coalition Government believes that lower taxes lead to a stronger economy that creates jobs, increases people's incomes and improves their economic wellbeing. It also believes that higher taxation weakens an economy, reducing income and economic wellbeing. This paper will refer to this belief as the Government's theory. The purpose of this paper will be to test if this theory is correct.

It will do this by comparing countries across the world. Different countries tax in different ways and at different rates. Looking at most of the countries around the world gives a large variety of different levels of taxation. By comparing the level of taxation in each country with various measures of economic and social wellbeing we can test if higher levels of taxation really do reduce economic and social wellbeing and lower levels of taxation increase economic and social wellbeing.

This paper will measure the level of taxation by comparing countries' tax to Gross Domestic Product (GDP) ratios. This is a well-established way of comparing countries on their level of

¹⁰ 7.30 (2019) *Scott Morrison on creating jobs, the banking royal commission and the upcoming election*, ABCTV, 29 January, available at <<https://www.abc.net.au/7.30/scott-morrison-on-creating-more-jobs,-the-banking/10760724>>

taxation. It considers the amount of tax collected and compares this to the size of the economy. This paper will then compare the level of taxation with the countries' average income as measured by per capita GDP.

While per capita GDP is often used as a measure of economic wellbeing, it does have some shortcomings. The reality is there is no one perfect measure of economic wellbeing. To overcome limitations in a single measure, this paper will look at several different measures of economic wellbeing. It is hoped that this will give us a better picture of the impact the level of taxation has on more than just average income. If the Government's theory is correct, then the impact of low taxation should show up in a variety of measures of economic success.

As well as comparing the level of taxation on average incomes, this paper will compare the level of taxation and the Human Development Index (HDI) for each country. The HDI combines average income with average life expectancy and years of schooling to try to get a broader measure of economic wellbeing. The paper will also look at the inequality adjusted HDI. This measure takes all the measures in the HDI and adjusts them for the level of inequality within the country to get an even broader measure of economic wellbeing. The paper will also compare the level of taxation with life expectancy. Life expectancy is a rough proxy for how healthy a country is. The final comparison is the level of taxation with how happy a country is. This is the most subjective measure of wellbeing.

No single measure can perfectly capture all benefits of a strong economy and all aspects of economic wellbeing. This paper uses a variety of measures in the hope that patterns develop to better gauge the impact taxation has on the strength of an economy and the economic wellbeing of its citizens. If the theory that high levels of taxation weakens economic growth is correct, then we should see a negative correlation between many of our measures of economic wellbeing and the level of taxation. That is, the higher the level of taxation for a country the lower the measure of economic wellbeing should be.

COUNTRIES

There are almost 200 countries with their own tax systems, and these countries have arranged their economies in many ways. There is a wide variety in terms of both the types of taxation and the rates of taxation. There is also a wide variety of ways in which governments spend this money on different services and transfer payments. This large variety represents an ideal way to test the idea that lower rates of taxation lead to a stronger economy and improve economic wellbeing.

Every effort was made to get as large a sample of countries as possible for these comparisons. The more countries used, the better the picture that can be built up in the comparisons.

When the word ‘countries’ is used throughout this report, it refers to the 193 sovereign states that are members of the United Nations, the two United Nations observers and four countries/administrative regions that are not UN member states but do have distinct tax systems. The four non-UN member states are Hong Kong, Kosovo, Macao and Taiwan.

Hong Kong and Macao are special administrative regions of China but have separate tax systems from mainland China. Taiwan (the Republic of China) lost its UN membership in 1971; Kosovo declared its independence from Serbia in 2008 but its territory is claimed by Serbia. This paper refers to the member states, observers, other countries and administrative regions collectively as “countries”, but they could also be called separate “economies”.

The United Nations has 193 member states and two observers.¹¹ For the comparisons in this paper 188 countries are used (including the four economies that are not UN member states or observers). Data for 10 UN member states and one observer (Holy See) could not be found to make any of the comparisons.¹²

Appendix A lists all data sources and details which countries are included in each comparison. The latest year for each country has been used. A list of years used is also included in Appendix A. Because the latest data is always used, this means that data from different years is being compared. This is not considered particularly problematic because both the amount of tax collected and GDP, and hence the tax to GDP ratio, tend not to change dramatically from year to year.

COUNTRY GROUPS

This paper will compare all countries where data is available, but it will also look more closely at three groups of countries. The first group is the countries that are members of the Organisation for Economic Co-operation and Development (OECD).¹³ These 36 countries make up what is considered the developed world. While they only make up just 18 per cent of countries, they account for 62 per cent of world GDP. This group is being looked at in order to see if different patterns or correlations occur in developed countries compared to all countries.

The second group of countries are the five Nordic nations.¹⁴ These have been held up as examples of successful high tax countries. It will be interesting to test if this is the case. If this is true, then comparing Nordic countries to other countries has the potential to provide

¹¹ United Nations, *Member States*, accessed September 2019, available at <<https://www.un.org/en/member-states/index.html>>

¹² A list of missing countries can be found in Appendix A

¹³ A list of OECD countries can be found in Appendix A

¹⁴ A list of Nordic countries can be found in Appendix A

evidence that the theory is incorrect. The comparison might also show that Nordic countries do not do as well as other countries on measures of economic wellbeing, which would be evidence that the Government's theory is correct.

The final group is slightly different from the first two in that its membership is determined by the results of each analysis and as such its membership will differ depending on the measure of wellbeing used. This group will be the countries that have done relatively well on the measure of wellbeing and have low rates of taxation. This group represent the countries that most fit with the Government's theory. If the theory that low levels of taxation strengthens the economy is correct, then this group of countries also has the potential to be very large. This paper will look to see if these countries have common characteristics that might help us better understand if their relatively low rates of taxation are the reason behind their good performance.

AVERAGE INCOME (GDP PER CAPITA)

GDP is the sum of all incomes in an economy and so GDP per capita (also known as GDP per person) is a measure of average income across the economy. Figure 1 is a scatter plot diagram of 185 countries comparing their proportion of tax (tax to GDP ratio) and their average income.¹⁵ The OECD countries are marked in red and labelled with their country names. Throughout this paper Australia will be labelled in each scatter plot diagram and highlighted in orange.

The black line shows the linear relationship between the variables. This is calculated using the least squares method and gives the best linear unbiased estimate of that relationship. The trendline is the line of best fit and is a line that minimises the variance between the countries. In this comparison the trendline is upward sloping meaning that there is a positive correlation between higher proportions of tax and higher average incomes. This means that countries that collect a larger proportion of tax are more likely to have higher average incomes. This is the opposite of what would be expected if the Government's theory that taxation weakens an economy was true.

¹⁵ Average income has been converted to Purchasing Power Parity and \$US.

The r squared value of the trendline is 0.19. The r squared value measures the strength of the correlation between the variables. A value of 0.19 means that 19 per cent of the scatter among the variables is due to the correlation between them. This means that this trendline 'explains' only part of what is going on with tax and income. In practice there are many other contributions from other factors that inform living standards.¹⁶ Of the large number of variables that could inform average income, it is interesting that taxation makes 19 per cent. While there are clearly other variables that inform average income, taxation is an important factor.

¹⁶ Values between 0 and 0.3 indicates a weak linear relationship. Values between 0.3 and 0.7 indicate a moderate linear relationship and values between 0.7 and 1.0 indicate a strong linear relationship. Ratner B, *The Correlation Coefficient: Definition*, DM Stat – 1 Articles, accessed September 2019, available at <<http://www.dmstat1.com/res/heCorelationCoefficientDefined.html#targetText=The%20correlation%20coefficient%2C%20denoted%20by,linear%20relationship%20between%20two%20variables.&targetText=Values%20between%200.7%20and%201.0, via%20a%20firm%20linear%20rule>>

It is important to note that correlation does not mean causation. Figure 1 does not imply that higher taxation causes higher average incomes or that higher average incomes causes higher taxation. It might be that one is causing the other or it might also be that some other factor that influences both taxation and average income is the casual factor and is influencing both. It could also be mere coincidence that both are moving in the same way. We will look at several different measures of economic wellbeing in order to test if this was just a coincidence. If the same correlation exists with multiple measures of wellbeing, then it reduces the likelihood that it is mere coincidence, unless the other measures relate to each other in some way.

While it is not possible from Figure 1 to say that a higher proportion of tax causes a higher average income, or vice versa, what we are seeking to investigate is the theory that higher taxes cause lower economic growth and hence lower average incomes. Figure 1 provides strong evidence that this is not the case. If higher rates of tax weaken economic growth, then over time you would expect the economies of higher tax nations to perform worse and have lower average incomes. This comparison provides no evidence that the Government's theory is correct.

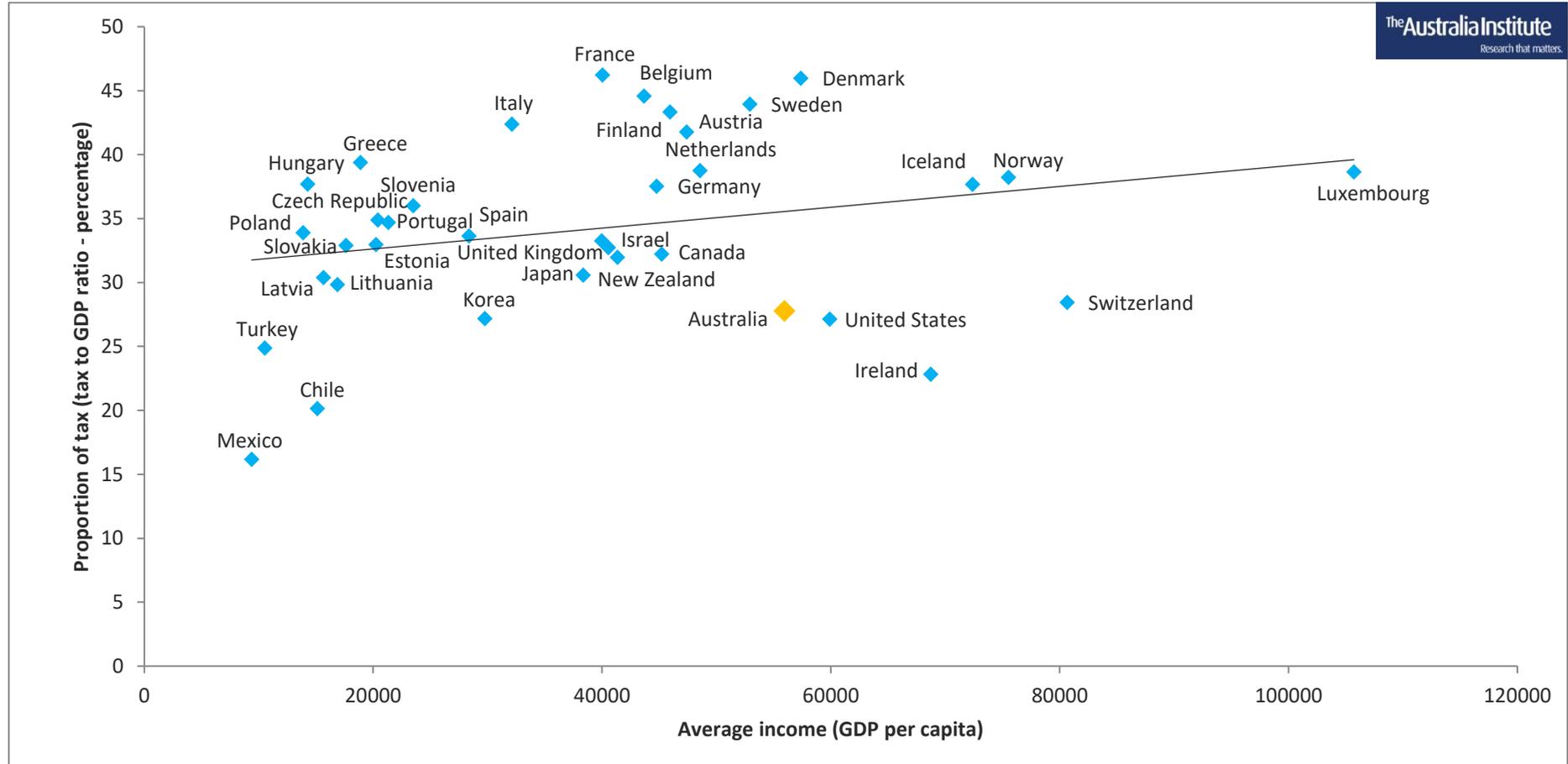
It is also interesting to note the position of Australia, which is close to but below the trendline. This points to the fact that Australia is a low tax country relative to its economic wellbeing, but not significantly so.

Developed countries

Looking at the developed countries also gives us a different insight. As expected, the developed countries are over represented among nations with high average incomes. But they are also over represented among nations with higher levels of taxation. This would seem to indicate that those countries with large, established and developed economies also have relatively high levels of taxation.

Figure 2 is the same as Figure 1 but only looks at developed countries. It shows that the same positive correlation between the proportion of tax and average incomes exists for developed countries as exists for all countries. That is, higher income OECD countries are more likely to have higher levels of taxation and lower income OECD countries are more likely to have lower levels of taxation.

Figure 2 – Level of taxation and average income for 36 OECD countries



Nordic countries

The Nordic countries have relatively high levels of taxation. Nordic countries have been used as examples of countries that have high levels of taxation and high economic wellbeing.

If the theory that higher taxes weaken economies was true, then these countries should have lower average incomes. Figure 3 shows proportion of tax to average income for all countries (the same as Figure 1) but with the Nordic countries highlighted instead of OECD countries.

Figure 3 – Level of taxation and average income for 185 countries with Nordic countries named and highlighted

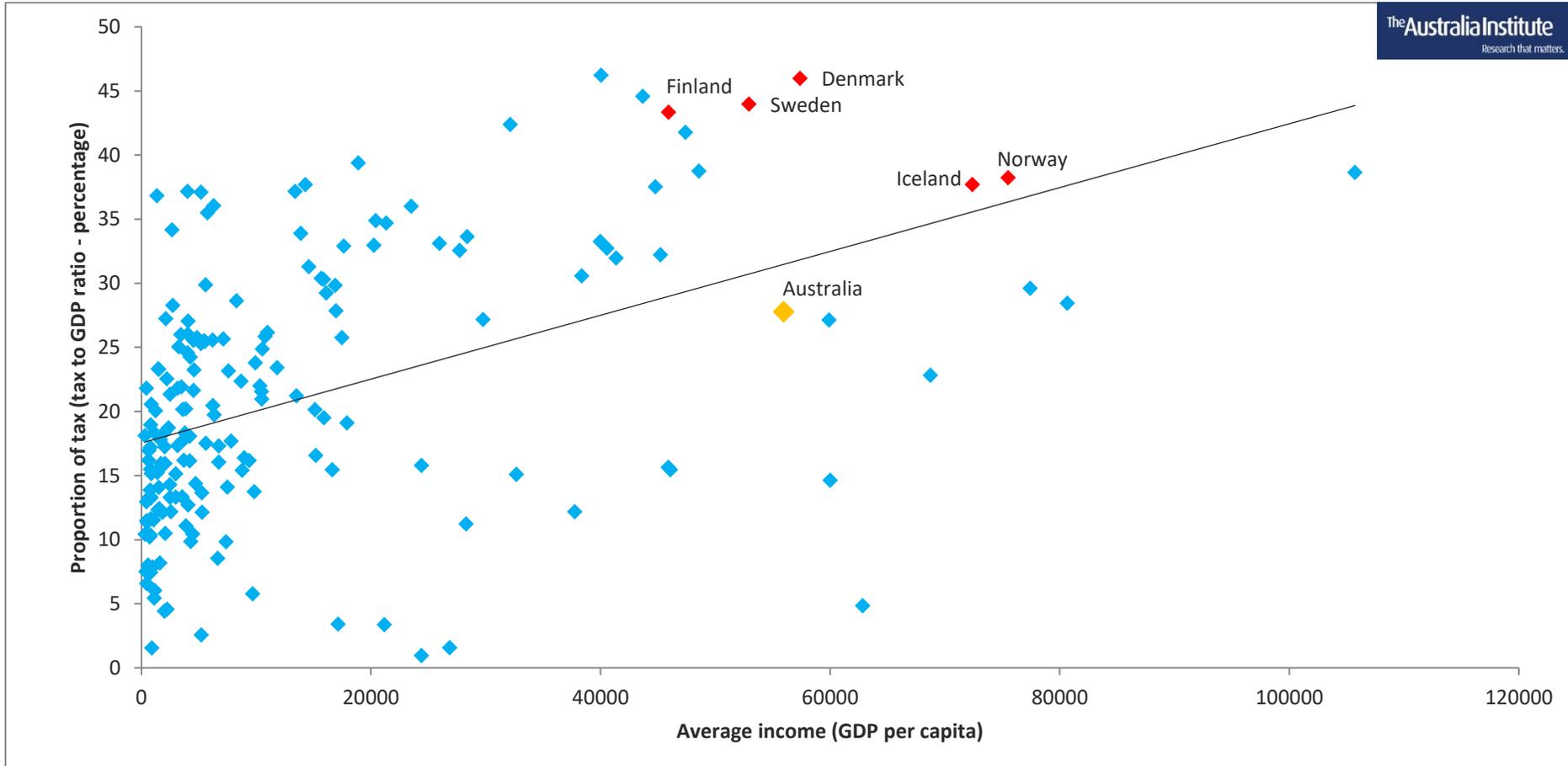
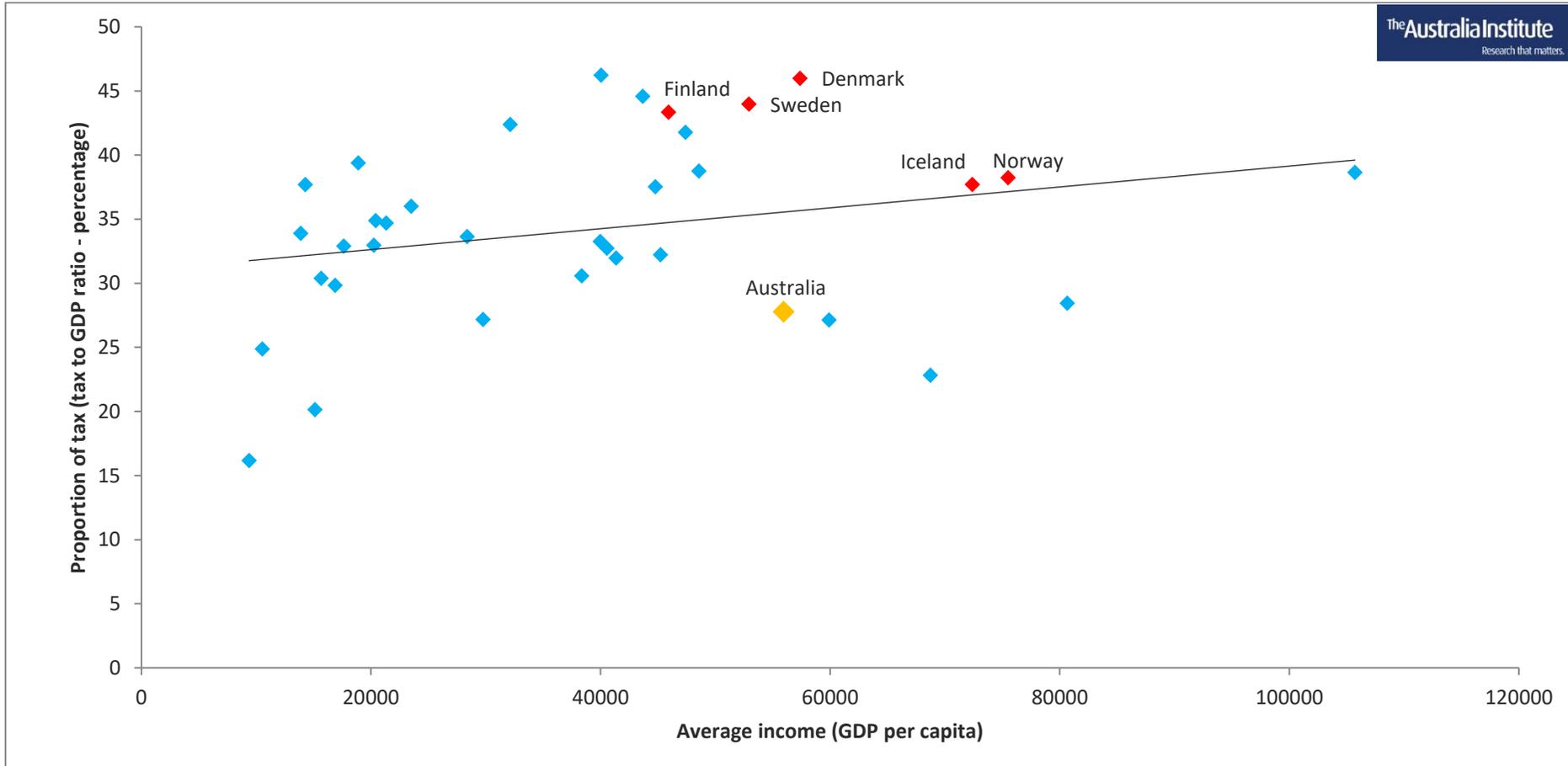


Figure 3 shows that Nordic countries have both relatively high average incomes and a relatively high level of taxation. This correlation does not support the theory that higher taxes weaken an economy. Nordic countries have some of the highest average incomes in the world. Three of the five Nordic countries are in the top ten countries with the highest average income, with the fourth, Sweden, coming in 12th and the fifth, Finland coming in 16th.

All five Nordic countries are in the group of developed countries and Figure 4 highlights the Nordic countries among the developed countries. Figure 4 is the same as Figure 2 but with the Nordic countries highlighted in red and labelled.

Figure 4 – Level of taxation and average income for 36 OECD countries with Nordic countries highlighted



If we split the countries into three groups, developed countries (all the OCED countries), developing countries (all the non-OECD countries) and Nordic countries (which are also included in the OCED countries), then we can look at each group’s average tax to GDP ratio and average income. These are shown in Table 1.

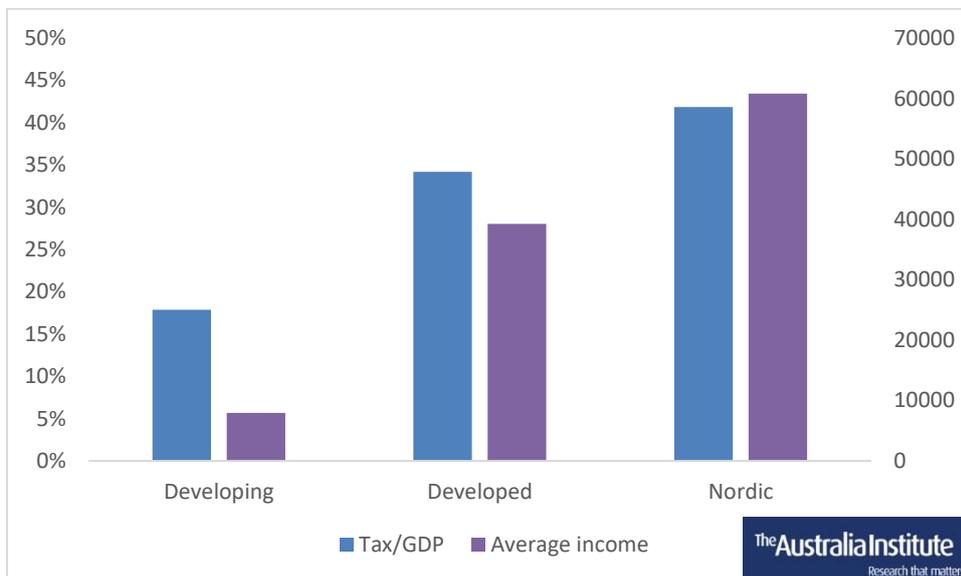
Table 1 – Average tax to GDP and average income for country groups

Country group	Tax to GDP (%)	Average income
Developing	17.9	\$7,974
Developed	34.2	\$39,248
Nordic	41.8	\$60,829

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We can see that an average developing country has both the lowest tax to GDP ratio and lowest average income. The average developed country has a much higher tax to GDP ratio and a much higher average income than an average developing county. The average Nordic country has both the highest tax to GDP ratio and the highest average income. This is also shown in Figure 5.

Figure 5 – Average tax to GDP and average income for country groups



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This again highlights that the government’s theory that higher taxation weakens economic growth is not supported by the evidence. As the average tax to GDP for each group rises so does the average income.

Outliers

Looking at all countries in Figure 1 shows that higher levels of taxation are correlated to higher average income. But a closer look shows that there are some countries that fit more closely to the low tax, high income theory. We will call these countries outliers because they run counter to the positive correlation and are shown in Figure 6.

These countries fit the theory being tested and therefore warrant a closer investigation to determine if their relatively high average income could be caused by their relatively low level of taxation. If the theory works for these countries, then it is possible that there are policy lessons that Australia could learn from them.

These outliers have been chosen because they're a significant distance below the trendline and have done relatively well on the measure of wellbeing, in this case average income.

Figure 6 – Level of taxation and average income for 185 countries with outliers named and highlighted

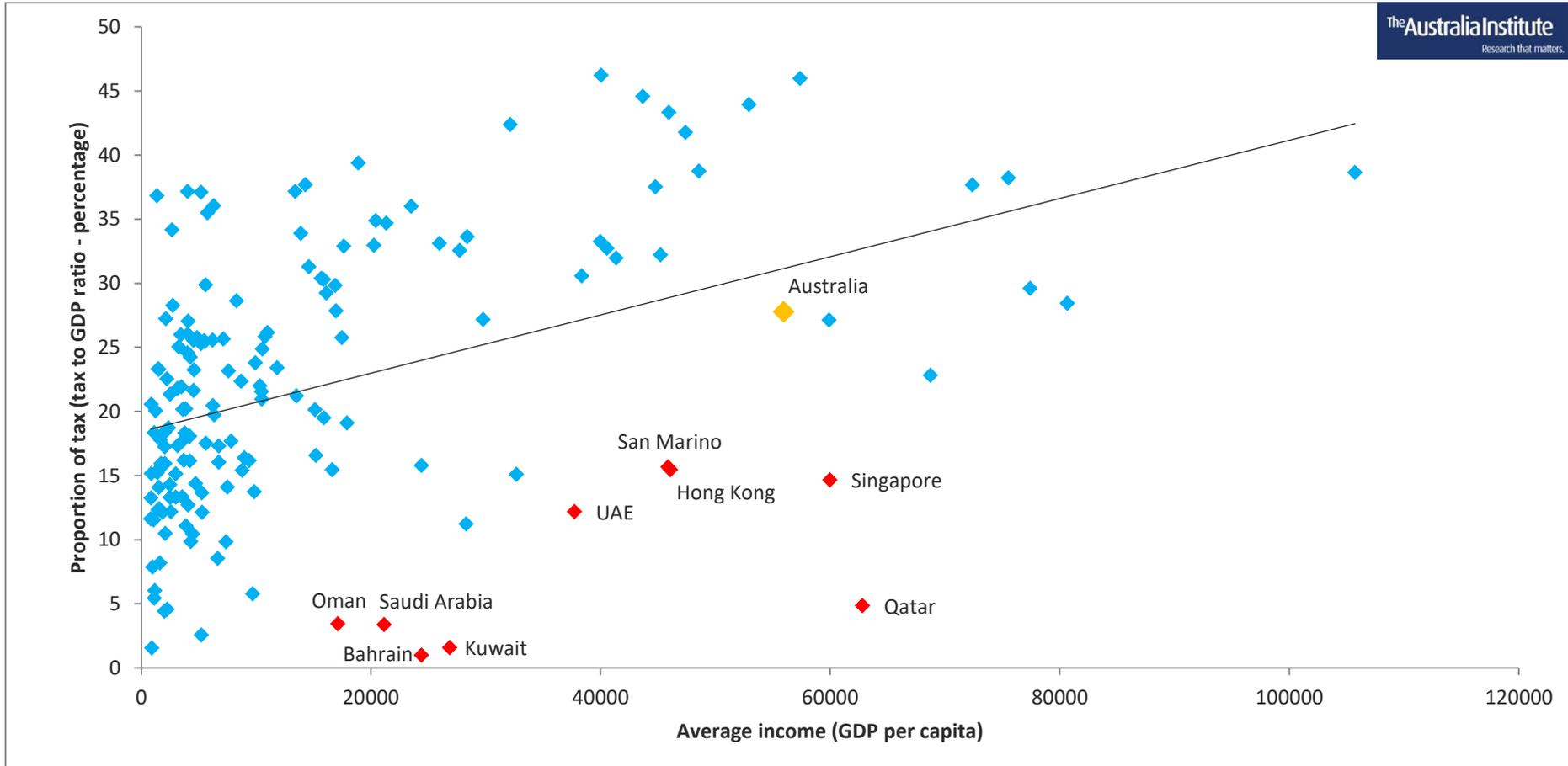


Figure 6 is identical to Figure 1 and 3 but with countries that have relatively low levels of taxation and relatively high average incomes highlighted.

These countries can be broadly split into two groups. The first group is made up of countries with large government owned oil and/or gas reserves. This group includes Oman, Bahrain, Saudi Arabia, Kuwait, United Arab Emirates and Qatar. This group funds government budgets with profits from state owned oil and gas companies rather than tax revenue. If we look at total Government revenue rather than tax revenue, then these countries look far less unusual. Government revenue includes, among other things, taxation, income from property, income from grants and the sale of goods and services. Table 2 shows tax revenue and total revenue for the six countries with large oil and gas reserves.

Table 2 – Low tax oil and gas countries’ tax revenue to GDP and total revenue to GDP

Country	Tax revenue to GDP (%)	Total revenue to GDP (%)
Bahrain	1.0	18.2
Kuwait	1.4	35.0
Oman	3.4	31.7
Qatar	4.9	30.6
Saudi Arabia	3.4	24.1
UAE	11.9	28.8



Table 2 shows that while these countries’ tax revenue is unusually low, their total revenue is at levels consistent with other countries. These countries are using the profits from the sale of their non-renewable resources to fund Government services. This allows them to have very low tax to GDP ratios.

The very unusual and unique circumstances that this group of countries face means that there are limited policy implications that other nations could follow to replicate these countries’ low levels of taxation and high average incomes. If a nation does not have large reserves of oil and gas and relatively small populations, it is unlikely to be able to replicate these countries’ tax structures.

One common characteristic that might be relevant to a country like Australia is that all these countries have nationalised their resource extraction industries and so the Government gets a significant proportion of the profit, which is then used to fund services. In Australia, private operators extract resources and most of the profits flow to the owners of those private resource companies. The Government takes a relatively small share in the form of royalties and taxation when compared to these outlier countries. If Australia wanted to lower its tax rate, it could follow these outlier countries in taking a much larger share of the profit from its non-renewable resources.

Finally, the low rates of taxation are unlikely to have played a large role in the relatively high average incomes of these nations. There are clearly other factors which have had a greater influence, specifically the abundance of exploitable natural resources.

The second group of countries with relatively low rates of taxation and relatively high average incomes are small city states that have traditionally been gateways into trading areas and have acted as tax havens. This group includes Hong Kong, San Marino and Singapore. These countries are also difficult to emulate because they are relatively small and their size and geographic location are very important to their success. A geographically large and isolated country like Australia is unlikely to be able to emulate these countries.

It should also be noted that, apart from Qatar and Singapore, these outlier countries have lower average incomes than Australia. For example, Australia has more than three times the average income of Oman and Saudi Arabi. Outlier countries have high average incomes relative to tax but their incomes are still, for the most part, lower than Australia's.

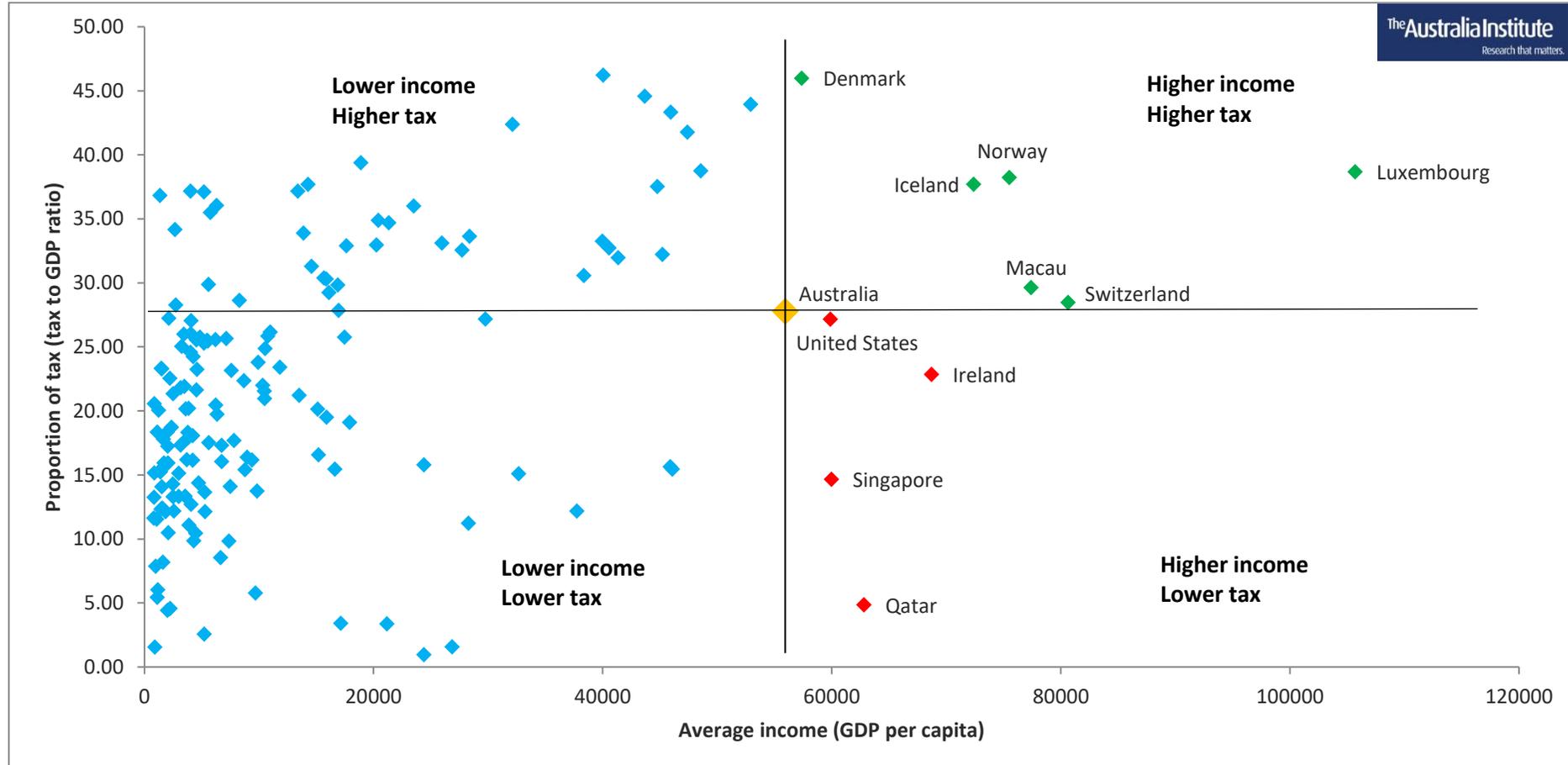
Countries with higher average income than Australia

It is also interesting to look at countries with higher rates of wellbeing than Australia and to consider these in terms of those with a higher or lower level of taxation. This involves breaking all the countries into four groups relative to Australia. These four groups are:

- those countries that have a higher level of taxation but a lower average income than Australia
- those countries that have a higher level of taxation and a higher average income than Australia
- those countries that have a lower level of taxation and a lower average income than Australia
- those countries that have a lower level of taxation and a higher average income than Australia

This has been done in Figure 7 by inserting both a horizontal and vertical line through Australia. The countries that have a higher average income than Australia have been highlighted, with those with a lower tax rate highlighted in red and those with a higher tax rate highlighted in green.

Figure 7 – Level of taxation and average income, countries with higher average income than Australia highlighted



There are four countries with higher average incomes and lower levels of taxation than Australia. They are the United States, Ireland, Singapore and Qatar. Singapore and Qatar have been discussed in the outlier's section above. The United States has a very similar level of taxation and similar average income. The final country is Ireland. Ireland has at times been called a tax haven (which the Irish Government denies). The large financial flows that wash through the Irish economy have the effect of inflating the country's GDP figures without a corresponding increase in real economic wellbeing.

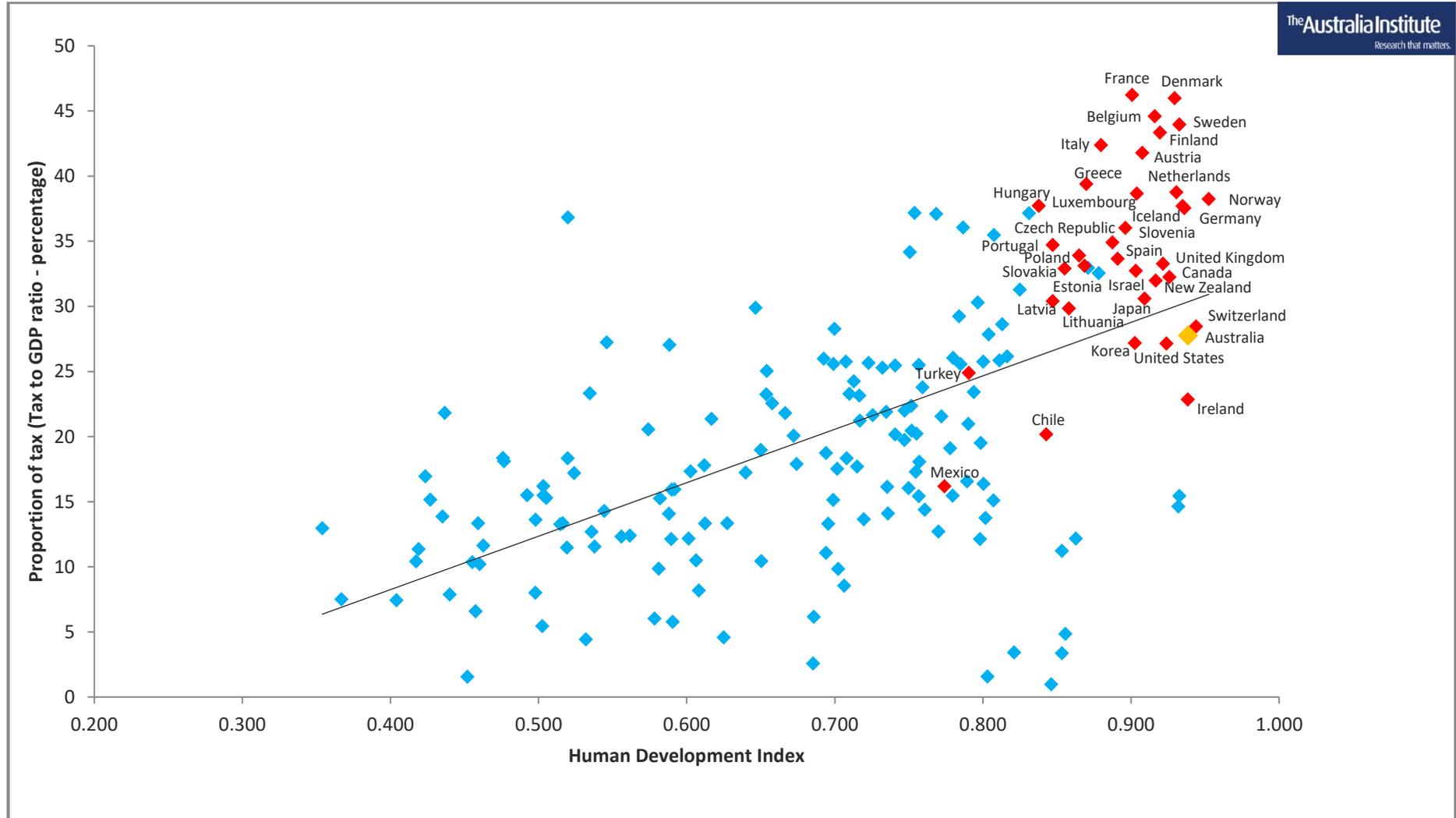
There are six countries with higher average incomes and higher levels of taxation than Australia. Three of the five Nordic countries (Denmark, Norway and Iceland) are in this group, along with Luxembourg, Macau and Switzerland.

This seems to show that from a policy perspective there are few if any policy options to copy if Australia wanted to increase its average income and lower its level of taxation. On the other hand, there are a number of countries that it could choose to copy if it wanted to increase its average income and increase its average level of taxation.

HUMAN DEVELOPMENT INDEX

This paper will now compare 183 countries' level of taxation (tax to GDP ratio) with their Human Development Index (HDI) score. The HDI was developed by the United Nations in order to overcome some of the limitations of using just GDP per capita (or average income) as a measure of economic wellbeing. The HDI is calculated from Gross National Income per capita, average life expectancy and years of schooling. The higher a country's HDI score, the higher its economic wellbeing. The HDI index and the level of taxation are compared in Figure 8. The OECD nations have been named and highlighted in red, with Australia highlighted in orange.

Figure 8 – Level of taxation and Human Development Index for all 183 countries with OECD countries named and highlighted



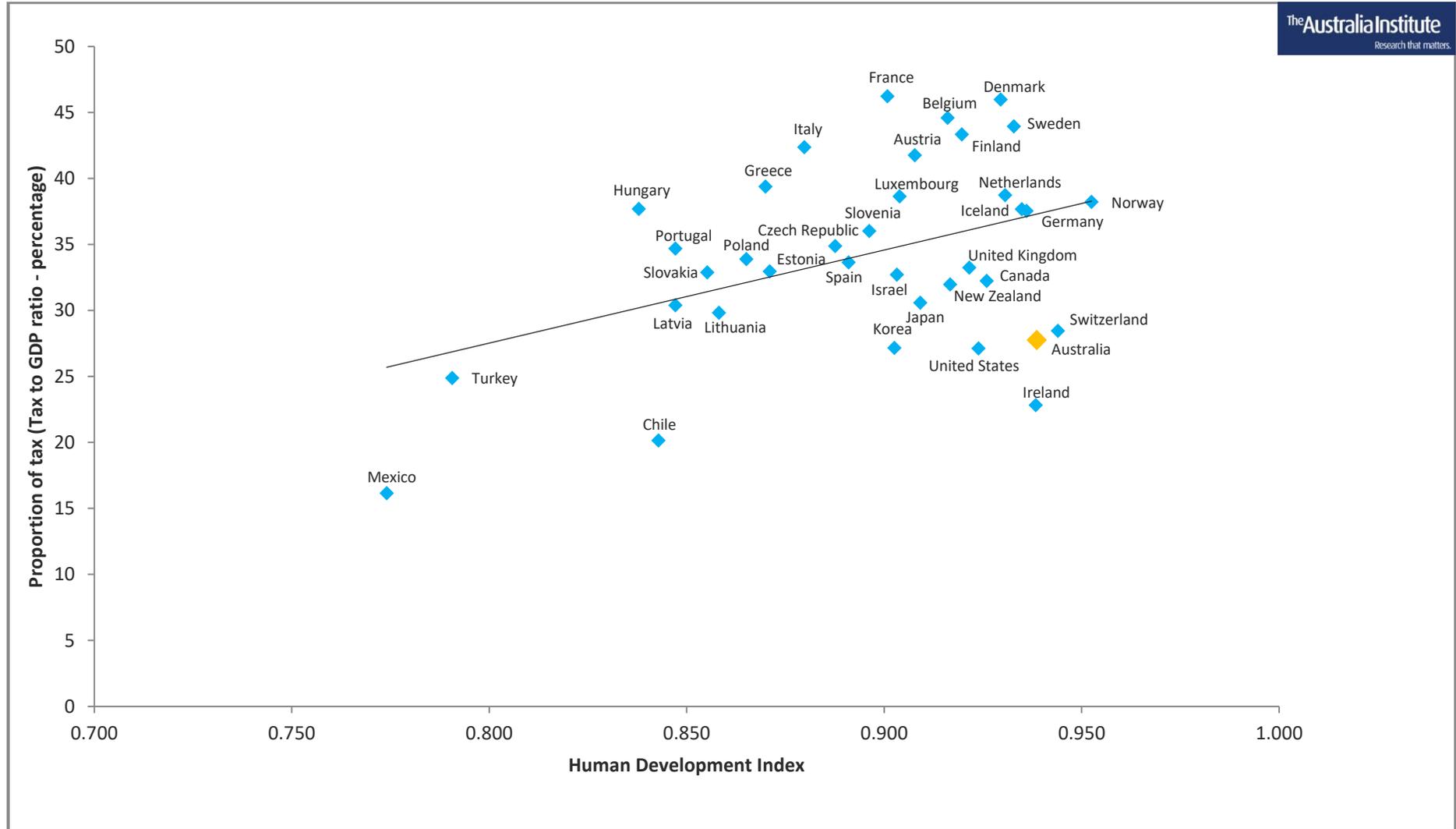
The trendline is again upward sloping. This means that higher levels of the HDI (average income, life expectancy and years of schooling) are correlated with higher levels of taxation. This does not mean that one is causing the other. These results are similar to the analysis of average income and the level of taxation.

In this case the r squared value of 0.36 shows the upward sloping trendline better explains the distribution of countries than the analysis of average income. The r square value of 0.36 means that the strength of the correlation is moderate and that 36 per cent of the variation is explained by the trendline. This shows that there are many variables that inform a countries HDI and that taxation is an important one.

Developed countries

The OECD countries dominate those countries with high HDIs as well as those countries with high levels of taxation. Figure 9 looks at just the 36 OECD countries. We can see that even among the OECD countries it is more likely that a higher level of taxation will be associated with a higher HDI.

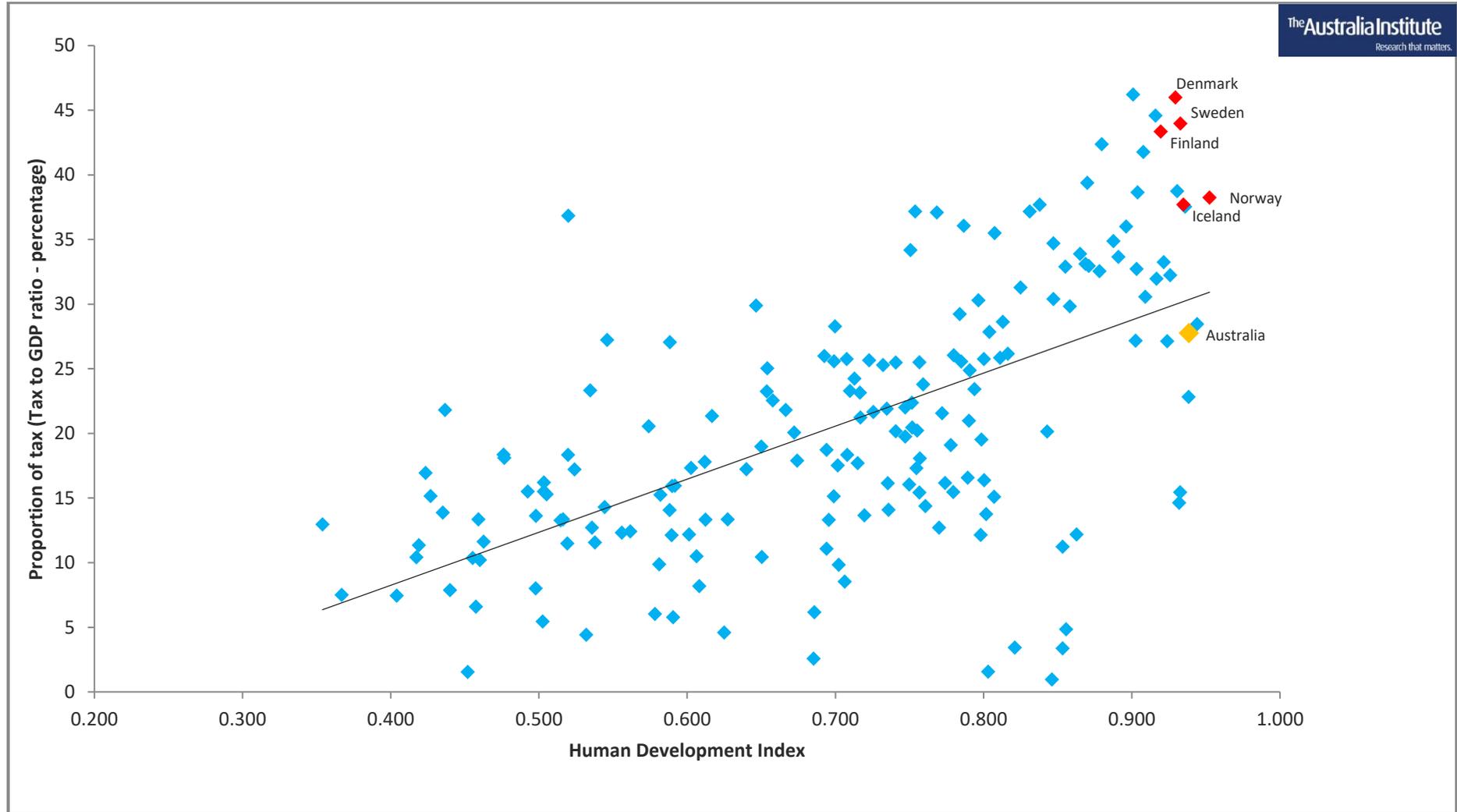
Figure 9 – Level of taxation and Human Development Index for 36 OECD countries



Nordic countries

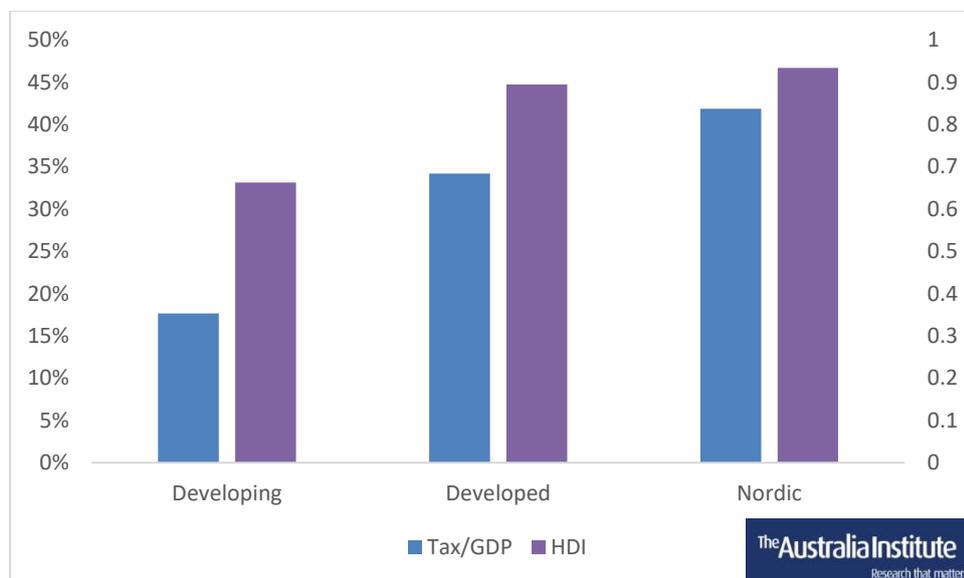
Figure 10 compares all countries' level of taxation and HDI score while naming the Nordic countries and highlighting them in red. The Nordic countries have some of the highest HDIs in the world. Three of the Nordic countries are in the top 10 and all five are in the top 20. This is the opposite of what would be expected if the theory that high levels of taxation weaken the economy was correct.

Figure 10 – Level of taxation and Human Development Index for 183 countries with Nordic countries named and highlighted



Splitting the countries again into developing, developed and Nordic, we can see that the average of each group shows that as the average tax to GDP rises so does the average HDI. This is shown in Figure 11.

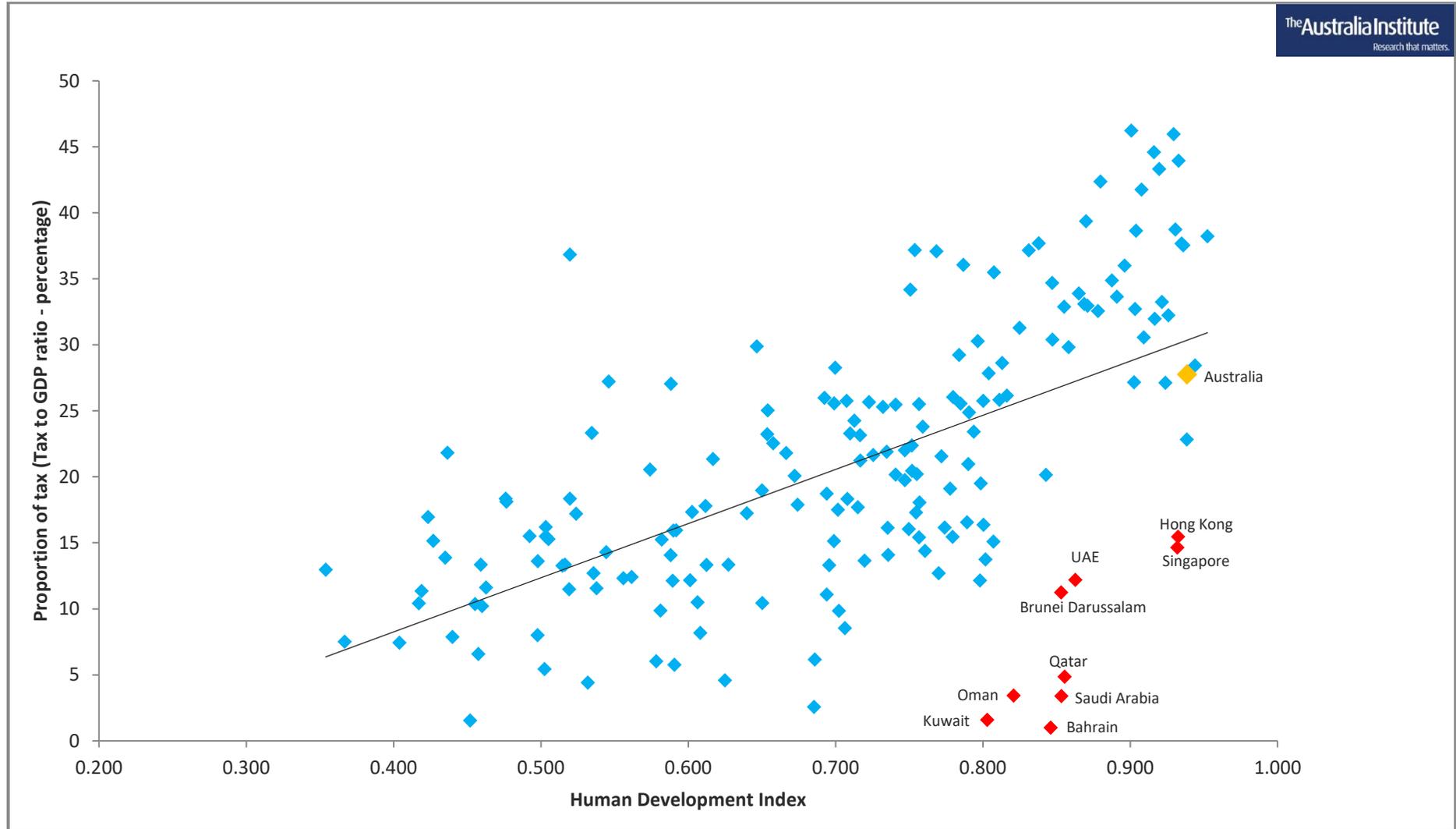
Figure 11 – Average tax to GDP and average HDI for country groups



Outliers

Looking for countries that best fit the theory that low levels of taxation strengthen the economy we see nine possible outliers. They are Hong Kong, Singapore, United Arab Emirates, Qatar, Brunei Darussalam, Saudi Arabia, Bahrain, Oman and Kuwait. These are highlighted in Figure 12.

Figure 12 – Level of taxation and Human Development Index for 183 countries with outliers named and highlighted



These countries are very similar to the same group in the average income analysis and can be broken into the same two groups. The first group of countries with large government owned oil and/or gas reserves includes the United Arab Emirates, Qatar, Brunei Darussalam, Saudi Arabia, Bahrain, Oman and Kuwait. Rather than using tax revenue as the primary source of revenue, they instead use the profits from their large oil and/or gas reserves. When government revenue to GDP is compared to their HDI instead of tax to GDP, all these nations have results that are closer to the trend.

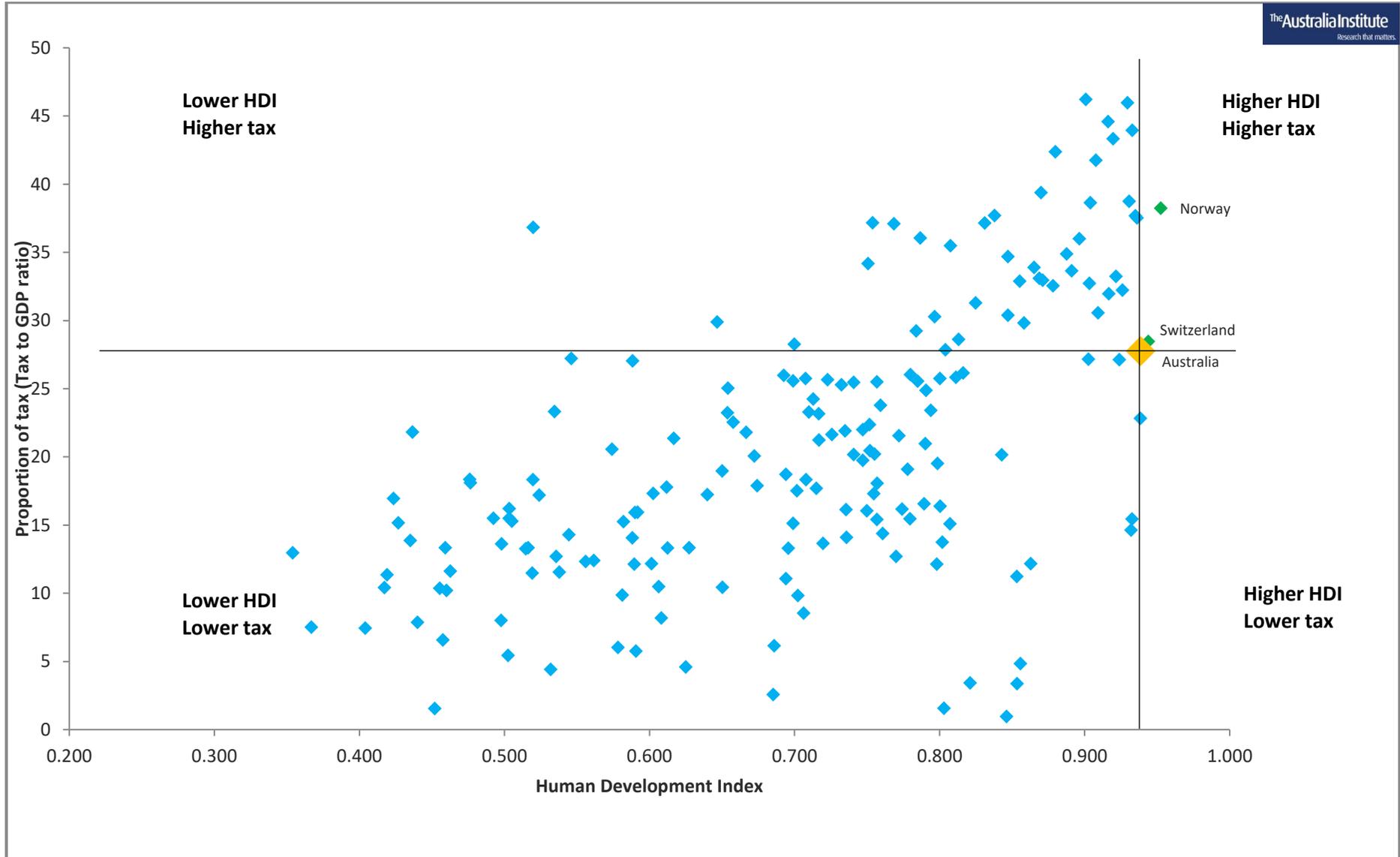
The second group includes Hong Kong and Singapore. Both these groups do not accurately explain the theory that low levels of taxation create strong economies as explained in the average income analysis.

It is also worth noting that while all the outlier countries have relatively high HDIs for their relatively low levels of taxation, all of them have lower HDIs than Australia.

Countries with a higher Human Development Index than Australia

Figure 13 splits all the countries into four groups, in the same way we did in Figure 7, and highlight those countries with a higher HDI than Australia.

Figure 13 – Level of taxation and HDI, countries with higher HDI then Australia highlighted



There are no countries with a lower level of taxation and a higher HDI. There are two countries with a higher level of taxation and a higher level of taxation. These are Norway and Switzerland. Norway is one of the Nordic countries.

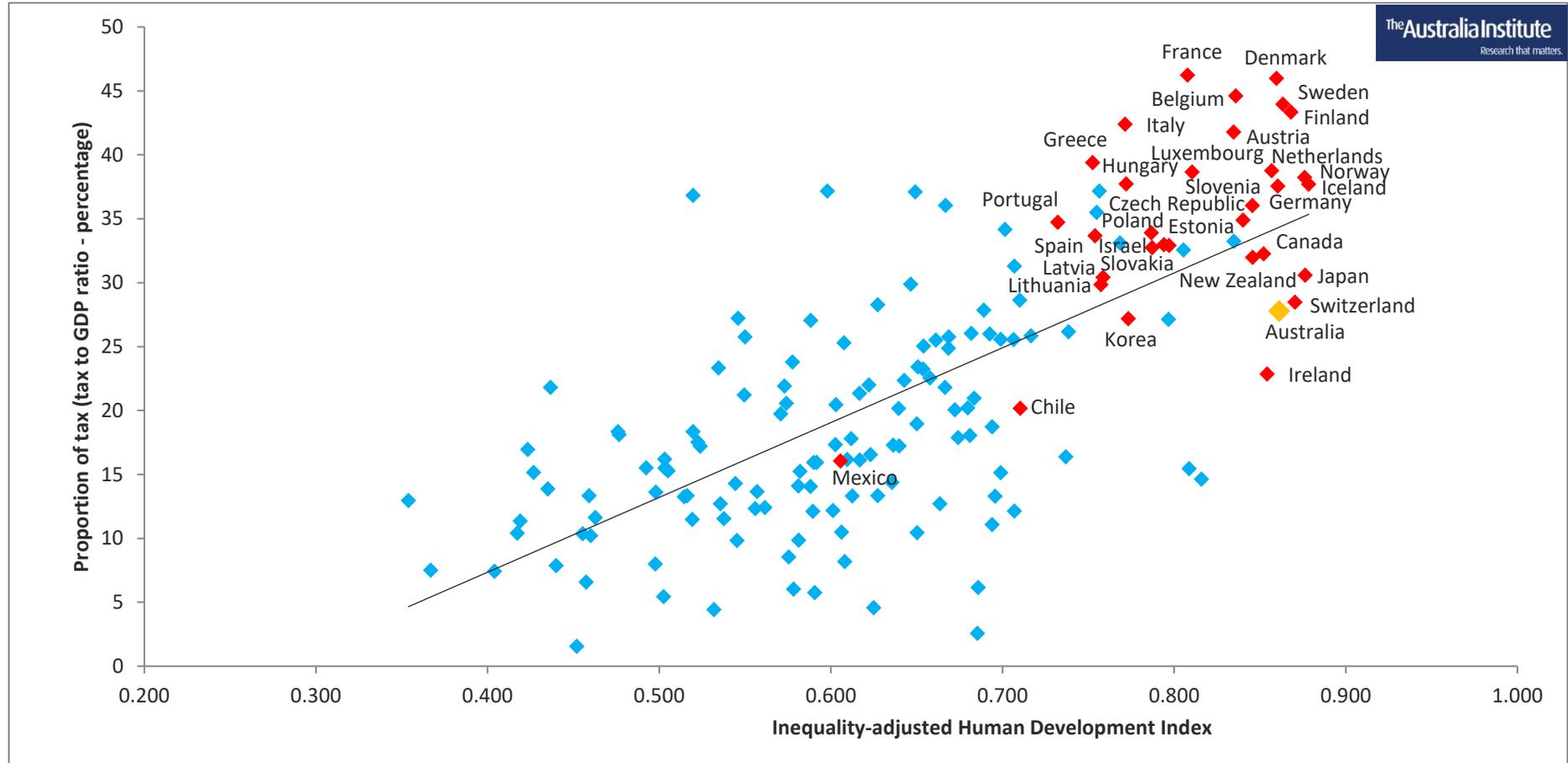
Using the HDI as a measure of wellbeing shows there are no countries that Australia could look at to increase its HDI and lower its level of taxation. There are two countries it could look at to increase its HDI and increase its level of taxation.

INEQUALITY-ADJUSTED HUMAN DEVELOPMENT INDEX

The Inequality-adjusted Human Development Index (IHDI) further expands the HDI to include inequality. Sometimes averages can be distorted by a relatively small number of people who are doing extremely well and hide a large group of people that are doing poorly. Average income suffers from this problem, but so does the HDI since it uses average income, average life expectancy and average years of schooling. Life expectancy and years of schooling are less likely to be as dramatically distorted as average income, but some distortion can still happen.

Figure 14 compares 159 countries' level of taxation (tax to GDP ratio) and their IHDI score. The OECD nations are named and highlighted in red and Australia is highlighted in orange.

Figure 14 – Level of taxation and Inequality-adjusted Human Development Index for 159 countries with OECD countries named and highlighted

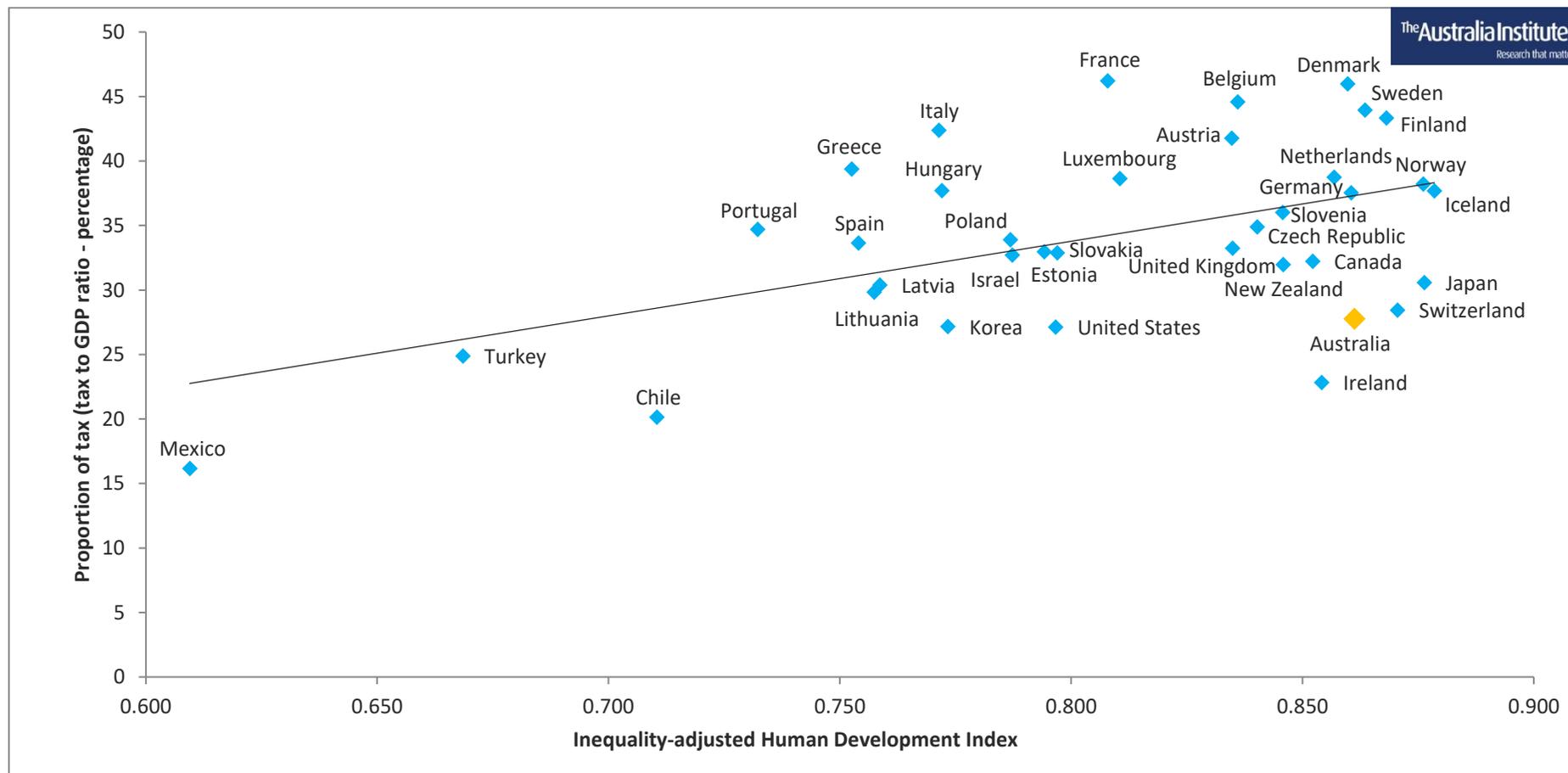


The trendline shows the same positive correlation as both the average income and HDI analysis. This means that higher levels of taxation in a country make it more likely that it will have a higher IHDI score. This is the opposite of what would be expected if the theory that high levels of taxation weaken the economy was correct. With an r squared value of 0.51, the trendline is better at explaining where countries are than both the average income and HDI analysis. It means that 51 per cent of the variation is explained by the trendline.

OCED Countries

The OECD nations dominate those countries with the highest IHDI. Even among OECD countries a higher level of taxation is associated with a higher IHDI as shown in Figure 15.

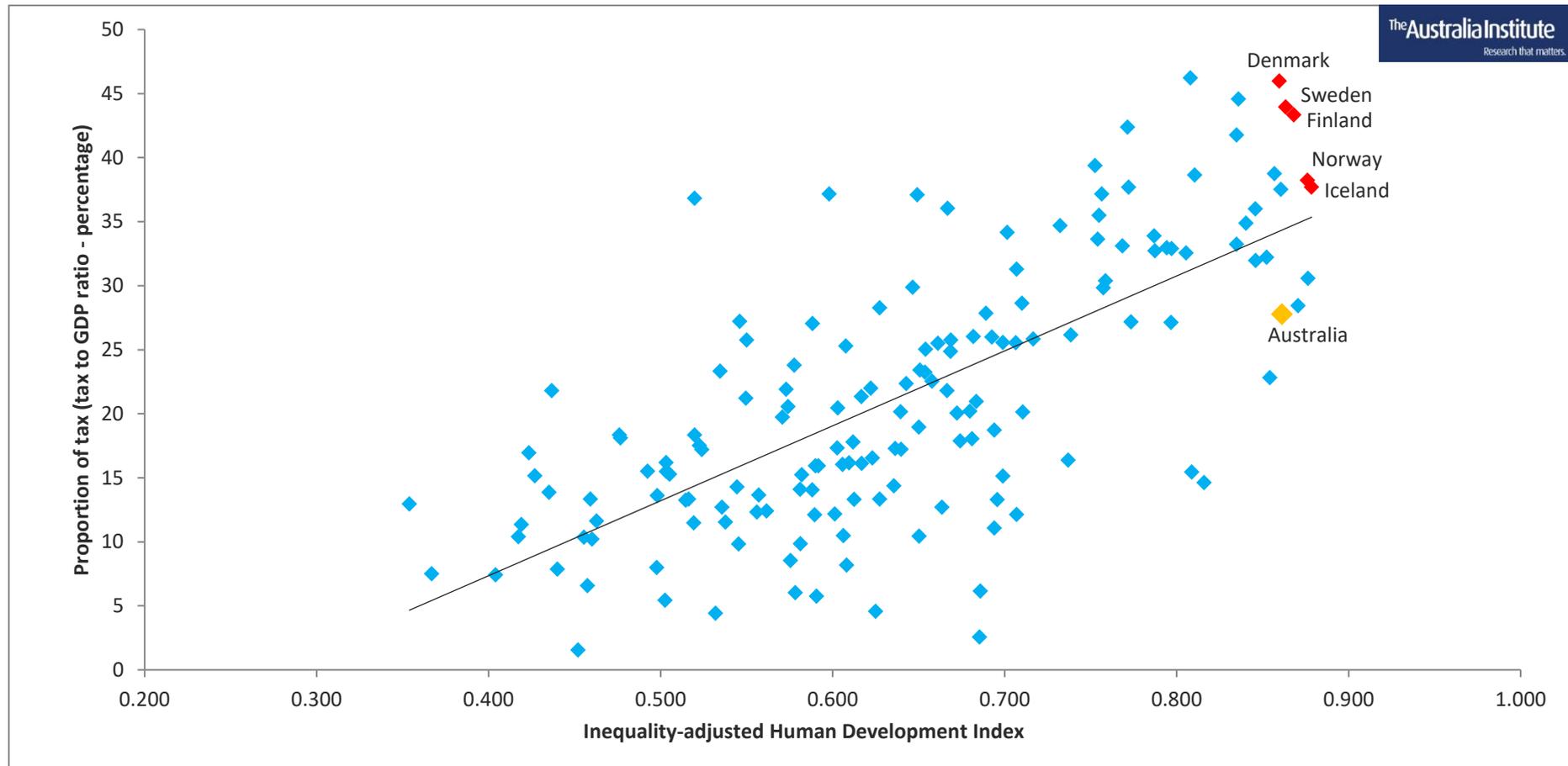
Figure 15 – Level of taxation and Inequality-adjusted Human Development Index for 36 OECD countries



Nordic countries

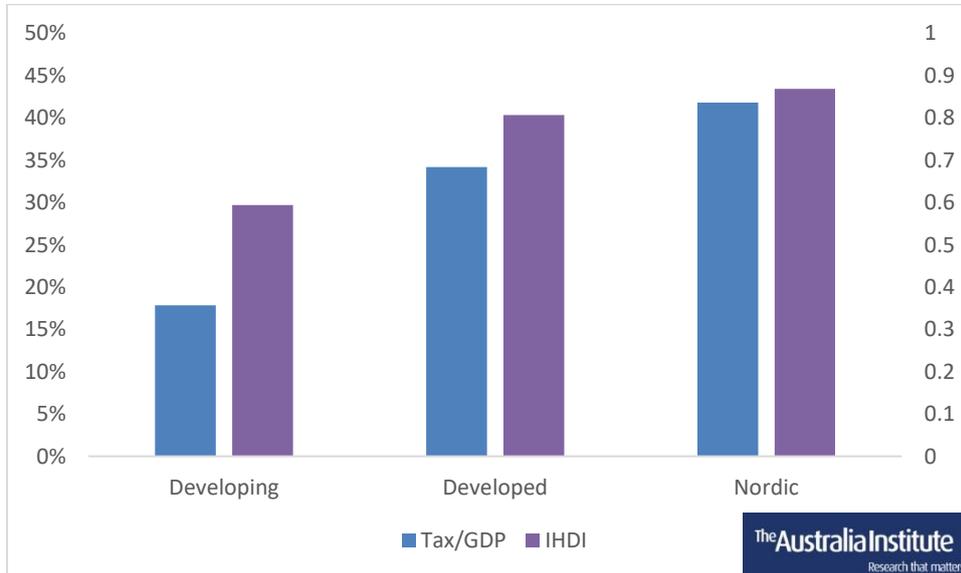
Figure 16 compares level of taxation and IHDI score with the Nordic countries which are named and highlighted in red. All Nordic countries are in the top 10 of all countries by IHDI score, with Iceland filling the top spot, Norway third and Finland and Sweden fifth and sixth.

Figure 16 – Level of taxation and Inequality-adjusted Human Development Index for 159 countries with Nordic countries named and highlighted



Splitting the countries into developing countries, developed countries and Nordic countries, we can see that the average of each group shows that as the average tax to GDP rises so does the average IHDI. This is shown in Figure 17.

Figure 17 – Average tax to GDP and average IHDI for country groups

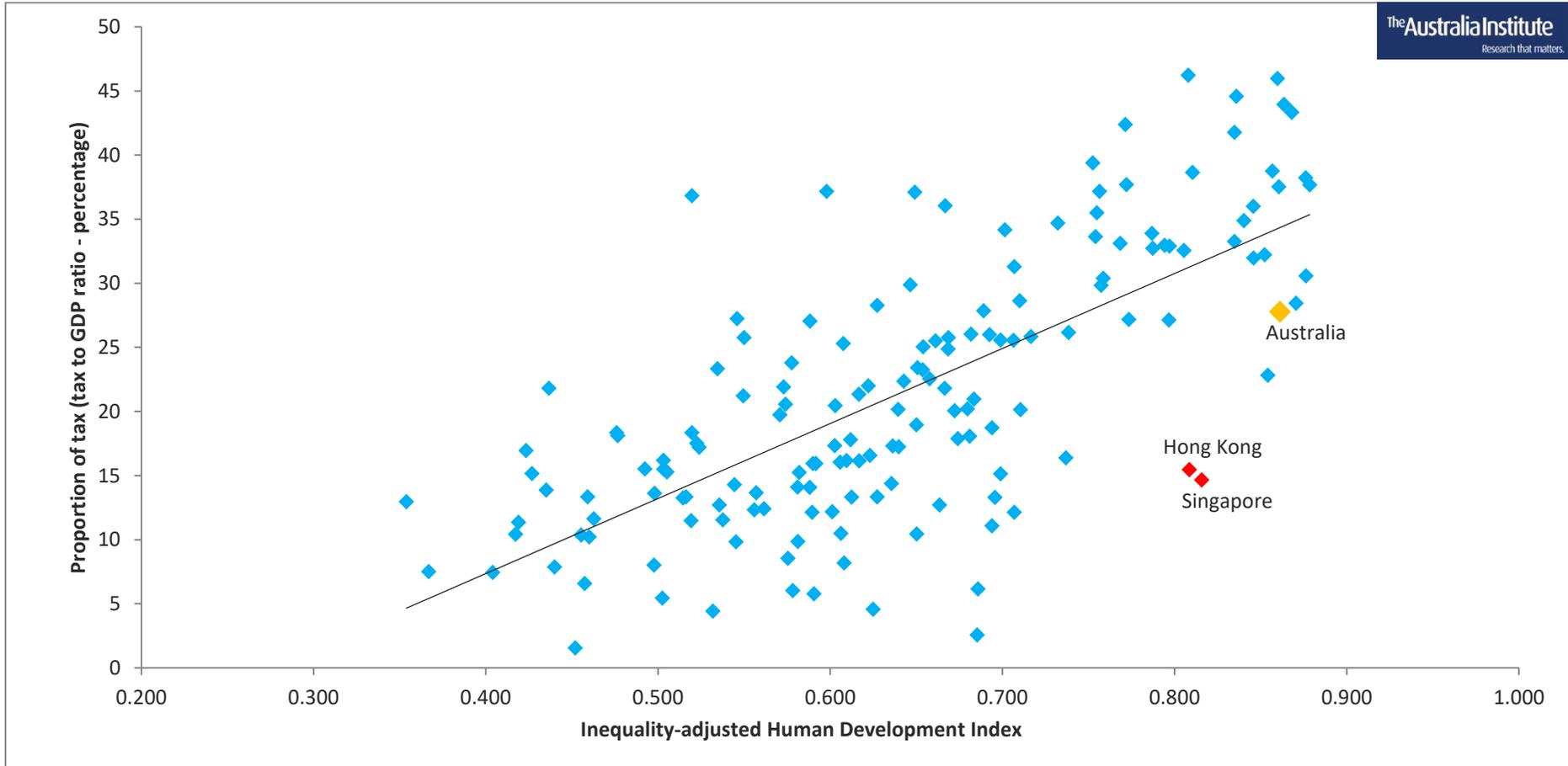


As average tax to GDP rises through the country groups the average IHDI also rises. This is the opposite of what would be expected if the theory that tax weakens the economy was true.

Outliers

There are only two countries that could be considered to fit the theory that low levels of taxation strengthen an economy: Hong Kong and Singapore. They're shown in Figure 18.

Figure 18 – Level of taxation and Inequality-adjusted Human Development Index for 159 countries with outliers named and highlighted

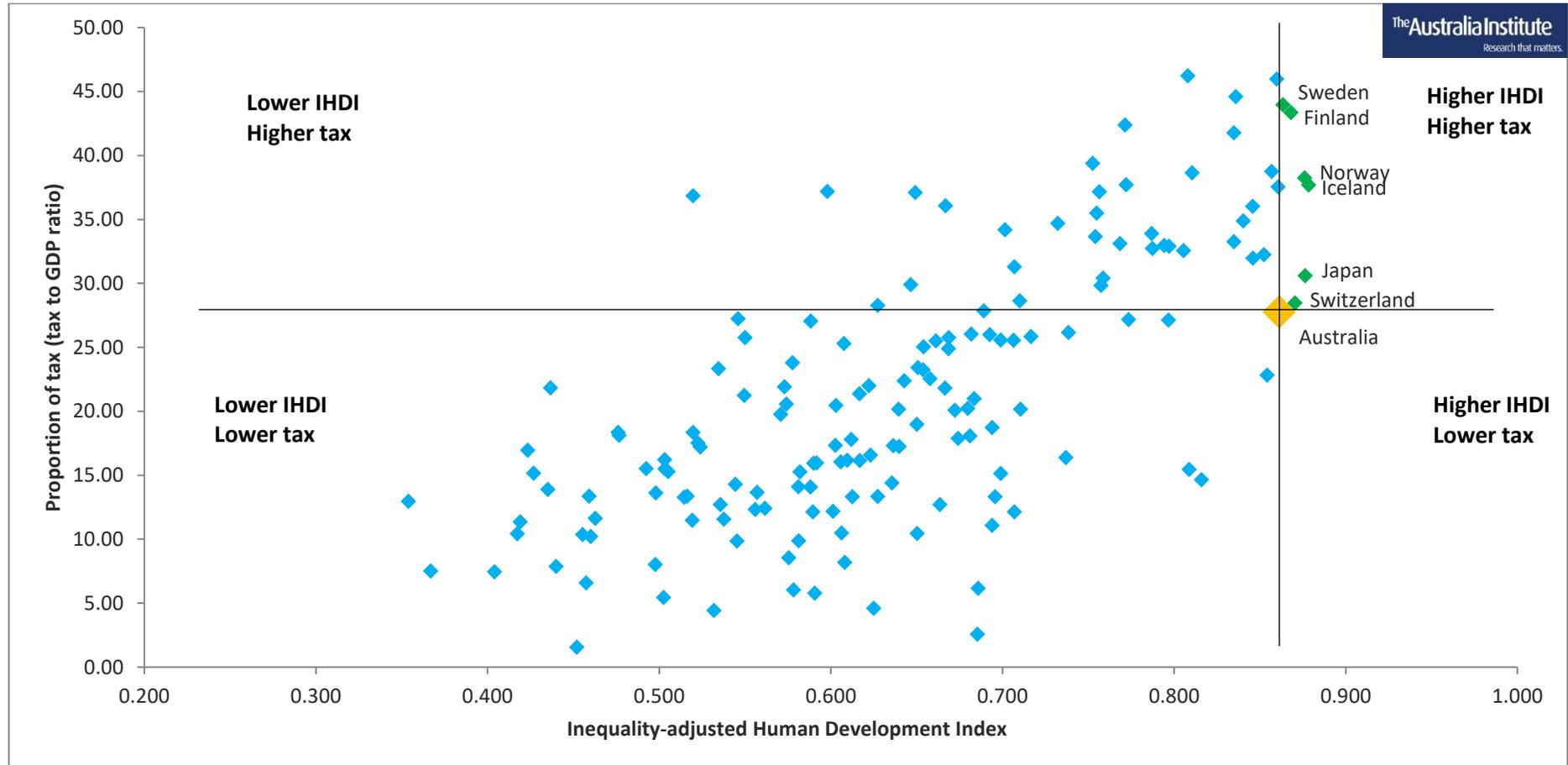


These countries have been outliers in both the average income and HDI analysis and the limitations of using them as evidence that low levels of taxation strengthen the economy are discussed above.

Countries with a higher Inequality-adjusted Human Development Index than Australia

Figure 19 looks at countries that have a higher Inequality-adjusted HDI than Australia and splits them into those with a higher and lower levels of taxation.

Figure 19 – Level of taxation and Inequality-adjusted HDI, countries with higher IHDI than Australia highlighted



It shows that there were no countries with a lower level of taxation and a better IHDI score. There were six countries with higher IHDI and higher levels of taxation. These were Sweden, Finland, Norway, Iceland, Japan and Switzerland. Four of these were Nordic countries.

This again shows that if Australia wanted to increase its measure of wellbeing, in this case the IHDI, then there are no countries it could copy that have a higher level of wellbeing and a lower level of taxation. If it wanted to increase its level of wellbeing then there are many examples of countries with higher levels of wellbeing and higher taxation, many of the them Nordic countries.

Our analysis of average income, HDI and IHDI have all provided evidence that the theory that high levels of taxation weakens the economy and that low levels of taxation strengthens the economy is incorrect. Our analysis shows that a country with higher levels of taxation is more likely to have higher average income, a higher HDI score and a higher IHDI score. This analysis does not show causation. But it does show that there is no evidence lower taxation leads to a stronger economy.

An important consideration from our analysis of the three measures of economic wellbeing is their interconnectedness. Average income makes up part of the HDI and IHDI. Life expectancy and years of schooling are parts of both the HDI and IHDI. Because of this it is not surprising that each of these analyses have produced similar results. What is interesting is that as additional elements are added to average income in order to create a more complete measure of economic wellbeing, the level of taxation becomes more closely correlated with the measure of wellbeing.

LIFE EXPECTANCY

We will now look at two more measures of wellbeing that do not include average income. The first is average life expectancy. This measure of wellbeing is included in the HDI and IHDI. Average life expectancy is a proxy for how well health services are being provided to a country. A country with a strong economy would be expected to be able to afford better health services and would be expected to have a higher average life expectancy. Figure 20 compares 180 countries with their level of taxation and average life expectancy. It also names the OECD countries and highlights them in red.

Figure 20 – Level of taxation and life expectancy for 180 countries with OECD countries named and highlighted

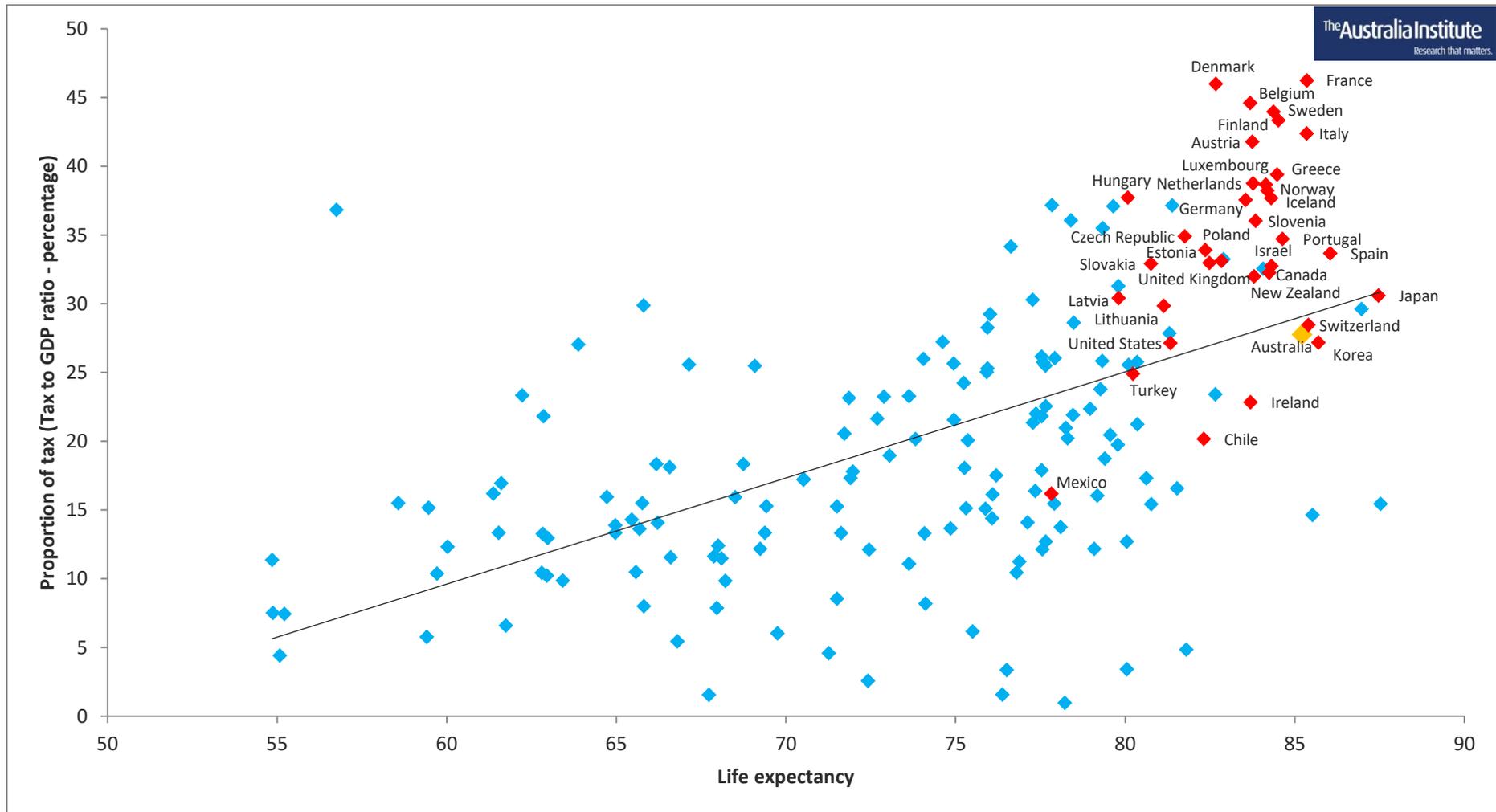
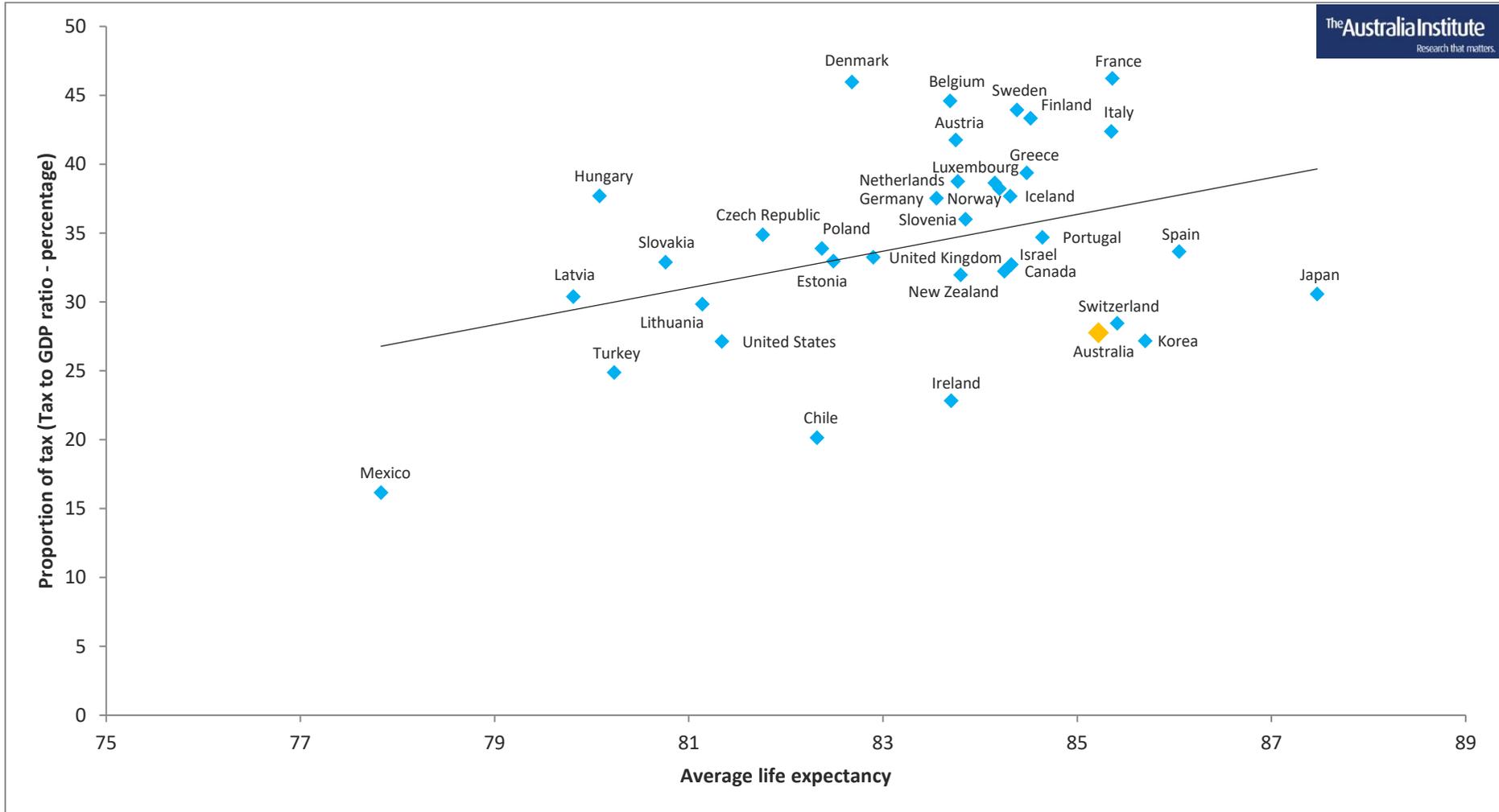


Figure 20 shows the same correlation as our other analyses, an upward sloping trendline that indicates that a country with higher levels of taxation is more likely to have a higher average life expectancy. This is the opposite of what would be expected if the theory that high levels of taxation weaken the economy was correct. The r squared value is 0.34 which means the strength of correlation is moderate. This is stronger than average income but weaker than the HDI and IHDI.

OECD countries

The OECD nations again dominate those countries with the highest life expectancy. Figure 21 compares just the OECD countries. It shows that, even among OECD nations, a higher level of taxation is associated with a higher average life expectancy.

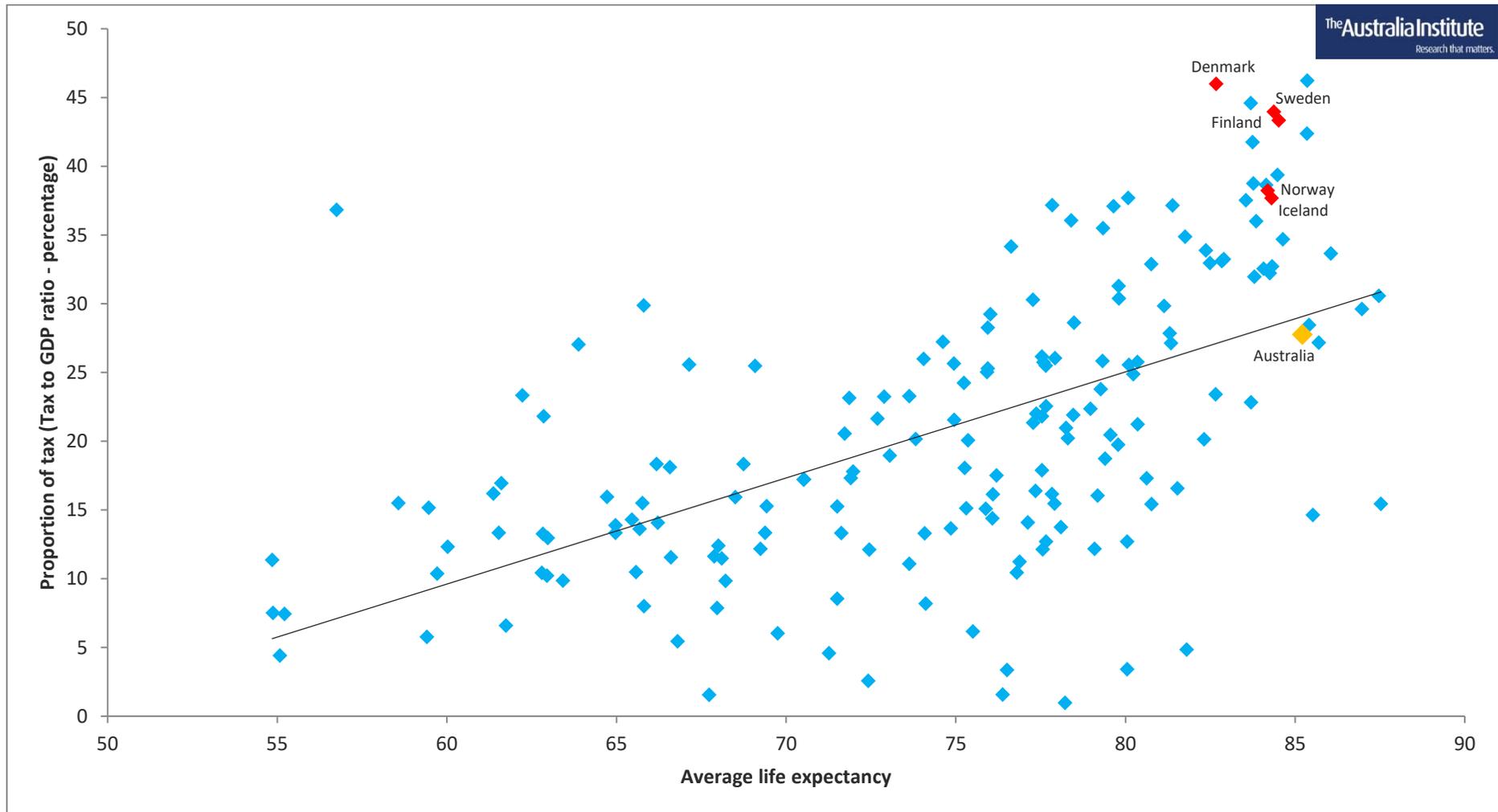
Figure 21 – Level of taxation and life expectancy for 36 OECD countries



Nordic countries

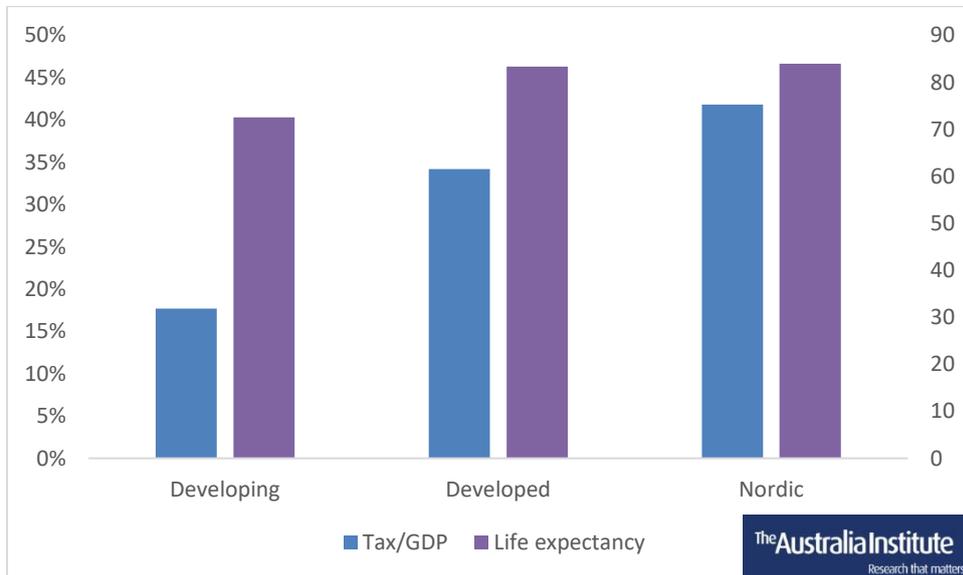
Figure 22 shows the level of taxation and average life expectancy with the Nordic countries named and highlighted in red. It shows that the Nordic countries have some of the highest life expectancies in the world. All the Nordic countries are in the top 30 with four of the five Nordic countries in the top 20.

Figure 22 – Level of taxation and life expectancy for 180 countries with Nordic countries named and highlighted



Splitting the countries into developing countries, developed countries and Nordic countries, we can see that as the average tax to GDP ratio for each group rises so does the average life expectancy. This is shown in Figure 23.

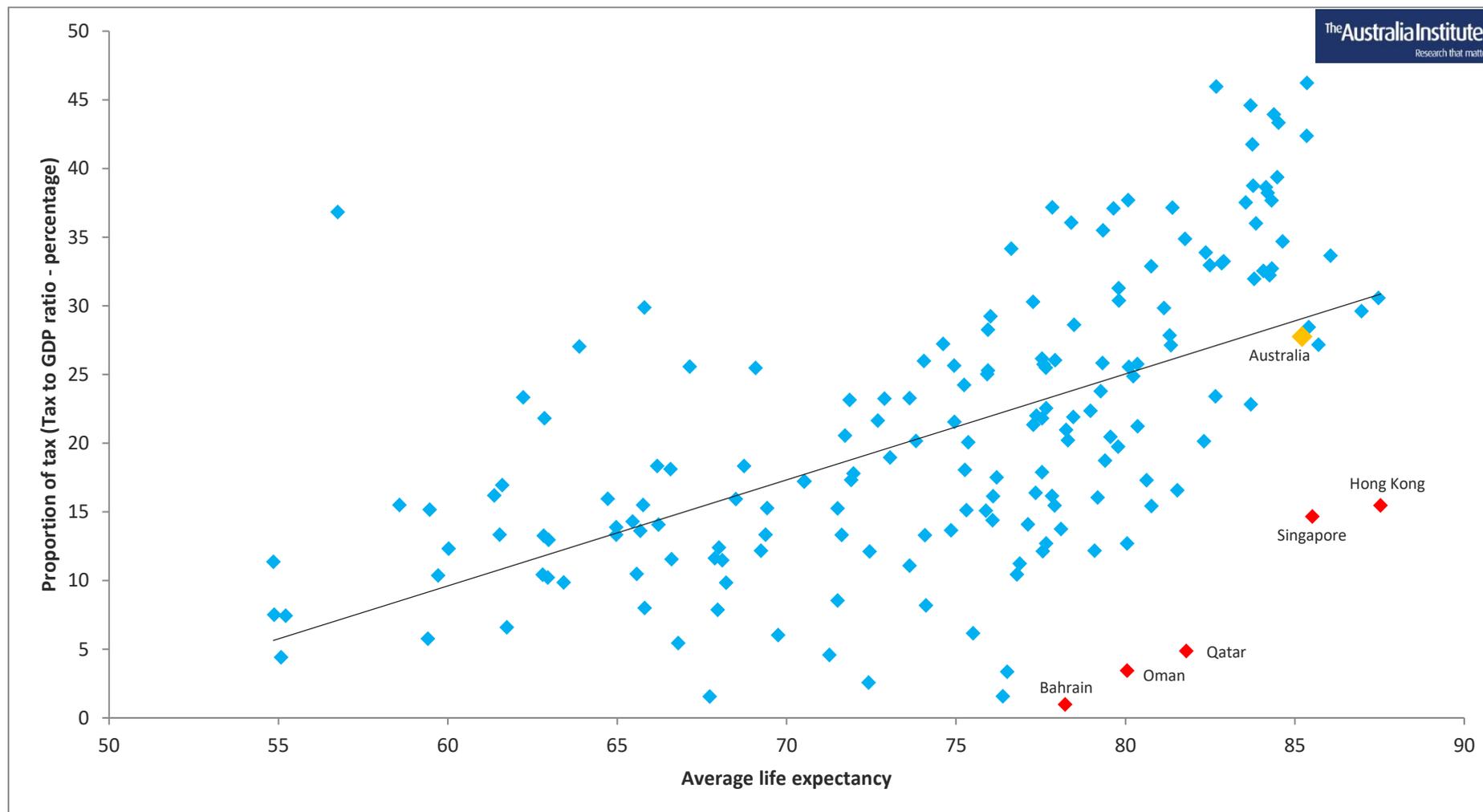
Figure 23 – Average tax to GDP and average life expectancy for country groups



Outliers

Figure 24 shows those countries that more closely align with the theory that low levels of taxation strengthen an economy. It includes similar outliers that we have previously looked at. These outliers are named and highlighted in red.

Figure 24 – Level of taxation and life expectancy for 180 countries with outliers named and highlighted

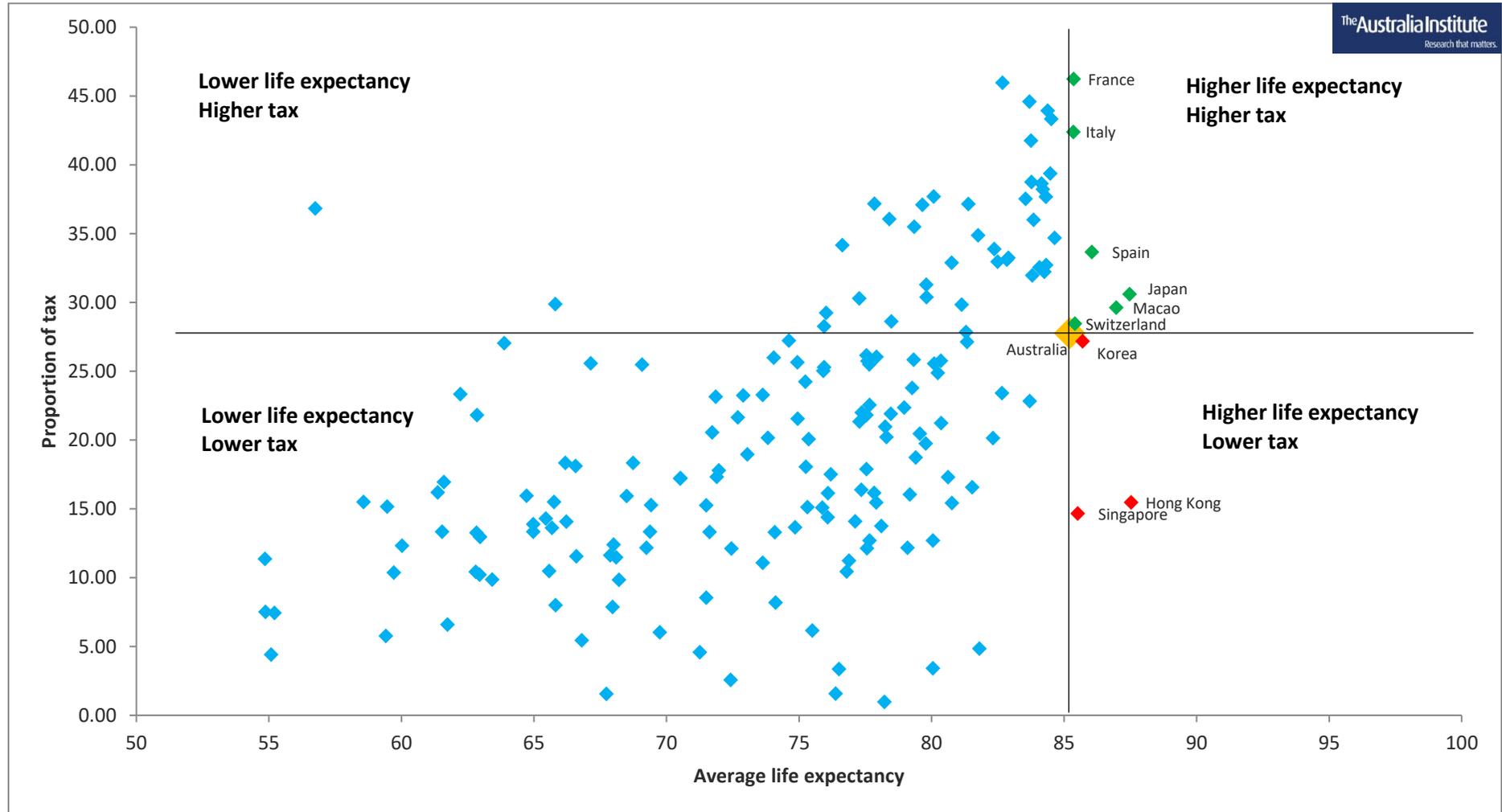


All these outliers have been discussed in previous analysis. Only Hong Kong and Singapore have higher life expectancy than Australia; the oil and gas rich outliers rank below most OECD nations.

Countries with higher average life expectancy than Australia

Figure 25 looks at countries that have higher average life expectancy than Australia and splits them into those with a higher and lower levels of taxation.

Figure 25 – Level of taxation and average life expectancy, countries with higher average life expectancy than Australia highlighted



Three countries/economies have a higher average life expectancy and a lower level of taxation. They are Korea, Hong Kong and Singapore. Hong Kong and Singapore have been discussed previously as outliers. Korea is very close to Australia in both level of taxation and average life expectancy.

There are six countries/economies with higher average life expectancy and higher levels of taxation. They are France, Italy, Spain, Japan, Macao and Switzerland. These countries/economies are a mixed bag with four European and two Asian countries. Interestingly, none of these are Nordic countries. This is the only measure of wellbeing where no Nordic country has a higher level of wellbeing.

HAPPINESS

Our final measure of economic wellbeing is very different than all the other measures. This time we will use the results of the World Happiness Report which gives each country a score on how happy they are. A higher score means higher levels of happiness. This is the most subjective of all our measures of economic wellbeing. It is also not included in any other measure of economic wellbeing used in this paper. However, since the purpose of economic activity is ostensibly to maximise utility, and utility is ultimately happiness, then a country that is succeeding and achieving its economic goals should be happier.

Figure 26 compares 149 countries' level of taxation (tax to GDP ratio) and their World Happiness Report happiness score. The OECD countries are named and highlighted in red and Australia is highlighted in orange.

Figure 26 – Level of taxation and happiness for 149 countries with OECD countries named and highlighted

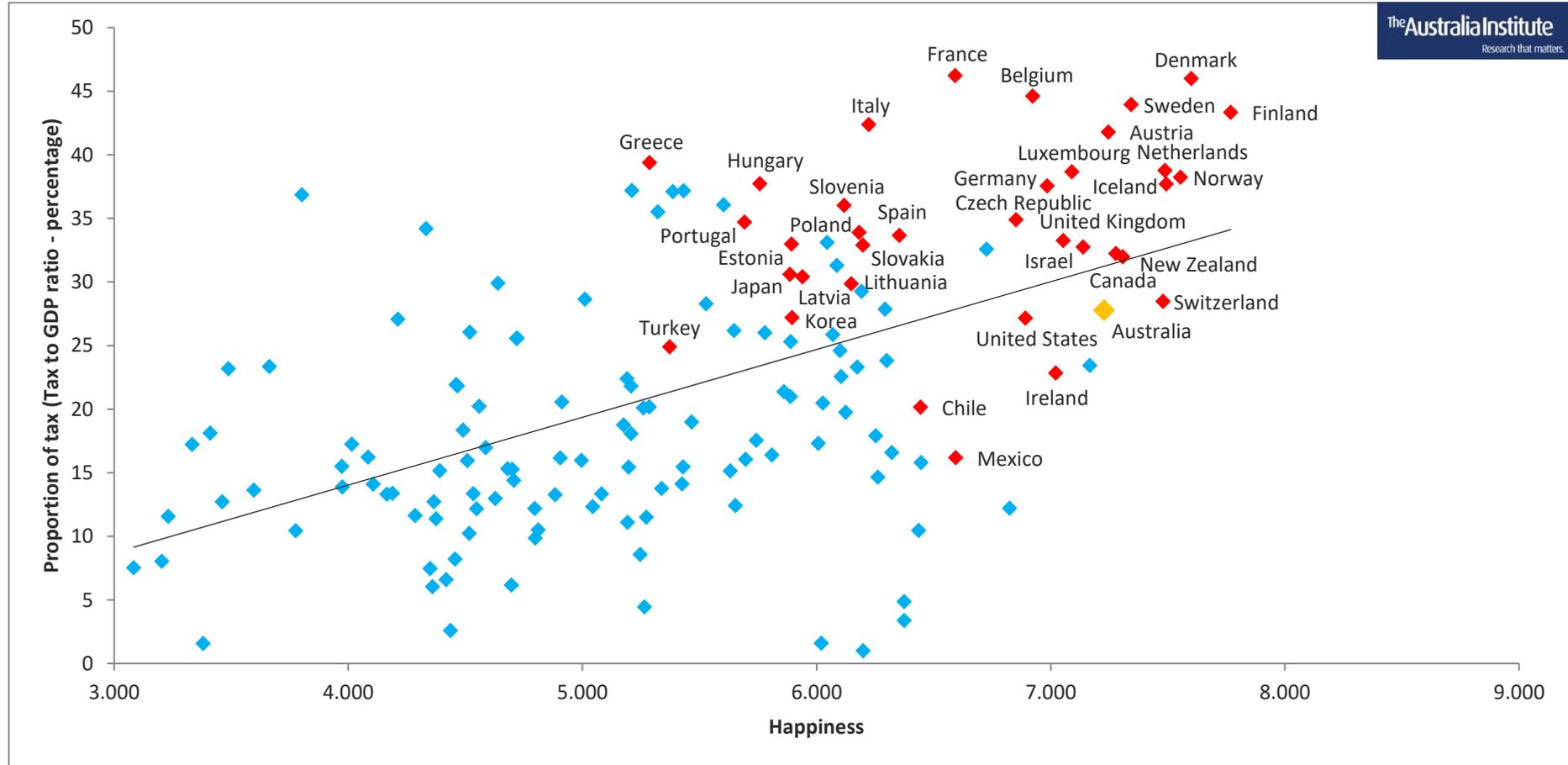
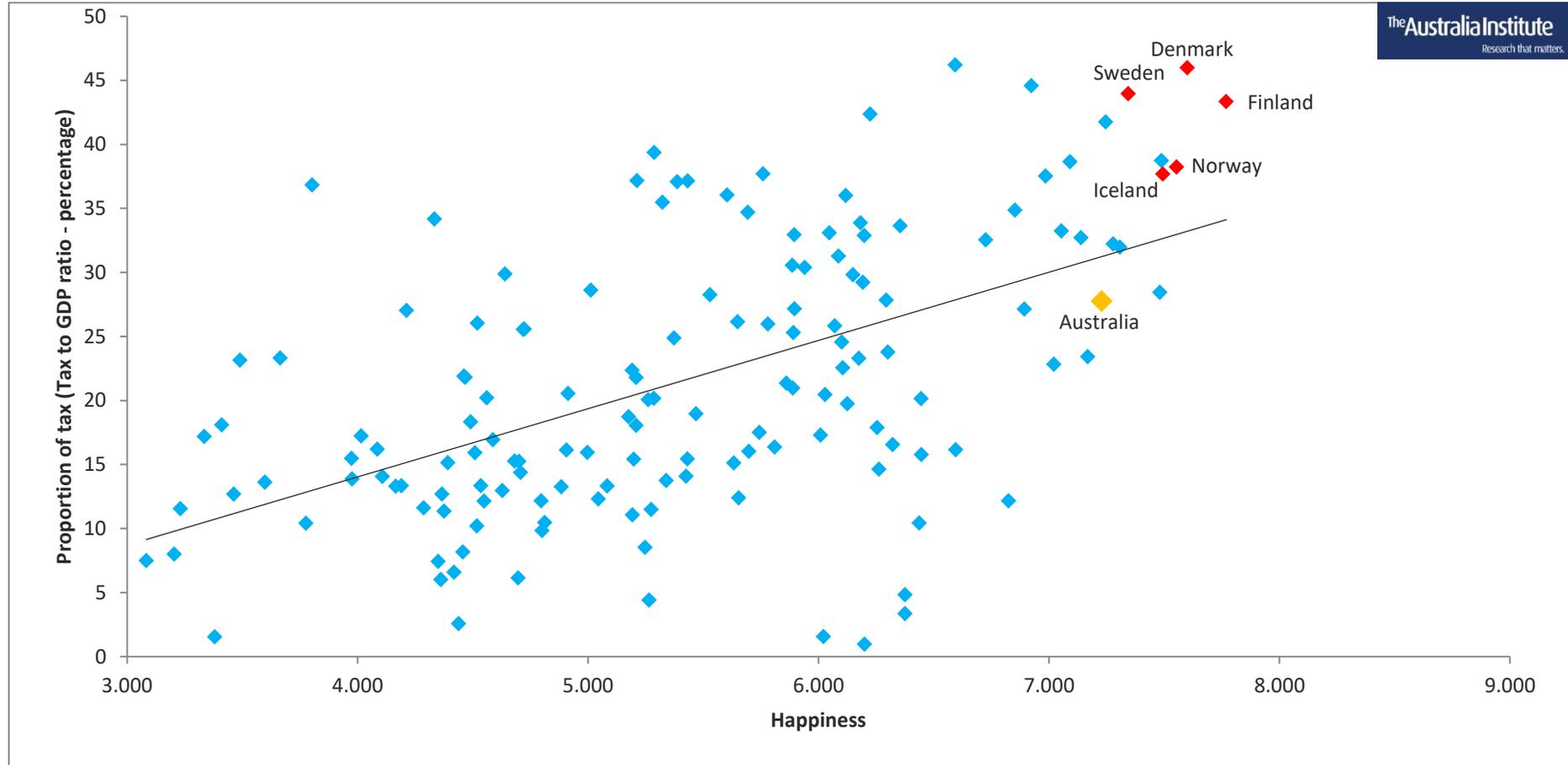


Figure 26 shows higher levels of taxation are correlated with higher levels of happiness. This is not what would be expected if the theory that higher levels of taxation weakens an economy was correct. It is consistent with all our other measures of economic wellbeing. The r squared value is 0.30 which means the strength of correlation is moderate. This is stronger than average income but weaker than the HDI, IHDI and average life expectancy.

It shows that higher levels of taxation are correlated with higher levels of happiness. This is not what would be expected if the theory that higher levels of taxation weakens an economy was correct. But it is consistent with all our other measures of economic wellbeing.

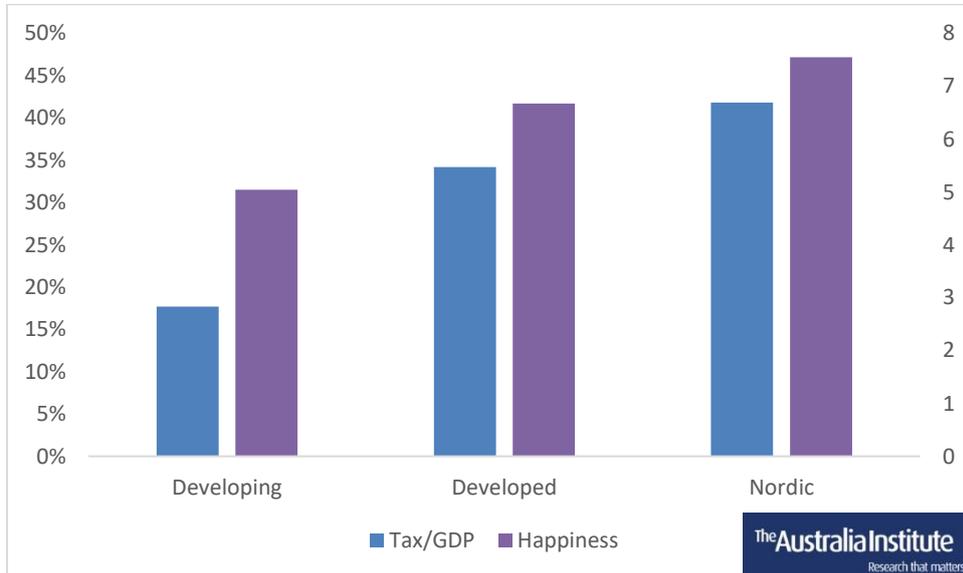
The Nordic countries are some of the happiest in the world. The top four happiest countries are Nordic; Sweden is the seventh happiest country. Figure 27 shows the level of taxation and happiness score for all countries with the Nordic countries highlighted.

Figure 27 – Level of taxation and happiness for 149 countries with Nordic countries named and highlighted



Splitting the countries into developing countries, developed countries and Nordic countries, we can see that as the average tax to GDP ratio for each group rises so does the average happiness. This is shown in Figure 28.

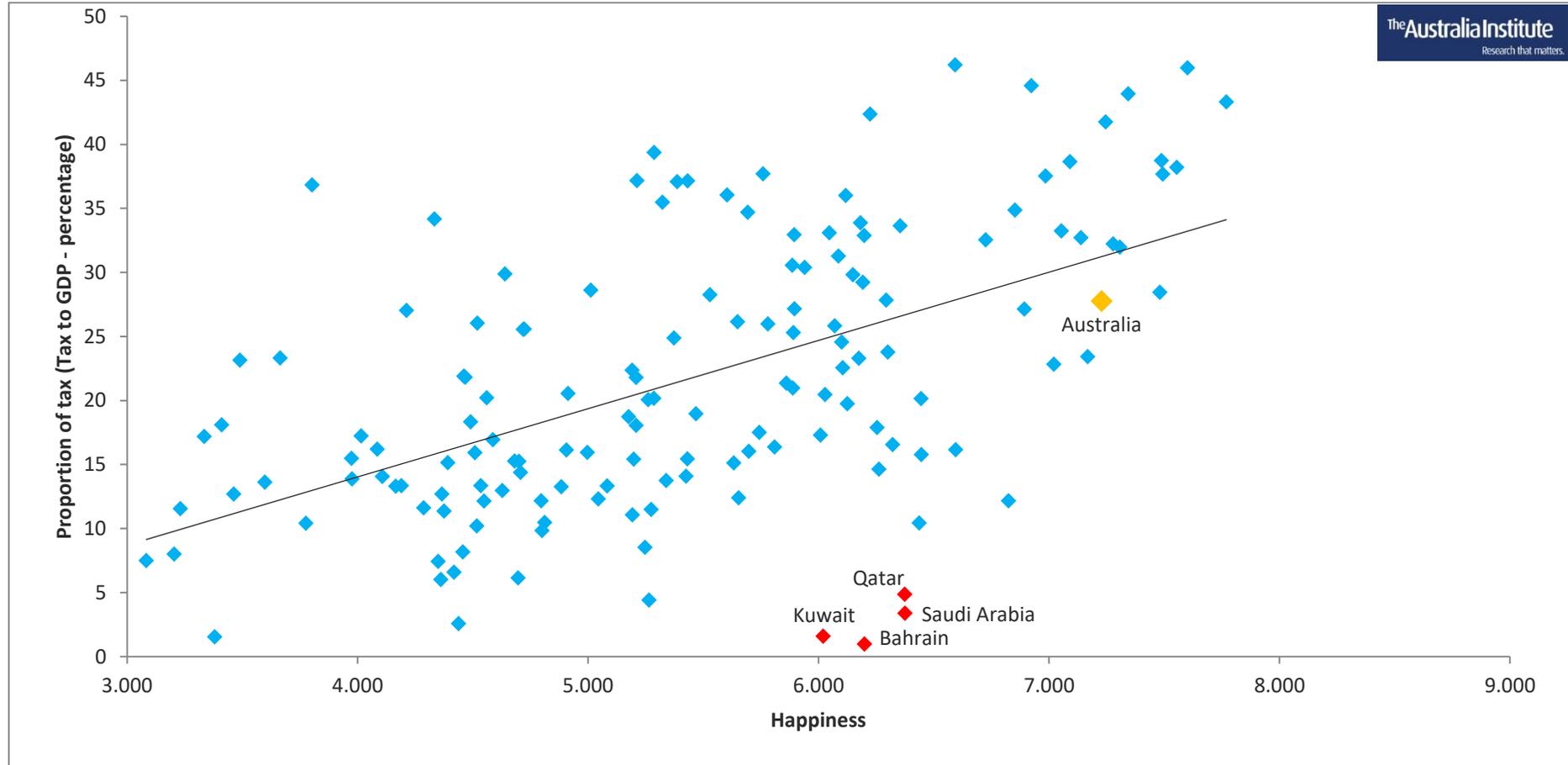
Figure 28 – Average tax to GDP and average life expectancy for country groups



Outliers

There were some countries that did well on the happiness score and had low levels of taxation. A group of oil and gas rich countries were somewhat happy, but they ranked towards the middle of all countries. These oil and gas rich countries are shown in Figure 29. As has been previously explained these outliers get most of their revenue from the profits from oil and/or gas, rather than tax.

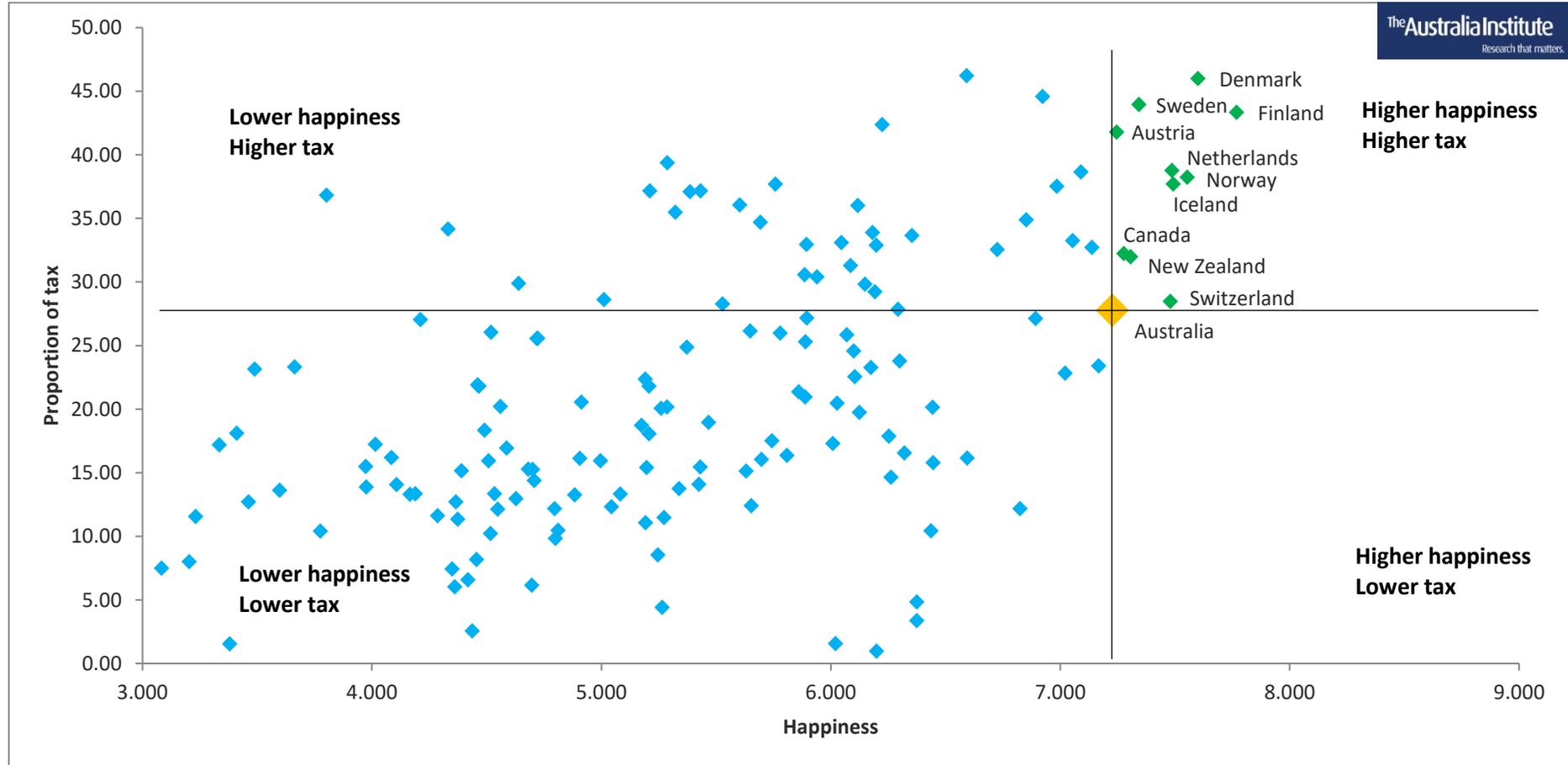
Figure 29 – Level of taxation and happiness for 149 countries with outliers named and highlighted



Countries with higher happiness than Australia

Figure 30 shows those countries with higher happiness scores than Australia and splits them into those with a higher and lower levels of taxation.

Figure 30 – Level of taxation and happiness, countries with higher average happiness than Australia highlighted



There are no countries that are happier than Australia and have a lower level of taxation. There were 10 countries with higher happiness and a higher level of taxation. This included all five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden). It also included Austria, Netherlands, Canada, New Zealand and Switzerland.

If Australia wanted to increase its happiness and lower its level of taxation, then it has no countries to emulate. If it wanted to increase its happiness and increase its taxation, then there are many countries it could emulate and learn policy lessons from. Given how well Nordic countries do on happiness, they could have important policy lessons for Australia.

Conclusion

The paper set out to look for evidence that high levels of taxation caused a weakening of the economy and low levels of taxation strengthened the economy. Comparing countries around the world shows that there is no evidence that higher levels of taxation impact economies in the way the Coalition Government believes. Looking at multiple measures of economic wellbeing appears to show a correlation that works in the opposite direction, although that correlation is not strong. It shows that higher levels of taxation are more likely to show higher levels of economic wellbeing.

While the positive correlation existed for all measures of economic wellbeing, it was stronger for the HDI and IHDI. The broader the measure of economic wellbeing the stronger was the positive correlation.

There were some countries that did seem to match the Government's theory, but closer analysis shows that for many of them, low levels of taxation was only possible because they collected Government revenue in an unusual way. Other lower taxation countries that better fitted the theory were small city states with geographic advantages that would be impossible for other countries to emulate. In all cases, the countries' lower levels of taxation did not adequately explain their relative success on the measure of economic wellbeing.

Splitting the countries into those that have higher levels of welfare and either a higher level of taxation or lower level of taxation than Australia highlighted several things. There were very few countries that had lower levels of taxation and higher levels of welfare. Most of the countries that had higher levels of welfare also had higher levels of taxation.

Of those countries that had higher levels of taxation and higher levels of welfare, they were regularly Nordic countries. These Nordic countries offer Australia an opportunity to study policies that could enable Australia to improve many areas of economic wellbeing.

The analysis done in this paper does not prove that higher levels of taxation cause higher levels of economic wellbeing. It does, however, provide strong evidence that the theory that low levels of taxation strengthens an economy and high levels of taxation weakens an economy is not correct.

Appendix A

Tax to GDP

Every effort was made include as many countries as possible. The tax to GDP ratio, which was used in all the comparisons, came from two sources with data from 188 different countries and economies. The data sources were the IMF's World Revenue Longitudinal Data (WoRLD)¹⁷ and the IMF's Government Finance Statistics Revenue (GFSR).¹⁸ Table 3 shows each country that a tax to GDP ratio was used for, the year the ratio is from and the IMF data set that was used.

Table 3 – Countries/economies with tax to GDP ratios

Country/Economy	Year of data	Source
Afghanistan	2017	WoRLD Longitudinal
Albania	2017	WoRLD Longitudinal
Algeria	2011	GFSR
Angola	2017	GFSR
Antigua and Barbuda	2017	WoRLD Longitudinal
Argentina	2016	WoRLD Longitudinal
Armenia	2015	WoRLD Longitudinal
Australia	2016	WoRLD Longitudinal
Austria	2017	WoRLD Longitudinal
Azerbaijan	2015	WoRLD Longitudinal
Bahamas	2017	WoRLD Longitudinal
Bahrain	2017	WoRLD Longitudinal
Bangladesh	2016	WoRLD Longitudinal
Barbados	2016	WoRLD Longitudinal
Belarus	2017	WoRLD Longitudinal
Belgium	2017	WoRLD Longitudinal
Belize	2017	WoRLD Longitudinal
Benin	2017	WoRLD Longitudinal
Bhutan	2016	WoRLD Longitudinal
Bolivia	2016	WoRLD Longitudinal
Bosnia & Herzegovina	2016	WoRLD Longitudinal
Botswana	2017	WoRLD Longitudinal
Brazil	2016	WoRLD Longitudinal
Brunei Darussalam	2017	WoRLD Longitudinal
Bulgaria	2016	WoRLD Longitudinal
Burkina Faso	2017	WoRLD Longitudinal

¹⁷ International Monetary Fund, *World Revenue Longitudinal Data (WoRLD)*, IMF Data, available at <<http://data.imf.org/?sk=77413F1D-1525-450A-A23A-47AEED40FE78>>

¹⁸ International Monetary Fund, *Government Finance Statistics (GFS)*, IMF Data, available at <<http://data.imf.org/?sk=FA66D646-6438-4A65-85E5-C6C4116C4416>>

Burundi	2017	WoRLD Longitudinal
Cape Verde	2016	GFSR
Cambodia	2016	WoRLD Longitudinal
Cameroon	2017	WoRLD Longitudinal
Canada	2017	WoRLD Longitudinal
Central African Rep.	2017	WoRLD Longitudinal
Chad	2017	WoRLD Longitudinal
Chile	2017	WoRLD Longitudinal
China	2016	WoRLD Longitudinal
Colombia	2016	WoRLD Longitudinal
Comoros	2017	WoRLD Longitudinal
Congo, Republic of	2012	GFSR
Congo, Dem. Rep. of	2017	WoRLD Longitudinal
Costa Rica	2017	GFSR
Cote d'Ivoire	2017	WoRLD Longitudinal
Croatia	2014	WoRLD Longitudinal
Cyprus	2016	WoRLD Longitudinal
Czech Republic	2017	WoRLD Longitudinal
Denmark	2017	WoRLD Longitudinal
Djibouti	2017	WoRLD Longitudinal
Dominica	2017	WoRLD Longitudinal
Dominican Republic	2017	WoRLD Longitudinal
Ecuador	2016	WoRLD Longitudinal
Egypt	2017	WoRLD Longitudinal
El Salvador	2016	WoRLD Longitudinal
Equatorial Guinea	2017	WoRLD Longitudinal
Eritrea	2017	WoRLD Longitudinal
Estonia	2017	WoRLD Longitudinal
Eswatini	2017	WoRLD Longitudinal
Ethiopia	2017	WoRLD Longitudinal
Fiji	2015	WoRLD Longitudinal
Finland	2017	WoRLD Longitudinal
France	2017	WoRLD Longitudinal
Gabon	2017	WoRLD Longitudinal
Gambia	2017	WoRLD Longitudinal
Georgia	2017	WoRLD Longitudinal
Germany	2017	WoRLD Longitudinal
Ghana	2015	WoRLD Longitudinal
Greece	2017	WoRLD Longitudinal
Grenada	2017	WoRLD Longitudinal
Guatemala	2016	WoRLD Longitudinal
Guinea	2017	WoRLD Longitudinal
Guinea-Bissau	2017	WoRLD Longitudinal
Guyana	2016	WoRLD Longitudinal
Haiti	2017	WoRLD Longitudinal
Honduras	2016	WoRLD Longitudinal
Hong Kong	2014	WoRLD Longitudinal
Hungary	2017	WoRLD Longitudinal

Iceland	2017	WoRLD Longitudinal
India	2016	WoRLD Longitudinal
Indonesia	2017	WoRLD Longitudinal
Iran	2009	WoRLD Longitudinal
Iraq	2016	WoRLD Longitudinal
Ireland	2017	WoRLD Longitudinal
Israel	2017	WoRLD Longitudinal
Italy	2017	WoRLD Longitudinal
Jamaica	2012	WoRLD Longitudinal
Japan	2016	WoRLD Longitudinal
Jordan	2017	WoRLD Longitudinal
Kazakhstan	2017	WoRLD Longitudinal
Kenya	2016	WoRLD Longitudinal
Kiribati	2017	WoRLD Longitudinal
Korea	2017	GFSR
Kosovo	2017	GFSR
Kuwait	2017	WoRLD Longitudinal
Kyrgyzstan	2017	WoRLD Longitudinal
Lao	2017	WoRLD Longitudinal
Latvia	2017	WoRLD Longitudinal
Lebanon	2017	WoRLD Longitudinal
Lesotho	2017	WoRLD Longitudinal
Liberia	2012	WoRLD Longitudinal
Lithuania	2017	WoRLD Longitudinal
Luxembourg	2017	WoRLD Longitudinal
Macao	2017	GFSR
Madagascar	2017	WoRLD Longitudinal
Malawi	2017	WoRLD Longitudinal
Malaysia	2016	WoRLD Longitudinal
Maldives	2017	WoRLD Longitudinal
Mali	2017	WoRLD Longitudinal
Malta	2016	WoRLD Longitudinal
Marshall Islands	2017	WoRLD Longitudinal
Mauritania	2017	WoRLD Longitudinal
Mauritius	2017	WoRLD Longitudinal
Mexico	2017	WoRLD Longitudinal
Micronesia	2017	WoRLD Longitudinal
Moldova	2017	WoRLD Longitudinal
Mongolia	2016	WoRLD Longitudinal
Morocco	2017	WoRLD Longitudinal
Mozambique	2017	WoRLD Longitudinal
Myanmar	2017	GFSR
Namibia	2017	WoRLD Longitudinal
Nepal	2017	WoRLD Longitudinal
Netherlands	2017	WoRLD Longitudinal
New Zealand	2017	WoRLD Longitudinal
Nicaragua	2016	WoRLD Longitudinal
Niger	2017	WoRLD Longitudinal

Nigeria	2017	WoRLD Longitudinal
North Macedonia	2016	WoRLD Longitudinal
Norway	2017	WoRLD Longitudinal
Oman	2017	WoRLD Longitudinal
Pakistan	2017	WoRLD Longitudinal
Palau	2017	WoRLD Longitudinal
Panama	2016	WoRLD Longitudinal
Papua New Guinea	2017	WoRLD Longitudinal
Paraguay	2016	WoRLD Longitudinal
Peru	2016	WoRLD Longitudinal
Philippines	2017	WoRLD Longitudinal
Poland	2017	WoRLD Longitudinal
Portugal	2017	WoRLD Longitudinal
Qatar	2017	WoRLD Longitudinal
Romania	2016	WoRLD Longitudinal
Russia	2017	GFSR
Rwanda	2015	WoRLD Longitudinal
Samoa	2017	WoRLD Longitudinal
San Marino	2016	WoRLD Longitudinal
Sao Tome & Principe	2017	WoRLD Longitudinal
Saudi Arabia	2017	WoRLD Longitudinal
Senegal	2017	WoRLD Longitudinal
Serbia	2012	WoRLD Longitudinal
Seychelles	2015	WoRLD Longitudinal
Sierra Leone	2017	WoRLD Longitudinal
Singapore	2017	WoRLD Longitudinal
Slovakia	2017	WoRLD Longitudinal
Slovenia	2017	WoRLD Longitudinal
Solomon Islands	2017	WoRLD Longitudinal
South Africa	2016	WoRLD Longitudinal
Spain	2017	WoRLD Longitudinal
Sri Lanka	2017	WoRLD Longitudinal
St. Kitts and Nevis	2017	WoRLD Longitudinal
St. Lucia	2017	WoRLD Longitudinal
St. Vincent & Grens.	2017	WoRLD Longitudinal
Sudan	2017	WoRLD Longitudinal
Suriname	2017	WoRLD Longitudinal
Sweden	2017	WoRLD Longitudinal
Switzerland	2017	WoRLD Longitudinal
Syria	2010	WoRLD Longitudinal
Taiwan	2017	WoRLD Longitudinal
Tajikistan	2017	WoRLD Longitudinal
Tanzania	2012	WoRLD Longitudinal
Thailand	2017	WoRLD Longitudinal
Timor-Leste	2017	WoRLD Longitudinal
Togo	2017	WoRLD Longitudinal
Tonga	2017	WoRLD Longitudinal
Trinidad and Tobago	2013	WoRLD Longitudinal

Tunisia	2017	WoRLD Longitudinal
Turkey	2017	WoRLD Longitudinal
Turkmenistan	2017	WoRLD Longitudinal
Tuvalu	2017	WoRLD Longitudinal
Uganda	2017	WoRLD Longitudinal
Ukraine	2017	WoRLD Longitudinal
UAE	2017	WoRLD Longitudinal
United Kingdom	2017	WoRLD Longitudinal
United States	2017	WoRLD Longitudinal
Uruguay	2016	WoRLD Longitudinal
Uzbekistan	2017	WoRLD Longitudinal
Vanuatu	2017	WoRLD Longitudinal
Venezuela	2016	WoRLD Longitudinal
Vietnam	2017	WoRLD Longitudinal
West Bank and Gaza (Palestine)	2017	GFSR
Yemen	2017	WoRLD Longitudinal
Zambia	2013	WoRLD Longitudinal
Zimbabwe	2012	WoRLD Longitudinal

GDP per capita

GDP per capita is shown in US dollar current prices. The data comes from the IMF's World Economic Outlook.¹⁹ All the data is from 2017. Data from 185 countries was used. There are three countries that were included in the list of countries with tax to GDP ratios in Table 3 that were not included in the analysis on average income. They are Haiti, Syria and the West Bank and Gaza (Palestine).

Human Development Index (HDI)

The HDI builds on average income as a measure of economic wellbeing. It includes average income (GDP per capita) as well as average life expectancy and years of schooling.

Data for 183 countries and economies was found for the HDI. Values come from 2017 and the data can be found in the United Nations Development Program's Human Development Indices and Indicators.²⁰ There are five countries and economies that were included in the list of countries and economies with tax to GDP ratios in Table 3 that were not included in the analysis on the HDI. They are Kosovo, Macao, San Marino, Taiwan and Tuvalu.

¹⁹ International Monetary Fund, *GDP per capita*, IMF DataMapper, available at <<https://www.imf.org/external/datamapper/NGDPDPC@WEO/OEMDC/ADVEC/WEOORLD?year=2019>>

²⁰ United Nations, *Human Development Indices and Indicators: 2018 Statistical Update*, United Nations Development Program, available at <http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf>

Inequality-adjusted HDI (IHDI)

The IHDI builds on the HDI as a measure of economic wellbeing. It adjusts each of the elements of the HDI for inequality.

Data for 159 countries and economies was found for the IHDI. Values come from 2017 and the data can be found in the United Nations Development Program's Human Development Indices and Indicators.²¹ There are 29 countries and economies that were included in the list of countries and economies with tax to GDP ratios in Table 3 that were not included in the analysis on the IHDI. They are listed in Table 4.

Table 4 – Countries and economies with tax to GDP ratios but no data on IHDI

Country/Economy
Antigua and Barbuda
Bahamas
Bahrain
Botswana
Brunei Darussalam
Dominica
Fiji
Grenada
Kosovo
Kuwait
Lebanon
Macao
Malaysia
Marshall Islands
Oman
Palau
Qatar
Samoa
San Marino
Saudi Arabia
Seychelles
St. Kitts and Nevis
St. Vincent & Grens.
Taiwan
Tonga
Trinidad and Tobago
Tuvalu
United Arab Emirates
Uzbekistan

²¹ United Nations, *Human Development Indices and Indicators: 2018 Statistical Update*, United Nations Development Program, available at http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf

Life Expectancy

Data for 180 countries and economies was found for both average life expectancy and tax to GDP. Data comes from the United Nations Population Division 2019 Revision of World Population Prospects.²² Life expectancy is the life expectancy at birth for females and is the average from 2015 to 2020. There are eight countries and economies that were included in the list of countries and economies with tax to GDP ratios in Table 3 that were not included in the analysis on life expectancy. They are Dominica, Kosovo, Marshal Islands, Palau, San Marino, St. Kitts and Nevis, Taiwan and Tuvalu.

Happiness

Data for 149 countries was found for both Happiness and tax to GDP. The data on happiness comes from the United Nations World Happiness Report 2019 and includes survey data from 2016 to 2018.²³ There are 39 countries and economies that were included in the list of countries and economies with tax to GDP ratios in Table 3 that were not included in the analysis on happiness. They are listed in Table 5.

Table 5 – Countries and economies with tax to GDP ratios but no data on happiness

Country/Economy
Angola
Antigua and Barbuda
Bahamas
Barbados
Belize
Brunei Darussalam
Cape Verde
Cote d'Ivoire
Djibouti
Dominica
Equatorial Guinea
Eritrea
Fiji
Grenada
Guinea-Bissau
Guyana
Kiribati
Macao
Maldives
Marshall Islands

²² United Nations, *Life expectancy at birth, females*, UNDATA, available at <<http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3A67#PopDiv>>

²³ Helliwell J, Layard R & Sacks J, *World Happiness Report 2019*, available at <<https://s3.amazonaws.com/happiness-report/2019/WHR19.pdf>>

Micronesia
North Macedonia
Oman
Palau
Papua New Guinea
Samoa
San Marino
Sao Tome & Principe
Seychelles
Solomon Islands
St. Kitts and Nevis
St. Lucia
St. Vincent & Grens.
Sudan
Suriname
Timor-Leste
Tonga
Tuvalu
Vanuatu

Missing countries

The United Nations has 193 member states and two observers.²⁴ This paper uses 183 member states and one observer (Palestine/West Bank and Gaza) in at least one of the analyses. A list of the 10 member states and one observer (Holy See) for which no suitable data could be found for any analyses is shown in Table 6.

Table 6 – List of UN member states and observers not used

Country
Andorra
Cuba
Holy See
Libya
Liechtenstein
Monaco
Montenegro
Nauru
North Korea
Somalia
South Sudan

²⁴ United Nations, *Member States*, available at <<https://www.un.org/en/member-states/>>

Economies

Four independent economies were used in some of the analyses in this paper. These are not UN member states or observers but do have quite separate economies from the member states that claim sovereignty over their territory. A list of these economies is included in Table 7.

Table 7 – List of economies (not UN member states/observers) used in some of the analyses

Economy
Hong Kong
Kosovo
Macao
Taiwan

OECD Nations

This paper uses all 36 OECD nations as a proxy for developed countries. The OECD countries are listed in Table 8.

Table 8 – OECD countries

Country
Australia
Austria
Belgium
Canada
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea, South
Latvia
Lithuania
Luxembourg

Mexico
Netherlands
New Zealand
Norway
Poland
Portugal
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States

Nordic countries

The five Nordic countries are listed in Table 9.

Table 9 – Nordic countries

Economy
Denmark
Finland
Iceland
Norway
Sweden