DÁIL ÉIREANN

AN COMHCHOISTE UM AIRGEADAS, CAITEACHAS POIBLÍ AGUS ATHCHÓIRIÚ, AGUS AN TAOISEACH

JOINT COMMITTEE ON FINANCE, PUBLIC EXPENDITURE AND REFORM, AND TAOISEACH

Dé Máirt, 25 Meán Fómhair 2018

Tuesday, 25 September 2018

The Joint Committee met at 2 p.m.

MEMBERS PRESENT:

Deputy Pearse Doherty,	Senator Paddy Burke,
	Senator Rose Conway-Walsh,
	Senator Gerry Horkan.

DEPUTY JOHN MCGUINNESS IN THE CHAIR.

Business of Joint Committee

Chairman: We will go into private session.

The joint committee went into private session at 2.10 p.m. and resumed in public session at 2.35 p.m.

Scrutiny of EU Legislative Proposals

Chairman: Before we go to the main business of our meeting, I wish to deal with the committee's decisions on scrutiny of EU proposals for the public record. The committee has agreed that EU proposals COM (2018) 339 and COM (2018) 354 warrant further scrutiny. The committee has also agreed that EU proposals COM (2018) 338 and COM (2018) 498 do not warrant further scrutiny. Full details will be published on the committee's website.

World Development Report 2019: Discussion

Chairman: I welcome Dr. Djankov, World Bank director, and his colleague. I invite Dr. Djankov to make his opening statement.

Dr. Simeon Djankov: I thank the honourable Chair and members of the committee for this opportunity to address them on some of the main findings in the main publication of the World Bank, the annual World Development Report. This year, the report is on the topic of the future of jobs and how technology affects not just them, but also businesses. Since this topic has been of high interest to the members of this committee and generally in Ireland and the rest of the EU, we believed it to be a good opportunity for us to share some initial views. In the materials provided, committee members have an overview of the report. It will be published at the World Bank-International Monetary Fund annual meeting in approximately three weeks' time. We are meeting today ahead of the publication of the report, so I will share several of its main findings.

The World Bank works not just in Europe, but in 190 or so client countries around the world, making this a truly global report. Our comparative strength is being able to use a lot of economic analyses from around the world to prove and disprove some of the statements around the future of work. Much of the popular economics on this topic over the past decade has made two points. First, new technology - robots, as it were - will rapidly displace workers and, as a result, many economies are heading towards mass unemployment or at least cyclical waves of large unemployment. Second and associated with that, as a result of robots replacing workers in what are often well-paying jobs, inequality in many countries is rising.

Taking these claims seriously, we applied the data to them and discovered that, at least until now, neither has been correct. While there are industries, both basic ones like transport and some services and a number of high-skilled sectors like accounting and legal services, where robots - more generally automation - displace workers, technology also creates many more jobs in traditional sectors as well as many new sectors. As a result, the world gains approximately 30 million net new jobs every year. Many of these go to emerging markets and - I will speak on this in a moment - countries with high levels of human capital, for example, Ireland. There is a high correlation between technology and the possibility of creating jobs and how high the average level of human capital in a country is.

We also looked at the second claim, namely, that due to this disruptive nature of technology, inequality is rising around the world. We document that at least as of now that is also not the case. Income inequality during the past ten to 15 years has been falling, not rising. There are several countries where that is not the case, South Africa being a well-described case. On average, however, income inequality has been reduced during the past decade.

In the report we ask what this means. We found there are two trends that deserve EU attention. The first trend is that while jobs, on average, are not disappearing due to robots as much as feared, the transitions between jobs are getting longer and the average time workers spend on any given job has been drastically reduced. We have numbers for many of the European Union countries. In the past dozen years, data from 2004 until now suggest that the average tenure of workers in any given job has halved from about 14 years on average to about eight years. Workers stay much less time in any given job. There is much more movement. The time workers have between different jobs is increasing quite significantly. More time is spent either finding jobs or spending time in part-time jobs and more flexible labour arrangements.

Why is this interesting for the members of this committee? It is interesting because it may suggest a different way to think about social protection. While our traditional model, especially in Europe, is one where social protection meaning social insurance and pensions are linked to wages in full-time employment, we may need to rethink that set-up with a view to the many workers who have transitions lasting more than a year, sometimes two or three years, during which time they have part-time and more flexible employment. Our report suggests the way to think about these changes to social protection.

What is new about this latest wave of technology is not so much on the worker's side but on the employer's or the firm's side. We document that new technology in many sectors, not only in retail or traditional sectors but in the banking and financial institutions sector, allows a company in a matter of five to seven years to come to a market with new technology and completely take it over. That is a different type of industrial organisation and we have many examples of that in the report. For example, a traditional company such as the Swedish company IKEA took 75 years to become a global force, but now a number of its competitors have taken five to seven years and have become much larger globally. That implies a different industrial organisation but also a different way to think about taxation, tax policy in particular, and competition policy, including in countries like ours. The report is available online and the members will be able to read in detail many of the examples to which I have referred.

I will finish on a personal note. I was a colleague of the members, so to speak, for a number of years. At the beginning of the eurozone crisis I became the finance Minister of Bulgaria. At that time Bulgaria has just adopted what we call the Irish taxation model and our corporate income tax rate decreased dramatically to adopt a flat tax system, a 10% corporate income tax rate and a 10% personal income tax rate, which we have managed to keep to date. When I entered the government and was a member of ECOFIN, I met some of the members' colleagues, former finance Ministers of Ireland, many times and I had core debates with a number of the other members of ECOFIN on the benefits of this type of taxation model. As I recall, this was a difficult period for Ireland and a particularly difficult period for their colleagues to explain why the Irish economy was resilient and would persevere in a matter of a few years. I am very glad to be back here and to see that the Irish economy has persevered and I am sure its income tax system may have improved in some ways but it has persevered with the judgment of time. I will finish on that note. I thank the members for their attention.

Senator Rose Conway-Walsh: I thank Dr. Djankov for outlining this report. I find this exchange very interesting from the perspective that it demonstrates how ill-prepared we are for the future and for the jobs of the future. To start with education, are we changing curricula fast enough to meet the new jobs of the future and, if we are not, why are we not? Are there some countries which are changing theirs fast enough from which we could learn? Dr. Djankov might respond to that question on education. What are the subjects we need to be doing across the board?

Dr. Simeon Djankov: I thank the Senator for her question. In some senses it goes to the core of this issue in that when people think of technology, typically it is presented, at least in much economic writings and in many business writings, in the frame of machines versus workers. We found in our report that in a number of economies - there are not many, the Senator is correct about that - as they upgrade human capital, basically their education systems, and I will speak about the ways they do that, they manage to benefit tremendously from new technology and bring businesses, which previously were not in these economies, both from richer countries and from emerging economies. Much of this is happening in east Asia. East Asia includes not only China, but Vietnam, Indonesia, Malaysia and Korea. These are economies we document in the report that are pulling in extra business.

How are they doing this? It is exactly with respect to what the Senator mentioned. Their education systems seem to be much more nimble than ours, by which I mean European ones, in terms of reflecting the need for new skills. What are these new skills? We have written extensively about this in the World Development Report. As I mentioned, transitions between enclosed jobs in enclosed sectors are becoming much faster than they were in past. What does this imply for educational systems? It implies that what is called the vertical system, where a person decides at the age of 15 to be, for example, an engineer or an economist, like myself, and pursues an engineering or economics degree by taking the right courses in high school and then in university, is not especially responsive to technology because technology is developing quite fast. Many of the skills we thought were required for sophisticated jobs like, say, high-level engineering and not just for menial jobs will be, in some sense, obsolete by the time children graduate from college.

What can be done about that and what can be done specifically in Ireland? We observe that many of the countries that are becoming more globally competitive do not even wait until high school to prepare their children for the future of work. Preschool, in particular, is the area where much investment in human capital is being made. One answer is that rather than looking at tertiary education, particularly university education and adult learning after that, as the way to prepare for the future, we and US policymakers should look maturely at this area and acknowledge that children are starting to learn technology at a very young age. If the Senator has children or even grandchildren, I am sure she will attest to the fact that they understand technology better than she does herself. Many four year olds have a better understanding of how to use technology than we do because their minds are wired that way. We have looked at the latest evidence to try to determine the best years in which to learn technology. Up until now, we thought it was during high school or college, but now we know that the best time is between three and six, which means that even primary school is too late. We need to think about addressing this in the preschool years. This is a major focus of the World Bank. Going forward, we want to work with governments to design programmes for children aged under six or seven.

On the curricula specifically, we have found that vertical curricula, where one studies only one subject like engineering, do not work. Curricula need to be much more flexible and multidisciplinary. Furthermore, the so-called soft skills, including the social and emotional skills that are essential to teamwork, are very important, particularly in circumstances where team members can be located in several different countries. There is a need for people to use technology to work independently as well as in virtual teams, but the current curricula in Europe do not prepare students for this. As a result, we have very good technical experts who cannot work at the pace of either American or Asian companies, so to speak. This is why out of the top 100 platform companies, the most high-tech global companies, only nine are European. What does this mean? In summary, we need to see much more focus on the early years, before primary school. We also need to see more of a focus at high school and university level on multidisciplinary curricula and not just on how we do things, that is, on cognitive knowledge but also on how we use that knowledge in team environments.

Senator Rose Conway-Walsh: I completely agree with Mr. Djankov. I could never understand the focus in our education system on cramming in as much information as possible, only to vomit it back up in examinations. That has never made sense to me and it definitely makes no sense in the context of this report. We need to be facilitating a love of learning in our young people and an ability to engage in complex problem solving rather than focusing on rote learning. We must wake up in that regard.

We must look at the finances of the world or closer to home, at the ECB and at our national Government. A so-called rainy day fund is being set up here in Ireland. While there is some merit in that, would it not be better to invest that money in human capital, especially in the context of lifelong learning and early stage education or to address issues like homelessness? Given that there are thousands of children living in hotels and more than 10,000 people homeless in this country, putting money aside in a rainy day fund instead of investing it in those children and in all of our children does not make sense, even in purely economic terms.

Dr. Simeon Djankov: Senator Conway-Walsh is completely right. Let us take the example of east Asia, which is a fiscally conservative region. Many countries in that region, including Malaysia, Singapore and Korea, have the equivalent of a rainy day fund that cannot be used except in the case of natural disasters or education. These countries make an exception for education because they know that every euro spent today on education will yield multiples tomorrow. The figures are in our latest report. I am an economist and a former finance Minister, so I believe in numbers and economic rates of return. We have calculated that, in a best-case scenario, the rate of return on investment in physical infrastructure like roads, ports, bridges and so on will be 1:6. By the time the project is fully utilised, we will have gained €6 for every €1 invested. In the case of primary education, the rate of return on investment is 1:40, and it is even higher for preschool. A number of studies by the World Bank demonstrate that the rate of return on investing in education for seven to 11 year olds is 1:40. If we invests €1 now, we will get €40 back in ten years. The rates of return on education are huge. The rate of return on education overall, including secondary and tertiary education is between 1:15 and 1:20, which is three times higher than the returns on physical capital. This is why a number of countries make two exceptions for their rainy day funds, namely, for natural disasters and for education.

Another area which I referred to briefly earlier but which is dealt with in great detail in our report is social inclusion. To have educated children one must have healthy children. Being healthy involves not having emotional troubles, being well fed, sleeping well and so on. In that context, we must look after families as well, and this is an area that is being worsened by technology. While income inequality is not rising, on average, as I have mentioned, a significant proportion of the population is not captured by the standard social protection system. People who work part time or who have flexible work arrangements do not have adequate resources to take care of their children properly. This is an issue in Europe, even though many European countries have relatively expensive social protection systems. These systems are not ready for the future.

Senator Rose Conway-Walsh: The financial systems in the world, including the World Bank and similar organisations must take better heed of the findings of this report. If we take the example of the promissory notes here, we must basically burn €14.5 billion, but another approach is needed. That money could be invested in our children, in human capital and in social inclusion which would yield a far greater return in the longer term than reconciling numbers on a balance sheet.

Dr. Simeon Djankov: Indeed, and the World Bank earlier this year pioneered what is called the social inclusion bond for client countries. It does not yet apply to Europe but perhaps we should have discussions with the European Union and national governments around that. The bond aims to serve exactly the purpose outlined by the Senator. Research suggests that most governments and most politicians, if facing a choice between investing in human or physical capital or if their budgets are constrained, will generally give preference to physical capital. This report and a number of other recent publications and projects of the World Bank make the point that we must change the financial returns. In some countries, particularly in Africa and south Asia, we have come up with social inclusion bonds whereby the World Bank steps in, together with some member governments, and organises a financial scheme that makes it interesting for the financial markets to take up these bonds. We have had three or four such experiences this year which have all been very positive. This can apply to emerging markets as well as to advanced economies like Ireland.

Senator Rose Conway-Walsh: We need to see a paradigm shift in our thinking. Many regions in this country do not have access to very basic telecommunications infrastructure like broadband. How important is investment in that area?

Dr. Simeon Djankov: It is very important. We have calculations across a broad set of countries, including in the EU, of how much it costs. It does not cost much. Technology has developed enough that broadband is available at inexpensive rates. Without broadband, it is difficult to prepare kids for the future of work and to prepare businesses to operate in the global economy. In that regard, Europe in general has much to learn from other regions.

I recently visited Vietnam, which is still much poorer than many European countries. In our report, however, it stands out as being on a par with most of Europe in terms of human capital at high school and primary levels. We were initially surprised by this. How could Vietnam with a *per capita* income of approximately one tenth that found in European countries afford this? Its system is truly something to consider, though. Every school has broadband. Where there is no standard electricity supply, solar panels are used to bring electricity to schools and, through that, broadband. Every week, every teacher in the country receives a set of scripted lessons. This is done for reasons of access but also equality. Every teacher has to use the script as the minimum at least, so every student in the country is taught it. The approximately 200,000 primary schools and 70,000 secondary schools receive the lesson each week. As a result, students' scores in Vietnam are similar regardless of whether they are in poor villages or rich cities like Hanoi. To give the committee an idea of how this system works, the bottom 10% of high school students in Vietnam score better than the top 10% in the US. Europe in general and Ireland in particular could learn quite a bit from Vietnam's experience.

Broadband can be used for more than just education. It can also be used in the field of health, as is done in a number of countries to the great benefit of, in particular, populations that live in rural and less well-off areas.

Senator Rose Conway-Walsh: I thank Dr. Djankov. I will explore that information further.

Senator Gerry Horkan: I thank Dr. Djankov for attending. The report is vast and covers the future of work in the World Bank's 190 client countries. Everywhere is different.

We have a limited amount of time at this meeting. Dr. Djankov is somewhat familiar with Ireland and our circumstances, having been a member of ECOFIN. I presume he met former Deputy Brian Lenihan and other Ministers while he himself was a Minister. Ireland has many technology companies and everyone has electricity, but not everyone has broadband. That is unlike Vietnam where everyone manages to have broadband despite not having an electricity supply beyond solar power. There is a digital divide between generations, areas and regions in our country and across the world. What would Dr. Djankov advise our Government to do in terms of education, investment in ICT infrastructure and so on? I would regard broadband as being like electricity in that it is essential for everyone to have quality broadband that allows them to do whatever they want to do on the Internet, for example, banking, communicating, emailing, working remotely, desktop publishing etc. What should Ireland's priority be?

Dr. Simeon Djankov: I thank the Senator for his question. In our report, which covers nearly 200 countries, we document on average the human capital of every country. Ireland is doing quite well. It is among the top three countries in Europe, for example. The report is embargoed, by the way, which is why I am not giving the exact numbers. It is among the top countries in the world.

Human capital refers to what students must know about the current economy. As mentioned during the line of inquiry followed by the Senator's colleague, though, that may be different in the technological economy, given that the recent wave of technological innovation, mostly through the Internet, allows companies to become truly global leaders within five or seven years in terms of sales, technology and so on. As such, every country in Europe needs a different structure so that it can reach new markets. That is where broadband helps. A company in a small country can reach many other markets. Broadband technology is essential for that. It is not a luxury. Rather, it is needed if a company is to be competitive globally.

Our report adds to this the issue of social inclusion from a very early age. The best investment that policymakers can make is in the first three to six years of a child's life. That is when technology comes most naturally, as do most languages. The brain is developing. A nice figure we have - it is nice for someone who is young, but not so nice for someone who is old - suggests that the brain operates best between three and six years of age and that, by 29 years of age, the cost of learning more is greater than the benefit. Someone should learn more-----

Senator Gerry Horkan: We are all in trouble, so.

Dr. Simeon Djankov: Exactly. By 29 years of age, one has learned as much as one can. After that, it is a more labour-intensive exercise.

Until recently, we thought of broadband as only being something that helped people to stay informed, use their bank accounts, do business, buy products over the Internet and so on. Now there is the concept of it being where we can access learning, especially for young kids. There is no other learning and there are no textbooks or technology courses, so to speak, for three to six year olds. The only way to learn is through broadband, accessing the latest thinking and presenting it to kids in a user-friendly way. Broadband is not just about current business. It is also about a country's future business and competitiveness. "Future" in this context does not mean 50 years from now, but five or ten years from now. These kids are the next generation of people who will determine whether the Irish or European economy will be able to compete with the United States and east Asia.

I have mentioned the statistic that only nine of the 100 largest platform companies, which are companies that have been created in the past ten to 15 years and have global reach, are European. The rest are US and Chinese companies. Given that Europe is larger than the United States in terms of market power and larger than China in terms of purchasing power, why is that number so small? Much of it has to do with embracing technology, but not just for sales. I mentioned the example of Vietnam. Technology must be embraced to extend countries' reach to their populations through health and education so that they can prepare early.

Senator Gerry Horkan: I thank Dr. Djankov. He stated that education in technology for three to six year olds in particular was essential. In respect of planning for increased levels of automation, while my background is as an accountant, I am not sure that we could automate politicians yet. It is to be hoped it will not happen for a while. What about driverless trucks, cars, buses, trains and so on? A year or so ago, I saw a presentation on the future of work. According to it, the single largest job category in approximately 30 of the 50 states of the US - truck driver - would not exist in the same form in 30 years. Maybe that was speculation or maybe it will happen. It is likely that there will be some automation. What retraining and re-education should our Government be planning? We will have many people trained in certain skills that will no longer be required and who will not be as capable of learning as three to six year olds. They could be in the 30s, 40s or 50s. What suggestions or advice would Dr. Djankov give our Government to reskill, upskill and keep our people in the workforce?

Dr. Simeon Djankov: We use the latest data in our report to document which are the types of sectors most amenable to automation, in other words, the way that robots are most likely to replace workers. As I mentioned, this applies not only to menial jobs, which was the case in the past with previous industrial revolutions, such as the development of the steam engine, electricity or even the computer, when one started at the bottom. We now have some very sophisticated jobs. The Senator mentioned accounting and there are legal services and surgical jobs where machines are too expensive to develop and use, but already we have a number of businesses or countries where robots work better than people and are cheaper. It is a matter of time as to when this change will take place.

Coincidentally, there are two types of work, according to our analytical work where it was found to be nearly 100% the case that robots cannot yet replace people. One is the job of politicians and that is because the logic of politics is often such that it is not routine, therefore, robots very often cannot figure out politics. The other job is that of journalists, where one needs to operate with facts but also to put matters together. At least according to our data, we are safe for now.

What can one do to prepare not only the next generation, which is what we have discussed so far, but the generation that is already out of school, out of university and at work where sectors are being automated? This is a much more difficult task. While we have many positive things to say about the early years of learning, and the Work Bank has vast experience of this from its operations around the world, the returns from adult retraining are basically negative around the world. There are a few successful programmes on which we comment but if we take the totality of both advanced economies and emerging markets and do a standard returns-to-investment analysis, it will show that for every dollar spent on adult retraining, we get less than a dollar back. That may sound striking but it does not mean-----

Senator Gerry Horkan: It sounds quite depressing.

Dr. Simeon Djankov: It sounds very depressing. That does not mean we should not try. Chapter 4 of the report goes into detail on the reason there is such a negative return for such investment. Some of it we can rapidly change. Many adult retraining programmes - I am familiar with some of the European programmes as they are applied in my country of Bulgaria - involve bringing in adults and treating them like students, seated at a school desk and giving them courses spanning three, six or nine months. They take classes as if they are students. We spoke about young brains being able to learn technology much better but adult or more mature brains operate very differently. This is the area of neuroscience. In particular, on average, every 1.7 seconds an adult brain switches to some other gear. In other words, for adults, their unit of attention is less than two seconds. For children, it is more like 20 seconds. We need to organise the course material or teaching methods for adults very differently from the way we organise them for children. Adults need much shorter learning units, not 45 minutes but 20 minutes and the use of much more technology. A number of programmes we use that have positive returns literally comprise 15 to 20 minute sessions over the course of an hour and a half or a two-hour training day and texts are sent to the participants during the latter part of the day asking if they remembered a matter and that is covered in just one sentence. That model works much better. Lithuania is one such country that uses European Union funds to retrain in that way. With approximately one and a half hour courses a day over a two-month period, its rates of return are significantly higher than a ten-month course in Germany, provided for exactly the same purpose, for example, to retrain low-level engineering skilled workers. We can improve adult retraining programmes simply by not treating adults as older students. Beyond that, the analysis suggests that by the time one is 30 or 40 years old, one's ability to switch to a new sector is fairly limited and, therefore, one tends to switch to a neighbouring sector. It is not possible, for example, for a truck driver to become a software engineer or a marketing agent. We need to think step-wise how workers can move from one job, which is under threat of automation, to a closely-related job that has a longer-time horizon. A few countries have succeeded in that but there are very few. The Senator is right in that the evidence is not yet optimistic.

Senator Gerry Horkan: Many jobs and companies that exist now such as Google, Facebook and PayPal did not exist 20 years ago. There are two elements to this point. Forty per cent or thereabouts of our corporation tax comes from ten companies. All of them are US based, or that is the impression we get, and they are nearly all in the technology sector with possibly a few in the pharmaceutical sector. It is suggested, and the Revenue Commissioners have not confirmed this, that those companies are Apple, Microsoft, Facebook, PayPal, Google and some IT companies or pharma and medical device companies. Many of those jobs did not exist 20 years ago and many of them will not exist in 20 years time. For what jobs do we need to be preparing? Dr. Djankov might address, if he is able to, the fact that we are over-reliant, and I do not use that word lightly, or certainly significantly dependent on them for corporation tax revenues. For what should we be preparing in the longer term? We have seen brand new companies appear in space of 15 years and if that can happen, some companies that are here now may not be here in 15 years time. The loss of any one of those companies would be a big shock to our economy. How do we need to plan for that and for the new jobs of the future?

Dr. Simeon Djankov: The most striking analytical finding of the World Development Report is the rapid rise of companies that become a truly global force in less than a decade. We have some striking figures of a company such as Alibaba that did not exist nine years ago as an international company and now it is much larger than Walmart, which previously was the largest company in the world. Alibaba is now twice as large as Walmart in a matter of nine years. We document in other sectors also how in three to five years a company can rise and totally obliterate the competition globally. If those companies are headquartered in Ireland, that is good news. It creates other issues, as I mentioned, such as the competition policy issue and the way to tax those companies but potentially that can be good for the economy and the country. The Senator is right to ask if corporate income tax is the way to raise revenue. Corporate income tax is very footloose. We document that in the report. Companies choose where to base their headquarters, research and development facilities and marketing departments. Much of this choice is not driven by human capital, although we would like it be, but by tax considerations such as the corporate income tax rate. There are other ways to tax such as more consumption based taxes. By that I do not only mean VAT but excise taxes, which is another way to think about it. That becomes increasingly prevalent not by choice but by the nature of taxation. We suggest in the ultimate chapter of our report, chapter 7, how countries have moved essentially from particular corporate income taxation to consumption based taxation. This is the way of the future. High corporate income taxes that were prevalent in the past will remain in the past. In the last year, the United States has drastically reduced its corporate income taxation. France is moving to much lower corporate income taxes from next year. It is not the way to tax in the future. At the same time, these companies have shareholders. By and large we are arguing in this report that shareholders manage to get away globally without paying much tax, if any. We picked particular companies among the ones the Senator mentioned. Overall we look at Fortune 500 companies and come to the conclusion that their shareholders essentially do not pay taxes, partly because they are mostly located in the Bahamas and other such tax havens. Globally, we need to do something about this. We hope that with this report, the International Monetary Fund, the World Bank and our institutions will step in and try to be agents for this change. If a US company does much of its operations in Ireland, it should be paying not just corporate income tax but also the equivalent of dividend taxes here. That almost never happens now. There is a great need for social policy and the tax policy that goes with it. This is a very open area. The European Union is trying to do some work but it is very early days. The OECD has some work that is also in the very early stages. Not so much the companies but their shareholders - sometimes they are one and the same and sometimes not quite - are essentially escaping taxation.

The Irish economy has a lot of such companies so Ireland has knowledge of them and their shareholders. It can be one of the countries that create innovative taxation models. We write about Korea and Brazil, interestingly, middle-income countries that are at the forefront of thinking on how to redesign taxation successfully. They manage to collect a lot more taxes from these platform companies than European countries do.

As a final word on what happens to these companies if a country like Ireland manages to tax them and their shareholders as well at the appropriate level, there we will rely on either regional - as in European Union - or wider co-operation on taxation so that these profits are not just parked in the Caribbean or other such areas. That is a much longer fight.

Senator Gerry Horkan: The concern I would have is that if we have over time to decrease our reliance on all this corporation tax, we are then asking the consumers of the Irish State to find €8 billion of corporate, excise and carbon taxes and other consumption taxes. At the moment, we are getting these because we are adding the value and having 8,000 or 10,000 people working in Apple, over 2,000 in Microsoft and many in Intel. People are adding value and creating products. We are a small, export economy. That model would be very difficult for us.

I certainly share the concern that there are companies that are avoiding paying tax anywhere. As far as most of us in this country are concerned, we are not looking for the taxes in respect of the Apple €13 billion because we do not think we are entitled to them. Somebody is probably entitled to them but we just do not think, if the phone was designed in California, made in China and sold in Singapore, that we should get the share. If a product is designed, built and manufactured by staff in Ireland, we are entitled to the revenue in the same way, whether it is cola concentrate, pharmaceuticals, medical devices or technology; we have genuinely large companies here. They are here for many reasons, including tax, but equally because we are an English-speaking country in the eurozone and so on.

I would certainly have concerns about Mr. Djankov's idea that we would eliminate or reduce corporation taxes. If we can manage to share a smaller percentage of a much bigger cake and still get the same money, fine, but I would have a very grave concern if we were going to replace corporation tax with consumption taxes on the Irish population. To try to find €8 billion would be an impossible task and not something we could ask people to do in any climate and particularly in the current one, where people in many situations are still recovering from the crash if they have even begun to recover.

Mr. Djankov did not touch as much on the new jobs and how we need to be planning. What should we be looking at in respect of training three to six year olds, upskilling and so on? I never realised three to six year olds were so important to the future but there we go. What particular sectors and areas of growth does he think are suitable for Ireland?

Dr. Simeon Djankov: Before I answer that question, let me go back and restate my comment on corporate income versus consumption. My statement was that this is the world trend. It is not that I am recommending it, I am just saying it is the trend of what is happening. The reason countries are relying more and more on consumption-based taxes and excise taxes is precisely that they are not able fully to capture the corporate income taxation. My view and the view of our report is that we should not just look at corporate income taxation as taxing the corporations but we should also look at their shareholders.

There has been this premise in public finance, not just among politicians but also among economists, that while the company may be situated and producing in Ireland, the shareholders can receive their dividends wherever they are. In other words, there is no link between shareholders and production. In fact, there is a link, especially in this new wave of companies where the main shareholder is typically also the majority owner, for example Amazon, Google and so on. It is not that there are 100 million owners with tiny shares; there are two or three owners that have 60% to 80% of the corporation. Currently, these owners basically do not pay taxes here or anywhere in the world. They park their money in small island economies, mostly in the Caribbean. An idea of ours that is lately getting a lot of attention in academic research is that just as countries like Ireland tax the corporation, they should be entitled to tax a share of the money that goes to the shareholders themselves. Basically, dividend taxes should also be paid here. It is called "tax on location". It does not matter where the shareholder is based; what matters is where the money is made, not just for the company but also for themselves. We calculate that for the 500 largest corporations, if dividend tax was proportionately shared where the money is, in fact, made and not where the shareholder lives, the European Union as a whole annually would have about €2.2 billion additional revenue, just from shareholdings. That money is significant enough to then ease the burden on consumption taxes but currently we do not have it. It is just parked somewhere.

Senator Gerry Horkan: From our perspective, if it is €2.2 billion across the whole of the EU and we are currently collecting about €8 billion in Ireland, it would still be a drop in the ocean in terms of what is available. Has Dr. Djankov done any estimate as to how much global taxation is potentially out there that is not collected? If it was taxed even at a medium-sized rate of 15% or so globally - I am not talking about Ireland's entitlement to it - how much is out there?

Dr. Simeon Djankov: I am sorry. I meant €2.2 trillion, not €2.2 billion. It is a very large amount even if we divide it among the European Union states.

Senator Gerry Horkan: A sum of €2.2 billion is not small, but €2.2 trillion is a lot more.

Dr. Simeon Djankov: Then I think there would be plenty for countries like Ireland, Bulgaria and so on.

As to the question on future jobs, there are some sectors that are emerging purely because of the demographics in Europe. For example in health services at the high-tech end - how to use new technology to make lives longer but also more comfortable - we estimate that over the next 15 years or so in Europe, the number of people involved in that sector will need to triple. Some aspects of healthcare are low-tech, for example taking care of the elderly on a personal level, visiting their homes, preparing meals for them and so on, and some of it is very high-tech, such as dealing with people with particular disabilities, mental or otherwise, that are basically disabilities of old age. This sector is currently severely under-provided in most of Europe and because of demographic trends it will be more severely under-provided throughout Europe. Literally every country in Europe needs to think of retraining people in that field. Also, there are business opportunities in this area. Given that Ireland has quite many high technical industries in other sectors, such as pharmaceuticals and the Internet and technology companies, high-tech medical care and the whole vertical of preparing new treatments dealing with old age presents a huge business opportunity as well as a social opportunity for Ireland.

In another sector which is close to Senator Horkan's heart, he mentioned accounting. As I mentioned technology in principle for accounting, the part which is routine is becoming a lot easier. Of course, nothing is routine about European taxation and it becomes less and less routine over time. That also allows the possibility of countries or economies to specialise in providing this type of service.

Ireland has a strong tradition of law and justice and upholding commercial law and so on and this is an area in my mind in which Ireland can specialise. This is a tremendously lucrative area, high in jobs and in an area in which Ireland has a comparative advantage it can build on. Both sectors have low-tech and high-tech components. This is not just confined to preparing the upper middle class of the future. Many of these jobs are jobs where workers can develop their careers.

The topic of Brexit is also relevant. There is more uncertainty around what is happening in England and with that uncertainty, especially around the city of London, many global investors are thinking of where these functions will locate. Dublin, in particular and Ireland overall is the obvious place for this work.

Senator Gerry Horkan: I thank Dr. Djankov. This is a very interesting report. When will the part of the report that is under embargo be released and when will it be published?

Dr. Simeon Djankov: It will be on 11 October 2018

Senator Gerry Horkan: I thank Dr. Djankov for his work on this report, which is very interesting. We look forward to it. We need to tackle Ministers and the Departments on how they are educating young people to prepare them for the future.

Chairman: I thank Senator Horkan. I now call Senator Burke.

Senator Paddy Burke: I welcome the delegation. Everybody agrees that investment in human capital is the way forward. However, the Government has to measure its cloth and has to have a balance between infrastructure, whether it is roads, water, electricity, broadband and so on, and generate the capital before it makes these choices. It is not as easy as saying we must invest in human capital.

Dr. Simeon Djankov: Indeed, and we are more nuanced in the report. For different economies one requires different mixes between investments in physical infrastructure and human capital. New technology, however, sometimes allows us to invest in different new ways in physical capital. One of the countries that I visited recently was Senegal. Much of Senegal has not been electrified. There is no electricity in about 70% of the country. By the way, Senegal is one of the richest countries in Africa so this is not among the most difficult cases. They were thinking about physical infrastructure in the following way. To have electricity, one needs to have the electricity poles and to have that one needs to have roads, so they decided to build roads first and then they will install the electricity poles and then they will bring the electricity to the hospitals and the schools and then they will think of broadband and so on. I already mentioned the case of Vietnam, where electricity is generated from solar panels and Senegal is blessed with lots of solar energy so that one can at least temporarily short-circuit the process and bring electricity where it is needed in hospitals and schools and so on, and provide the broadband through it so that the next generation can start developing. In the meantime, they still need the roads for commerce to develop, for people to be able to move. It is just a question of how to use limited resources and what is the optimal mixture. Until recently nearly 90% of the Cohesion Funds was used for infrastructure by the Bulgarian Government because Bulgaria needs a great deal of infrastructure. The new thing we are bringing is to think of the mix, so to prepare the next generation, one does not need huge investment. The order of magnitude of investment in primary education is 0.5% of GDP on average or 0.7% of GDP. Infrastructure in the average country is 6% to 7% of GDP. The mix can be done in such a way that one thinks of current business and commerce but also future business. That was my point.

Senator Paddy Burke: When Dr. Djankov considers all the countries around the world, which country does he think we should take the lead from because it has everything right and it is the way to which we should aspire?

Dr. Simeon Djankov: It may sound clichéd, but I am more and more impressed with some of the east Asian countries, countries that have already caught up with the average income *per capita* of Europe. I am thinking of Korea, which in terms of income *per capita* is very similar to Ireland. Admittedly it is a large economy, but when we have this type of discussion with the policy makers they have thought about how to prepare the next generation for the future of work and also how to work with the current generation of workers for the transition to new jobs, basically how to think of the new economy.

Many countries in east Asia, perhaps because of their centrally planned past and maybe present tend to take a longer view and consider whether it is okay to invest heavily in broadband, which has been discussed in Europe for many years and to consider whether it is a good thing to do or a priority. At least from what I know in most European countries, broadband is still considered something that is not really so essential - it is good to have but it is not like roads or bridges. Even in poorer east Asian countries, broadband is a right, so everybody needs to have access to it and governments are spending the money now because they realise that if they do not have broadband lots of people are excluded from business but also from preparing for the future.

Senator Paddy Burke: Has a model been developed where one could tax trade on broadband or through the Internet because it is displacing jobs in retail in the high street? The greater the trade on the Internet, the greater the losses on the high street.

Dr. Simeon Djankov: The Senator is correct and these are exactly the countries I mentioned already, Korea as well as Brazil, that literally in the past two years have come up with potentially global ways to tax trade and services, either goods or pure services over the Internet. That has made some of the global corporations uneasy. The companies ask how a country knows how much money they are actually making from that country's market. Therefore, the legislature in Korea came up with an innovative solution which basically gives two options. One option is for a company like Google or Amazon to report every year to the Korean state how much money it made from the Korean market, which currently is not done as there is no such regulation at the global level. Otherwise, if the company does not do that, from January 2017 Korea by law imposed a minimum, which is a percentage of what Korea, based on the analysis of the Korean finance ministry, thinks are the company's sales in Korea. Therefore, from last year, all of the companies we discussed essentially pay the equivalent of a value added tax. They complain but the money is quite significant.

Senator Paddy Burke: That is for business done online or through the Internet.

Dr. Simeon Djankov: Precisely. It is for business done online, and not just traditional business but also marketing and all the components of the business of Facebook and all of these companies. Brazil has a similar system, as does Argentina. Most of the public finance innovation is coming from middle income countries, interestingly, not from advanced economies.

Senator Paddy Burke: Where can the World Bank invest or can it invest in companies that it feels might make a change in the world, for example, in regard to food, how electricity is brought into a country or how broadband is distributed? Can the World Bank decide it will make the decision to invest in a particular project or to give aid to a country to improve the situation for the citizens of the country?

Dr. Simeon Djankov: In the last calendar year the World Bank invested more than $100 billion directly and about double that amount through the funds we manage, either through particular governments or particular international pools of money. About half of that goes directly to private companies of the type the Senator mentioned. It has to have a development goal and that goal can be social, for example, schools, whether private or public, and health systems, and there is a lot of investment in basic infrastructure, as was mentioned. We realise that countries must have the ability to carry on commerce, in particular traditional commerce, which requires ports, airports, bridges and so on, and especially across countries. Our main goal is to develop the economies in order for people to live healthier, easier and more prosperous lives. Of course, this has to happen through the growth of the economy, trade and services. Every year we have some 3,000 projects, primarily in emerging markets. At the same time, we often work with companies, including Irish and European companies, that have global or at least regional presence and, through this presence, use their technology and their human capital in the service of a large part of the world. We are precisely in that development business.

Chairman: If members are satisfied, I think we have had a good exchange on the issues raised in the report. No doubt there is plenty of further debate that can be had on the report, which is quite extensive. I thank Dr. Djankov for attending the meeting. We look forward to further engagements with the World Bank.

Dr. Simeon Djankov: I thank committee members for their interest.

The joint committee adjourned at 3.45 p.m. until 2 p.m. on Thursday, 4 October 2018.