China's medium term outlook: Will innovation save China from becoming old before it becomes rich?

Organised by:
Bruegel

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Structure

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Event description

What can China do to stop the deceleration of its economy. Is innovation the solution?

Opening remarks

Hello, and a very warm welcome to our event today here at Bruegel. My name is Guntram B. Wolff and I'm the Director of Bruegel. I'm pleased to host the session today discussing China's medium-term outlook – will innovation save China from becoming old before it becomes rich? And I'm particularly pleased to be joined today by Jean-François Di Meglio who is the President of Asia Centre in Paris, and a known scholar and practitioner working on China and many, many other parts of the economy. I'm particularly pleased that my dear colleague, Alicia García-Herrero, is here joining us physically, from Taipei. So, it's great to have you over and see you in person for this event. And lastly, I would like to thank you, our audience for joining us online today. If you have comments, remarks, questions, please don't hesitate to ask them below. We have two presentations. And after these two presentations, we will have ample time for discussion so that in one hour roughly we will be done. Jean-François, thank you for so much for coming here; and the floor is yours.

Presentation 1: Demographics & Economics

I think this is a good time to talk about this topic. We call the event will China grow old before it becomes rich, because I think if you're Chinese, you have two objectives in life: to be rich, and to grow old. So, there is a contradiction to be sorted out. I remember as early as 2005, we were already asking ourselves the question. However, the prospects at the time looked, should I say much better. So, I won't be too pessimistic because my presentation will not go in as much detail in terms of figures. That's Alicia's job, and she's very good at that. I will be taking a quite provocative view. And I hope this will leave room for debate based on some figures, but also based on some very personal thoughts and observations.

The first observation is that we are currently in a kind of perfect storm. By perfect storm, I am not referring to the health crisis, but rather the perfect storm that comes out of China, not only due to the pandemic – we need to focus on the few elements in parallel to pandemic. Growth, as we will see later, was slowing down already before 2019. And much more importantly, the population was growing older and older, with two parameters, which are extremely negative. First, you have fewer kids, fewer young people in China because they grew rich. And that's the point. When you grow rich, you tend to have less kids. And that's what's happening in China. And it has been happening since the early 1960s. A lot of people forget that China's population kept on growing, but that the number of kids per family decreased in the early ‘60s, because China has been growing richer.

The other parameter which is very negative is the disparity between males and females. And that's something very important in Chinese demographics. If you have this disparity, even though you want to have kids, you have a technical problem if I may say. The Chinese government wants their people to have three kids per family and encourages it, but people do not follow. There are lots of reasons we will talk about to explain this. This is the first negative parameter. And on top of that, you have the macroeconomics in China. And we all know about the real estate problem in the country. And I mentioned it because there is liquidity, there is, of course capital in China. But the question is, will it be allocated to right areas, like R&D, as we will see later, or will it be used just to cure the current problems of the Chinese economy, especially in a context where China is closing off, as we can all see.

Well, the data illustrates what I just said. Probably the important thing on the left graph, is that you can see the trend: the trend has some blips, ups and downs, but the trend is there. And the trend has not changed, since 10 or 15 years. Growth is slowing down. That's quite the normal situation, no country has had as long a period of high growth as China has. So, it's quite natural, that growth would be slowing down. But of course, it will matter whether, as we will see later, productivity follows or not. And if you have an ageing population, as you can see on the right-side graph of this slide, that doubles up and makes the problem even bigger. And you can see the projection: with a Chinese population, which will reach peak probably next year or years to come. At best go down to 1,200,000,000 people, possibly less than that, if you have the fertility rate going down. Chinese growth benefited a lot from the relative youth of its population, the Chinese were young before, and now they are growing older. That causes problems.

We all know that being rich is also a matter of disparity within the population. This is an illustration of the Gini factor and the dispersion of wealth. You can see that China, as compared to Western countries, if you look at the Gini index that is on the left side, rounds up at seven points. If you look at the scale on the left, which is the percentage of population in the very high bracket of revenue, you can see that China is quite low. There is still a gap. You have lots of disparities among the wealthy in China. Now the question is, where is productivity? Alicia is much more eloquent than I shall be on that one. This data here from the National Bureau of Statistics in China. Looking at the statistics, looking at the total factor productivity during three different periods of time, you can see that the ratio of total factor productivity within general growth. Growth is slowing down, and the ratio of productivity is also decreasing. The issue with research and development is highly related and correlated to what's happening with semi-conductors; and this is comparable to EU countries. You can see that China is not very well positioned in terms of imports and exports of high-grade semi-conductors. China is not yet making the highest-grade semi-conductors and is dependent on foreign countries for them.

In conclusion, I'm trying to look at China's prospects; how can China avoid the trap that we are looking at. I tried to put myself in the shoes of a Chinese leader which is very difficult. And I look back at what was possibly the scenario in 2020. In 2020 the pandemic arrives, and you think that the pandemic will be devastating and probably devastating in the West just as much as it is in China. What is a middle-income trap? Is it to be trapped at a low level of income, or just being joined at that low level of income by countries which will become poorer? I think in some Chinese leader's mind the pandemic was an opportunity, if we can call it so, to have China be in the same bracket as other countries; because other countries, we're seeing their growth going down, and their prospects becoming bleaker and bleaker. Unfortunately, for Chinese leaders, this did not happen. You still must catch up on the high side and not get caught up on the lower side. This scenario probably must be discarded; it will not happen. Then you have what we can see now, which is building wealth and growth in this area, which was built around the RCEP area, the area that was built possibly around the Belt and Road Initiative; meaning that China would extract wealth from the outside, from dependent countries. Exporting its overcapacity on the Belt and Road and getting some dividends.

The problem with this is that if you compare China with Japan, in the early 20th to 21st century, Japan had invested a lot abroad, and Japan was growing old as well, but getting dividends from the capital invested. China has invested not yet enough, starting 2005-2006. The dividends from this capital invested abroad are not yet coming. Sometimes the investments were wrongfully done. If you look at Africa, not all the investments were properly done, and if you look at other countries, you have barriers now raising. So, it's a solution, which might be very difficult to get to. As a true believer of Chinese innovation, I think China's innovation will surprise us soon. I think, of course, we must watch very closely as Alicia will do, at the traditional ways of innovation. I think China has a talent to innovate where we cannot, and to innovate, sometimes in a "good enough" way, meaning spending less, but getting more in return out of what you invest in; and innovating in some new areas. I think the investment into data, big data, and possibly also, digital finance is somethings where China might reap dividends, from selling data, collecting data, dealing with the data collected, and possibly also exporting its finance capability abroad. Those are just assumptions.

Will China grow old? Before getting rich or not? No. We will have common prosperity, which is prosperity at a lower level, probably, but better shared. But I cannot predict at which level it will be – but better shared. That is for sure.

Presentation 2: Growth, context, labour, and capital

I want to just make a little comment before I start on that very good idea of comparing China with Japan, because we should add one more subtitle to our long title for this event, in which we could ask with China becoming a rentier like Japan before it gets too old. Jean-François' answer is probably not because the investments. In other words, China didn't have enough time, as opposed to Japan – to make those investments. And let's not forget that Japan made investments in a world that had much higher yield, compared to China today. Sometimes I feel it really is not about China. I feel like everything is made to seem like it circles around the question of why China is growing so slow structurally? Is it China's fault? Sometimes it's just the environment. China's environment is harder than it was for Japan or Korea, which is the point I'm going to make in my presentation, let alone whoever comes after China by that means are in for much worse, because at least China managed to get, all the WTO globalisation advantages. Maybe the next one will be even worse. But I think that's an important point you made, because it takes the focus out of what China might be doing. Or might have done, and it goes much more into when it happened. And I think that's a big issue on which to compare Japan, and China.

As Jean-François said, we're trying to answer the same question from a different perspective, but the answer is very similar – in that regard, I don't have a firm response, but I would argue that it it's nice to be better shared, but still low income per capita. I don't know whether it will be better shared, but certainly, it won't be South Korea. It won't be the dream of South Korea, China won't be the dream of South Korea – which doesn't mean, it won't be good enough, because China is much bigger than South Korea. In terms of market size, and so on. But if we're focusing here on wealth, and income per capita, I do think China will be a different story from South Korea. And that's basically the key message here. We started with growth, same idea. It's coming down. China has been decelerating structurally, it's not about Covid. I didn't even include Covid, just so we don't lose track of where we are. Is this something to worry about? And the first answer is of course not, because this is the law of gravity, as you become richer, you grow less. Is China rich enough to see that reduction in growth? Probably yes, it's still a very high growth. In fact, here, you can see how much of an outlier China has been. Positive outliers. So basically, 99%, China was from 1995 in the 99th percentile of countries in the same bracket as very low-income per capita countries. China did great, especially from 5,000 to 10,000, not during the poorest dips, because those are the times that China might want to forget, from Mao to the Cultural Revolution, and that's the first graph. It wasn't great, but it was better than others. 90% in the 90th percentile, let's acknowledge that. And then these times were Deng Xiaoping's time, followed by the others, and it was even better, 99%.

Will it continue to outperform? Before I answer that question, I just want to have a sense of where China's growth might be by using a very rudimentary tool, which is just a convergence model by which you take the linear trend of labour productivity, and you just figure out a number. That is, if things were going as they go now, or they've been going for the last 10 years, where would we be, in 2030? By the way, this is a positive scenario because these consider all the good things that have happened to China so far, because we're using the past for this. We're considering what we know, which is the labour participation rate. That's, of course, pushing it down. Idle population growth rate, all of these are numbers that we can't change by 2030. In terms of the trend of labour productivity that comes from basically 20 years before, labour productivity in China has been decreasing. And when you apply that to potential output, you come up with something close to 2.4% in eight years. Are we ready for this? I mean, is the world aware that China will (unless the US does very poorly), not converge anymore with the US? That's the message. Maybe it will converge per capita because of the huge differences in labour participation. Between the US. This is like the Japanese situation. Maybe you're not as poor as you think because you're fewer in town, but this is not necessarily something to be happy about. Your convergence. This is the reality. And the question is, can this change because of innovation? Can this change because of, who knows, China becoming the largest economy in the world and setting its own standards? There are many reasons why this might be wrong, exogenous reasons, and that's what I want to analyse very quickly.

Before I do that, how bad is that 2.4% in 2030? Or the other number I had, which is slightly higher? 3.6. The average of this decade is about 4.4. Is that very bad? No, it's not very bad, it's quite good. It's just that China was such an outlier. In fact, it's around Japan and Poland, but it's not South Korea. My message is, don't think that what China is going through is such a desperate situation it is among the best in the world, if we have estimated that long term growth correctly. Unfortunately, it can get worse. And the question is why? I want to get into that. First reason why our estimates, no matter how low you think they are, i.e., 2.4%, from 2030, might be overestimated, because not only is the elderly dependency ratio much worse than it was at the time when South Korea and Japan reach the $10,000 per capita; but, because the debt to GDP ratio is so much higher. The room to take care of that problem is much less in China. Of course, the size of a population doesn't really help if you think about it. The other issue is that to be very frank, neither South Korea nor Japan at the time, when they reached $10,000 per capita, had a real estate bubble. China does have one now. And it needs to rein in this bubble, and it's happening already. I agree with Jean-François, China is changing its growth model; and that's great, wonderful news. However, it comes at a cost, the cost of an economy, which grows about a third, thanks to real estate. The contribution of real estate to real growth is a third, and it's going to detract quite a lot for years, because it's not going to be solved in a year or two. This is indeed a very important issue to realise we might be overstating our potential growth numbers. The other one is that when South Korea and Japan had to deal with its "coming of age", if I may say, i.e., becoming a high-level income economy, nobody talked about climate change. Nobody pushed South Korea to reduce its dependence on coal, but China must deal with this. Yes, indeed, China is a massive producer of renewables, but the reality of things is that being such a massive producer, it hasn't yet taken that bold decision. It must be costly, otherwise, it would have done it already. This means it's going to have an impact on growth, and I think that's important to realise.

What can China do to smooth out that impact on productivity that we so far have in mind, or we've seen so far? And the answer, as Jean-François said, innovation. There is very little we can really say to be frank, about the impact of innovation on China's potential growth, because supposedly this is going to be seen in the future. The only thing I can say, is the first thing you would need to see is an innovation trend that fosters capital intensive sectors because the population is falling. Well, that's not what's happening. If you look at that area, it is basically increasingly negative, zero negative, which means that the value added in the industrial sector is growing faster for sectors which are labour intensive, not capital intensive. That's, in a way already an issue. On the fact that China spends a lot on R&D, they now spend at the level of Europe, but still well below the level of the US. Even further away from South Korea, which is at 4.4. That's about half of South Korea. It's not at South Korean levels, at least in value. Whether China's spends on innovation or uses R&D better than South Korea it is difficult to judge.

In education, it is indeed growing, but what we know is that that China only spends 6% of R&D on basic research. Most of it is development or implementation. Here, China sits much lower than France, Germany, the US, or Japan, in terms of the share of basic research in data research. I think that's very important, because you can be very innovative, but at the end of the day, basic research is what matters for productivity – and the IMF has proven this. If you look at labour productivity in China, it is important to note China's move into the service sector. The service sector happens to be less productive, not only in China, in Japan, in Australia… We know this. Because it's going through such a structural transformation it is very hard for China to increase total factor productivity, let alone labour productivity. The other issue, for me is that most of the R&D is state-driven. Think about the semiconductor funds: $70 billion is state-owned. How effective that might be is doubtful given that, overall, the product or the productivity of investments in state-owned companies is so much lower than it is for private companies. I just worry that all that R&D might not be so fruitful. I have different figures, but this is because this is a Conference Board – what is interested is that the US institutions have much higher total factor productivity compared to the figures I saw from your graphs, Jean-François, figures that came from a Chinese source. It's kind of interesting. Barring total factor productivity, the rest is falling. We need to believe in the black box to confirm that total factor productivity will save the day, and by the way, is not increasing. The net effect is still less productivity in China for the last 10 years. As if this were not enough, we need to think of the fiscal space.

What you see here is that total healthcare in China is already today, at $10,000 per capita, nearly double what it was in Japan at $10,000 per capita. Why? Because the weight of the elderly population is bigger today in terms of health care than it was then. You already see how much the health care expenditure by the public sector is increasing. This burden is going to affect China's public debt, which is my point here. Many people think this is very low, that nobody cares about public debt in China. I just want to remind the audience that a lot of the real public debt is hidden by the fact that corporate debt includes state-owned enterprises that which is two thirds of that. If you were to add that, China's public debt today would be higher than Japan, for the mere fact that you are counting the debt of the public state-owned companies.

Finally, one thing that is very clear is that the external environment that China is facing today is, frankly, much worse. I mean, Japan got to a point where it was also very bad in the 80s. I think that China's is facing a structurally worse environment for the mere fact that Japan was, in a way a military colony of the US. China is much more of a risk for the US than Japan ever was, and I think that makes the external environment much more compelling for China. I think that's something that that will make it even harder, as we can see already from the reforms of C. Fuse or our own investment screening framework in Europe; it was a nice time for Japan. I think that's something that we need to recognise: the environment is hard for China to keep that growth. In a nutshell, I think we should acknowledge that China has been very successful. That's the first thing; there's no doubt about it. In moving out of the low income to the middle-income group of countries – for the high income, I think the situation is much tougher. External environment, labour productivity, ageing, fiscal space, you name it. Therefore, how much more does China need to be, and this is a key question, innovative enough to overcome all of this. For a population of 1.3 billion. This is not Israel. I'm not doubting China's innovation, the question is – how much more innovative will you need to be to overcome that kind of situation? It's about the degree; and I think that's an open question. I don't have an answer for it. My sense is that you need to be very bold, and China might not even be able to afford it, because the fiscal space is not there. And that's the key question. Again, no answer. However, just a sense, that it will be very hard for China to move quickly out of the middle-income trap.

Q&A

What struck me is the sudden slowing of the growth from 2013. Could you give us a better sense of the why behind this slowing down? What is behind this number? Is it a more mechanical projection? What's the model behind that number?

Alicia García-Herrero: Even if the external environment is negative, joining or rather creating RCEP which might give China better access to finally, what is the largest and most thriving part of the world, which is Asia. I acknowledge that, although the external environment is tricky, maybe it is *not* the external environment where growth is the most obvious. The best model I've seen, which is World Bank, and NDRC, came up with a number that looks like 2.7 by 2035. I don't think it's so much the methodology it's what I call the law of gravity, meaning, if your stock of excessive investment is so huge as it is for China today for its income per capita, you don't have a return on assets that looks like your level of development. China is bloated in its stock, in its investment stock, compared to a country of its income per capita. That means that the equilibrium return on assets is low. China has that issue. It's already too capital intensive for the level of developed therefore future growth will not be coming from capital. We know this because investment to GDP is 40%. That's the thing that is hard to understand, but I think is essential. China is too capital intensive for its level of development.

Jean-François Di Meglio: I think, in parallel to what you said, Alicia, we should also put the picture into perspective; in the sense that China is both a very open economy and an economy that can also close-off, because it has a huge domestic market. I think this is really the turning point, where we are now. This period where I don't know how long it will take, but it will probably take a long time. I think it's probably in the planners' mind, currently. And the fact that China is gradually closing-off might be also correlated to the fact that the planners the leaders know that it will take some time. You gradually close-off so that you boost your domestic market. And by the time you induce foreign capital – we didn't speak too much about foreign capital, because whatever capital is lacking in China might come from abroad – what you can see currently, is that this dual perception of China by industrials and firms who say, "we are kind of scared by the closing-off of the Chinese market", and on the other end, investors who say, "the Chinese market is still very attractive, because there will be innovation." You might have a China, which closes-off in terms of, importing goods, but opening-up in terms of employing capital, and that can bridge the gap somewhat. I'm not saying it will totally bridge the gap, but it might help gradually bridge the gap. That will take some time. And meanwhile, you just close your eyes, you close the market, and possibly the Chinese population cares less and less about what's happening abroad. It's a very political stance I'm taking it's different from a purely sectorial approach and an economic approach, but I think this also must be considered.

How much will us pressure influence China's strategy to neutralise at best the challenges you outlined?

China's success in innovation appears to stand or fall with success in developing high quality semiconductors. What's your view?

Jean-François Di Meglio: Foreign pressure I think is very ambivalent, because so far China cannot do without considering what's happening abroad, and what's the foreign vision of what's happening in China. Conversely, as I tried to say, China is very able, as we can see currently, to close-off somewhat for a while and just deal with its own problems by itself. Foreign pressure is important. But at the end of the day, what is more most important for Chinese leaders is how harmonious the society's insight is, and not caring about what's happening aboard. In terms of semiconductors, I do not have a clear answer but what we can see so far is that capital spent on semiconductors is not yielding as much as it does abroad, thinking about Taiwan and South Korea. There is obviously a gap in terms of yield on the capital spent on semiconductors. I don't know why, but I do know that many places had a lead when it came to time compared to China, so that might be the explanation.

Alicia García-Herrero: Whether US pressure is creating, I wouldn't say a miracle but basically accelerating that idea that China can be very innovative, simply because all the forces aligned towards that objective. Perhaps one could argue that we don't see in the existing data, whether it's labour productivity or total factor productivity, that increase that will come out of China's united response to the challenge. And so far, so good. One could argue that there's been several Chinese initiatives. Made in China 2025 started before Trump for obvious reasons. It's a 2015 project. But one could argue that China was so visionary and kind of figured out that the West would come after China, and pre-prepared its own industrial policy. In other words, I don't know whether this is a response to, or China's own vision of what China needed to do. But I think the ultimate issue is whether we believe, and this is really, for us economists to decide where we stand, I stand on the side that if you're not open, you cannot catch up with innovation. That's my standpoint. I may be wrong, but you know, that's the way I've been educated.

Why do you take that view on an economy as big as China? Compare it with, let's say, Japan of 30 years ago, the rest of the world was almost not much bigger than China is on its own, in many respects. Isn't China big enough to have enough regions, differences and to be at the frontier of research?

Alicia García-Herrero: Not yet. That's not what the data shows us. In many sectors, China's still lagging. If China closes-off, it will be harder to catch up, no matter the size of the market. Maybe China will have a lot of data, but that data is not at the core of innovation, at least not yet. Data is the basis to use innovation, but if you don't, if you have not reached that level, I don't think it would be a problem.

Jean-François Di Meglio: Unless you find a way to extract value out of the top.

Alicia García-Herrero: No, but that's a commercial response – about the commercial value of data, there's no doubt. But here, the question really is whether China can leapfrog, its innovation capabilities out of closing-off its economy. This is the question. And the answer to me is, maybe it can but it will be harder. Not easier. That's the principle so. The direction China's taking to me is worrisome rather than a solution.

What does the recent tech crackdown tell us? Will it hinder China's innovation?

In a context in which growth becomes harder to come by, what type of policies do you think will shape common prosperity?

Alicia García-Herrero: First, this is not only tech, but also a much wider crackdown. I showed a graph on the real estate sector, it was indeed a crackdown. It was not coincidental. You had these three red lines by which to leverage, developers would not get any access to bank loans. And therefore, we ended up with cases like Evergrande. This is not only a tech crackdown, but

I also think what it is, is a crackdown with this slight, if not strong leaning on a private sector crackdown. Because if you look at the companies that have been affected, they're mainly private companies, including the real estate developers. When I say private, I mean to say not in the realm of the state or the party, so I would exclude Huawei. It's a very special type of company that has been cracked down on. It's not a sectoral issue. It's a "how far are you from the centre" type of reason, and "how important are you given where you are." If you're important, and you're far, you're a target. This will affect innovation, because to be innovative, sometimes you need to be far from the centre. That's the whole idea of innovation. I think that this will reduce the innovative spirit of Chinese companies, because they know that they could lose the excess profits of their innovation.

I think what the government is trying to do, which is smart, is push the innovators out of sectors that may be very greedy, and profitable. Like video games, the maybe less profitable sectors but most important sectors, semiconductors, or others. Shaping innovation in that way, you may lose part of the talent, because they want excess profits. The answer to that question to me would be, it'd be harder than it was before. This is a complex issue, but to make a long story short, you had President Xi's speech on the 15th of October. The whole idea is it's not welfarism. It's not the European welfare state. There is even a comment on "we don't want to promote laziness", a very negative view on the European model, but that's a different topic. It's about controlling the resources, which will be less and less controlling from the centre to be able to redistribute in a way that fits the model. Nothing wrong with that, because if you have less resources, maybe we would do the same. But let's not think that this is just purely an automatic stabiliser by which you redistribute income. If that were the case, they would have done a huge fiscal reform, which they haven't. I don't think that's the model for China in terms of common prosperity.

Perhaps in the same spirit, on this, this question of governance, part of the answer of Alicia, you can paraphrase it saying ultimately, it's the private sector. It's innovation. It's entrepreneurialism, that will drive innovation. And as China's governance model is becoming more intrusive, and the government is more intrusive in the private sector, but not only in the private sector, also among individuals. And it's cracking down on very rich people. This changes incentives for people when it comes to striving for innovation, for being ahead of the curve for growing. How much of an effect does it have on growth in your view, and how much of a positive effect might it have on inequality because inequality is very high in China.

Jean-François Di Meglio: I think the fact that the state is so important, and the body so important, is a blessing and a curse, because it's a blessing in a way that it's able to plan and to allocate resources to have a view. And very often when we observe China, we can say that, as compared to our Western democracies, you do have a long-term view, which was our topic today. Having said that, when you tighten the control as it's happening now, you have a squeeze, possibly, between the ability of large companies to be the engine of innovation, because they are big, and the inability of real innovators, that were really helped in the last 5-10 years. When you went to China in the last 5-10 years, you were seeing clusters, everywhere. Every university had its own cluster, and it was innovative. I don't know how much this is still encouraged because this was a mixed economy. You had some private capital, working in the labs. And you had researchers working in the labs as well. I don't know how much this can be pursued in the current ambiens, where basically, you scare people who are trying to make rich.

I think this is probably where the curse is taking over the blessing. We do have a potential impasse there.

The atrocious state of China's governance which China exports, including through the Belt and Road Initiative – where's the WTO? How much is this governance model affecting countries, companies, etc., beyond their border? And how much of a negative effect does it have on China itself?

Jean-François Di Meglio: I think the general mood is currently turning, is changing. There was an appetite for welcoming China in various initiatives. During the last few months, I would say, if not the last few years, the mood and the climate is changing.

Alicia García-Herrero: We published a report here at Bruegel I believe in 2018. I absolutely agree, the mood is changing – but I just want to go back to that report where we use big data. It was media all over the world, including in Europe, and it was very interesting that the average image of the Belt and Road was positive. The average image of China was less positive, we compared the two. This is a very general concept, China, who knows what you're really measuring. The point was that the deterioration in 2018, in the course of 2018 was already very fast. We tried to figure out whether this was the US media, because, whether there was an influence with the change in the US, with the US approach to China with Trump and interestingly, that was part but not all. The most negative issue which we found explaining that worsening was trade; and it was related to countries which were worsening their trade balance with China. What I'm trying to say here is that maybe its governance, but you know, people feel it on their inner pocket. When China became pervasively better, if you look at the pandemic: China's trade surplus has ballooned while Europe and the US' have worsened. People don't like that. Rightly or wrongly, we tend to think we criticise the governance level, but it was there before. I think this is partially because we feel we're losing ground versus China, and that is why we are having this response. I don't think that is that relative. Maybe China will converge, because we will do so much worse; but that explains a lot of that thinking, negative thinking on China yet – which might be unfair because China is not responsible for our own mistakes – but it is very much related to the relative situation.

How do you see China's development in artificial intelligence over the next years? And to what extent do you think China will consider the discussion of trustworthy AI that the EU has, but also the EU and the US in the trade and Technology Council?

The internationalisation of the renminbi, the yuan – what does this mean for the growth trajectory of China?

To what extent will questions of sustainability influence and alter the growth direction of China? How about the question of natural resources that must be imported?

Jean-François Di Meglio: On internationalisation of the currency, we both have worked quite extensively on it during the last 15 years, and I think we changed our minds several times, but I think now, it's very clear. It's internationalisation the Chinese way; meaning going through digital, mostly. And once again, I take your point. There is commercial value, which is added, but there will also be value added through the internationalisation of renminbi, because settlements make money, and if you settle in your own currency, you do make money. That will add some points in GDP growth. AI – I think we only see the tip of the iceberg. I don't know exactly to which extent China is developing AI, but it's a very strong engine for growth as well. But I don't think we can see the whole picture at this juncture.

Alicia García-Herrero: On digital I fully agree. This is the way China is trying to internationalise its currency. It's a new way. It used to be offshore centres, we wrote a Newsletter on that, too. China is trying a new way, so that, in principle, they don't need to open the capital account while still having an international currency. They open it, but they check it, because all the transactions can be monitored. So, that's one. And it is very important. I think we're underestimating the importance of this event. On sustainability, China is very clearly not ready to follow instructions on this one. And rightly so if you ask me because China's external competitiveness depends nearly as much on the cost of energy, as it depends on the renminbi. We forget, electricity in China is very cheap. China's not going to give up on that. At the same time, it is digitalised in its industry, it wants an industry. Why kill it just to introduce renewables suddenly. I don't think China's going that way. I think it's going to be slow, and China won't be pressured. At the same time, a little bit like in Europe, but I think in China much more the case, climate is a business opportunity. 80% of solar panels are first sold overseas rather than used domestically. And that that's China's model. It's always been the case. Even with vaccines. They started exporting before they vaccinated. It's not a criticism, it's just a business model, I think we need to realise that – and that will make climate change slightly, probably less speedy, than we think it should be here in the West.