Should Governors Be Worried?

Changes and Challenges in Central Banking

By Marko Škreb[1]

Ante Čičin-Šain Lecture

29 May 2018, Dublin

Contents:

[1] Central Banking Consultant, web: markoskreb.hr; e-mail: markoskreb@gmail.com, Cell phone #: +385 99 312 1514

1. Your Excellencies, honourable governors, ladies and gentlemen. I am deeply honoured and feel privileged to stand in front of you today to deliver the 2018 Ante Čičin-Šain lecture. Ante Čičin-Šain passed away exactly ten years ago. It is wonderful that his memory is kept alive in this way. As Croatia's first Ambassador to Ireland, Ante Čičin-Šain was highly committed to developing Irish-Croatian relations and was enormously successful in doing so. His success was attested to during his tenure as Ambassador and later by Ireland's unstinting support of Croatia at all crucial points in Croatia's path to full E U membership. Indeed the unique part he played in promoting Croatian-Irish relations was recognised by the Irish Government when, after he had retired as Croatian Ambassador to Ireland, it appointed him as Ireland's first Honorary Consul in Zagreb. And I should say that nobody could be more pleased than Ante would have been to see that today Croatia is fully understanding and wholly supportive of Ireland's position in the context of the challenges posed to the entire E U, but Ireland in particular, by Brexit.

   Of Course, Ante Čičin-Šain only came to diplomacy at the end of his career. Before then, he was the first Governor of the central bank in independent Croatia, which for me as a central banker is something very relevant. As this is not the first Ante Čičin-Šain lecture, a lot has already been said about him as an exceptional professional (economist, central banker, diplomat and a lot more), as a true European intellectual and as a human being. I am not sure I have much to add that is not known. I was not his student during his lecturing years, as many of my colleagues were, nor was I working directly with him. Therefore, allow me to start in a slightly unorthodox way by mentioning three things I humbly think we both have in common.

- First, we were both Governors during war times. In his case, it was an actual war. Parts of Croatia were still occupied. The ongoing fight was both a military and political one, the fight for Croatia's independence and international recognition. As I will mention later, Croatia was isolated financially as well under sanctions. In my case, it was a different war. A public relations war. The central bank and I were fighting against the old socialist mentality and against failed banks and rogue bankers. One could call this period a banking crisis, but for me personally it was a war. For the record, it was not Trump who invented fake news, it was quite present in our press in the 90's. True, there was no Facebook and Twitter (hard to believe that they did not exist from today's perspective), but at the time newspapers and the TV were almost as efficient in twisting the facts as social media are today.
- Second, neither of us finished our term. We were removed from office under political pressure. Fortunately, Croatia has matured in the meantime, and I am sure this is almost impossible to happen today, despite more or less serious attempts from time to time. And, I certainly hope that Boris will get his well-deserved second term, as his predecessor did.
- Third, neither of us signed a single banknote. To see one's signature on a banknote feeds the vanity of some governors. Ante oversaw the introduction of new money in

independent Croatia, a very important transition and a way to decouple from the hyperinflationary Yugoslav dinar. However, as inflation was still very high, the transition was a cleverly thought-through move via a temporary currency, the Croatian Dinar – HRD. Even more so, in order not to taint the credibility of the new central bank and its planned future permanent currency, the Croatian dinar bills were issued with the signature of the then Minister of Finance. Our currency (before we introduce the euro) is now the kuna – HRK, introduced in 1994, initially with the signature of the then Governor, Professor Pero Jurković. When Croatia was ordering banknotes for its new currency in 1993, inflation was still very high, and nobody believed that we would soon get rid of it. But inflation was brought to almost zero in a couple of months after the introduction of the stabilisation programme started by end-1993.As a result, we ended up with a huge stockpile of printed banknotes, especially ones of the highest denomination. Therefore, during my term (1996 – 2000) there was no need for new banknotes or my signature on them.

Ante Čičin-Šain was a great man who cared about his country dearly. Even when removed from office he did his best to help and promote Croatia as Ambassador to the EU and later to the UK and Ireland, as you all know. Let me tell you about an episode I remember well. I think it was 1994. The war was still going on and Croatia was isolated politically and financially. We needed international contacts and, even more so, money. Croatia became independent without any international reserves. So, the then governor Pero Jurković decided to travel abroad, establish contacts and try to get some loans, despite international semi-official sanctions. He decided to bring me along. We went to visit (semi-privately) the then head of Eastern Europe at UBS, Mr. Friedrich von Schwarzenberg. UBS was chosen as it had done a lot of work with the former Yugoslavia. But, how did we get in touch with von Schwarzenberg? The meeting in Zurich would not have been possible without Ante not only arranging it but also coming with us. I remember being somewhat surprised that he was willing to help even though he was no longer Governor. It was a great trip although, sorry to say, we did not manage to get any loans at that time.

Another episode I remember well about Ante was when he was Ambassador to the UK and Ireland. I had some business to attend to in London and arranged for a meeting with him. I had barely entered his office when he took me by the hand and out of the building and walked into the square where the Embassy was located. He waved his hands excitedly and asked me what I could see. Frankly, being still jetlagged from the trip I only saw a beautiful square in full blossom (it was spring). Then Ante, somewhat disappointed, finally said: “This is the famous Fitzroy Square, designed by Robert Adam. The design of some of the buildings was inspired by Diocletian's Palace in Split.” He was very proud of his native city. At the same time, he was a true international intellectual and a local-patriot.

I remember him always being full of life, of new ideas and projects to pursue. The last project he was working on was a far-reaching one, a multi-volume work on the complete monetary history of Croatia to be written by different experts and coordinated by him. The last meeting I had with him and a group of central bank officials in Croatia was on this topic. Unfortunately, God's plans were different. May his soul rest in peace.

2. A brief walk down the central banking memory lane

Central banking has a three hundred-plus-years history. It would be quite a walk to do its full length. But, as some people decide to walk only part of the famous Camino de Santiago to find their spiritual enlightenment, I have decided to walk with you only through the last part, specifically the last two decades. As I have already mentioned, I was Governor from 1996 to 2000, and I would like to make some comparisons between what central banking looked like in the last century and how I see it nowadays. This is not a perfect comparison as I was an insider then, and now I am just an external observer – a central banking *voyeur* of a sort. Truth be told, since I left the central bank I've been earning my living as a central banking consultant, so I do have insights into central banks, but mostly the ones less advanced that need technical assistance. Nevertheless, allow me to walk you through four episodes, where I personally see the biggest changes between then and now. When I did this exercise, I was surprised by how much has changed.

a) From one-mandate consensus to multi-mandate uncertainty

In May of 1996, I attended my very first BIS All Governors' Meeting in Basel. I was eager to learn everything I could from the "big guys" and proud to rub shoulders with other governors during dinner. I still vividly remember the then Chairman of the BIS Board, Swedish Governor Urban Bäckström, giving one the following advice: "To be a good central banker you have to remember only four things: inflation is always too high, interest rates are always too low, if the economy is growing healthily it is because of the central bank, and if it has problems, blame it on the Finance Ministry." He was not the only one. The late Baron George (Governor of the Bank of England at that time), while smoking his cigarettes, would often say: "Central bankers have only one simple mantra to repeat and it is: price stability". It was a simple world for central banks. Today's central bankers have a much more complex task. They must take decisions in a more complex, dynamic and uncertain world than ever. It may be useful to divide the history of central banking into periods as one of central banking's most prominent economists and historians, Charles Goodhart [2](2010) did. He distinguishes the periods of consensus and the periods of uncertainty. The periods of consensus in central banking are: first, the Victorian era (1840s – 1914) with the main characteristic being the gold standard, second, government control (1930s – 1970s)

[2] https://www.bis.org/publ/work326.pdf

with fiscal (Keynesian) dominance and third, the triumph of the markets (1980s – 2007) with central bank independence and inflation targeting. He pointed out that the *interregna* between those periods are often confused without a clear consensus on what central banks should do.

Even defining an appropriate target for a central bank has lately been questioned. Arguably, the biggest change in central banking mandates since the 2007-GFC (global financial crisis) has been the **explicit** addition of the goal of financial stability. And this is typically the case, regardless of whether central banks do microprudential supervision. Even more so, regardless of whether their laws state it or not, central banks are expected to be the custodians of stability of the overall financial system. Systemic risks, how to measure or manage them, and the use of macroprudential tools are a relatively new game for central banks. But, every reputable central bank must publish not only its Inflation Report but a Financial Stability Report as well.

And what is more, even the consensus that central banks should aim at price stability has been disputed.

Some (Frankel, 2014) claim that the goal of price stability (and inflation targeting as a tool to achieve it) is too narrow and central banks should target nominal GDP. This adds a new dimension; who, the government or the central bank itself, should define the target? This has major implications for the governance structure of the central bank (Lybek and Morris, 2004).

In 2013, Mark Carney, Bank of England Governor, launched a new central banking tool: forward guidance policies. The interesting part of his approach is that he mentions the unemployment rate as a future trigger for changing interest rates. So, it is not only inflation rates that matter anymore. But, for me personally, the last shock to my belief in inflation targeting and price stability as the only goal central banks should pursue is that on March 26, 2018 the new PTA (Policy Target Agreement) between the Reserve Bank of New Zealand (RBNZ) and the Government, as well as inflation, mentions unemployment as a goal[3]. This was linked to the initiative to amend the RBNZ act accordingly. I know the Fed has a dual mandate, as so do some other central banks. But was it not considered a legacy of the past? People were telling Ben Bernanke he should get rid of the unemployment target as it could create conflicts in pursuing price stability. Now, New Zealand is moving in that direction. They invented inflation targeting. I can only say in a sad voice: *Et tu, Brute?*

b) New instruments of monetary policy or old wine in new bottles

When first Yugoslavia, and then Croatia, had episodes of hyperinflation, the recipe we were given to deal with it was simple. Raise interest rates to positive in real terms and stop printing money. Inflation is always a monetary phenomenon, is it not? So, we did it. Croatia got rid of inflation. But look what is happening after the GFC.

[3] https://www.rbnz.govt.nz/news/2018/03/new-pta-requires-reserve-bank-to-consider-employment-alongside-price-stability-mandate

Inflation targeters are doing their best to get inflation up to 2%, from deflation or serious deflation fears. How come that with all that multiplying of the biggest central banks' balance sheets, i.e. printing money, we still cannot get inflation up? If in the 90's I had spoken about the benefits of the QE and other unconventional monetary policy tools at one of the meetings in the *sanctum sanctorum* of central banking – the BIS head office in Basel – I would not only have been looked upon in disbelief but probably thrown out of the building for uttering such heresy. When I was learning my lessons about central banking and monetary policy, one of the main points was that monetary policy should not be sectoral, i.e. should not intentionally have distributional effects. In the early nineties, when I joined the bank, the Croatian National Bank still maintained the selective, sectoral loans, as they were called, from the primary emission to companies (*via* banks). We, the young guys at that time, fought vehemently to abolish such a relic of socialism and a cause of inflation, making the quantity of money endogenous, outside our control. We wanted to show our devotion to the modern market-based central banking. And we did. During every public appearance, I continued preaching that monetary policy should not be selective and should aim at price stability. However, much to my surprise, and I am sure to the delight of those who were opposing us at that time, the ECB today is not only printing money like crazy, tripling its balance sheet and buying government bonds but – it is even buying corporate bonds. Today, buying bonds from LVMH, Nestle or Shell is considered efficient monetary policy that will improve monetary transmission. So, frankly, I wonder why the Corporate Sector Purchase Program (CSPP)[4], as it is officially called, is considered efficient and even necessary, a non-standard monetary policy invention that will save our economies while what the CNB did in the past was a relic of socialism that was pushing inflation up. Otmar Issing[5] warns that "The biggest threat for independence lies in possible actions by the central bank itself. One comes from using instruments with distributional consequences, such as cheap credit to special groups, banks or companies." But CSPP is alive and kicking.

Another change of heart is to be seen in interest rates. I remember well when in the mid-nineties (I was Head of Research and Statistics at the CNB) the first World Bank missions to Croatia came to help in restructuring banks. The first lesson they taught us was that the precondition for sound growth and an efficient allocation of resources was to have positive real interest rates. This is Econ 101, is it not? Wow! Think today. The ECB has nominal deposit interest rates negative. And it is not only the ECB. The central banks in Switzerland, Denmark, Japan and Sweden do the same, although not for the same reasons. Some experts want to abolish cash so that negative deposit rates on individual bank accounts could be a tool to fight the next crisis (and stimulate demand). With no cash, households cannot stash it but must spend their money to avoid being taxed with negative interest rates.

[4] https://www.ecb.europa.eu/pub/economic-bulletin/html/eb201605.en.html#IDofBox2

[5] https://voxeu.org/article/uncertain-future-central-bank-independence

Finally, think how the approach to capital controls has changed. With the Washington consensus, we were all convinced that, after the current account liberalisation, the next step should be a complete liberalisation of the capital account. The free movement of capital around the world would lead us if not to Utopia directly than at least to the Great Moderation, i.e. the reduction of volatility in the business cycle. Today we know better. For example, the Croatian central bank introduced capital controls around 2005 against the IMF advice. This has understandably created a lot of criticism from the commercial banking community and (too) liberal economists. However, the CNB today is vindicated for its foresight. Capital controls are kosher again.

The shortest answer to my questions is that conditions have changed and (luckily) so have policies and instruments.

In the 60's Bob Dylan was singing "The Times They Are a-Changin'". True, baby boomers were used to high inflation, while millennials are used to price stability. As a baby boomer, I can only say *O tempora, o mores*!

c) **From secret societies to media celebs**

In the past, central banks were regarded as being like secret societies. Maybe not Illuminati or Freemasonry, but powerful men's clubs who take decisions that influence us all, while no one outside the circle is supposed to know why and especially not when. Remember the famous Plaza Accord on exchange rates from 1984? Can anyone tell me the names of the governors that attended the event, which resulted in the depreciation of the USD against the German mark and the Japanese yen? Probably not, because the agreement took place between the Finance Ministers of the US, the UK, West Germany, France and Japan. Things have come a long way since then. Can you imagine such a meeting being held today without central bankers? I cannot. Central bankers may not have their devoted Twitter followers like Kim Kardashian or President Trump, but they are much more present in all types of media including social networks and not only in specialised financial media. In my opinion, the first real big international media star in central banking was probably the Maestro, Alan Greenspan. However, after the GFC, the tables turned. He was blamed for so many things and suddenly viewed as a villain. I leave it to PR experts to explain what has happened. Another good example of a media star central banker is Mark Carney. Remember his transfer from the Bank of Canada to the Bank of England? It was followed in the media as if Lionel Messi was leaving FC Barcelona for Real Madrid, C.F. Mark Carney, the first non-British Governor at the Bank of England during 300+ years of its history, negotiated with the then PM David Cameron: firstly, a shorter than eight years mandate (five years, but he even got an option, which he activated for one more year); secondly, a substantially higher salary than his predecessor Baron King and, thirdly, a big annual accommodation allowance. All this was abundantly reported in the press. Definitely, in central banking things have changed from a closed "brotherhood" to today's transparent public servants and educators. Central bankers not only hold regular press briefings, publish minutes of their board meetings but are having town hall meetings or even business luncheons with ordinary folks explaining their policies, using all social media to spread their messages. Not long ago monetary policy decisions were considered too complex for mere mortals to understand them, so why bother? Today central banks consider it their primary duty and a necessity to have the public in their corner. And for that reason, communicate and explain they must.

The central bank communication is one of the most sensitive areas for central banks. Even the announcement of a possible change, without any changes in the instruments themselves, can create havoc on the markets, as we have learned during the taper tantrum in 2013. Governors consider central bank communication to be: "… at the heart of monetary policy. It is actually a monetary policy tool[6]", as explained by Mario Draghi in his 2014 speech. "Whatever it takes" from 2012 will remain to be one of the most famous effective communication phrases, and not only in central banking. I am sure it is and will be taught at universities around the world. Transparent communication is seen as an important tool to anchor expectations. But not only this. It may sound like a *cliché*, but credibility is the most important asset any central bank has - or does not have.

With the greater powers that central banks gained during and after the GFC, and due to the move to greater independence from politicians to perform their mandates, the public scrutiny of central banks has increased. Central banks responded by increased transparency. Note that some consider that there is a democratic deficit in delegating monetary policy and financial stability decisions to the *de facto* unelected central banking technocrats. Therefore, accountability and additional transparency are not only *de rigueur* but also a necessary precondition to maintaining the present level of independence in democratic societies.

d) **From profitable public institutions to cost cutters chasing KPIs**

Another area of dramatic change I have seen in central banking in the last 20 years concerns internal governance and the attitude towards the efficiency of a central bank's overall operations. In the late nineties, the main worry, on top of inflation and interest rates, was to discuss whose wine cellar was better: that of the BIS or the Banque de France. Or, should central bankers have residencies and recreational centres? We all agreed on the Basel consensus that central bank staff should have much higher wages than public sector ministries, but they reluctantly agreed to be paid less than commercial bank managers due to their higher job risks. Today, central banks not only look to the private sector for advice on how to increase their efficiency

[6] https://www.ecb.europa.eu/press/inter/date/2014/html/sp140804.en.html

but also discuss it regularly among themselves and want the public to know they are lean and mean. Look at the Central Bank Governance Forum at BIS[7]. Central banks focus more and more on operational efficiency, (re)define their processes (sometimes distinguish between core and auxiliary ones), define the owners of processes, have strategic plans linked with three-year budgets, etc. I remember when in the late nineties we were reluctant to introduce internal audits at the central bank in Croatia. Why bother? We knew what to do! It was pure arrogance on my part. Look today at the area of risk management at central banks. Central banks have always paid attention to financial risks, i.e. the risks of managing their reserves, or as we prefer to call them today – assets. The non-financial ones were simply something that did not exist. Overall risk management is a relatively new function to central banking. The function has been expanding in this century and speeded up after the global financial crisis. According to BIS sources, in 1999 only about 15% of BIS surveyed banks had some type of risk functions. Today, I assume all are at least thinking about it as central banks are rapidly moving from being risk-averse to being risk-aware. Twenty years ago, if you asked a central banker about his risk appetite, his thoughts would wander to some new exotic food. Today I am sure at least most of them have heard about the amount and type of risk that a central bank is willing to take in order to meet their strategic objective, even if they do not have it for their own central bank. As the understanding of the importance of credibility for central banks has increased, elevated to among their most important assets, reputational risk and risk in general are studied in more detail. In my view, everything the central bank does and is visible from the outside is communication and therefore has a risk element in it, from the governor's behaviour in his or her free time to MPC press releases. Every information available to the public can either hurt or enhance a central bank's reputation.

But it is not only risk management or internal audit that is being borrowed from the commercial sector into central bank governance. In a growing number of central banks, managers at different levels of responsibility are given Key Performance Indicators (KPIs) to achieve. Their salaries often depend on their performance. Overall efficiency in a central bank has been a hot topic for some time already, and I am sure that interest in it will continue to grow.

I see two main sets of drivers of this trend: a) (arguably) the secular trend of decreasing seigniorage and b) accountability due to the greater powers that central banks have gained.

I have already spoken about accountability, so let me address briefly the former, secular trend in decreasing seigniorage. I have not conducted any empirical studies of trends in central bank profitability, so what follows are my own speculations at my own risk. I think that in the future decreasing seigniorage will be something central

[7] https://www.bis.org/cbgov/index.htm

banks have to count with. Why? The highly cherished independence of a central bank is reliant on its sound capital position and the profitability of the central bank. In simple terms, it relies on not having to ask the Finance Ministry for money. Note that without financial independence central banks are not going to be able to perform their function(s) efficiently. How do we stand here today as compared to twenty years ago? Usually, the main sources of central bank profits are: a) cash (the currency in circulation is a non-maturing and non-interest-bearing liability, something commercial banks can only dream of), b) the reserve requirement and the excess reserves of commercial banks typically not remunerated at market levels, c) lending to the government and banks at interest rates preferably close to the market ones, and d) investing in foreign assets at historically high nominal rates of 4 – 5%. For these reasons, the spread was always quite comfortable. However, if one looks carefully, all these sources of income may come under downward pressure. First, there is a trend towards using less and less cash. Some central banks push for cashless (or cash-lite) societies. Fintech and digitalisation are making electronic payments so much easier. Even the smallest amounts are paid by either contactless card or iPhone. However, this trend is not universal, and it seems that cash is still king. I was surprised to find that in the euro area: "… in 2016 around 79% of all payments at POS were made with cash, 19% with cards and 2% with other payment instruments. In terms of value, the market share, …(was), …, 54% for cash, 39% for cards and 7% for other instruments."[8] Furthermore, Fintech creates substitute monies to legal tenders that are gaining ground (like the famous Bitcoin, but many more exist). Under b), in most central banks reserve requirements have decreased significantly and will probably continue to decrease, especially for longer-term deposits. The ECB has a 1% limit and Canada, the UK, New Zealand and some other countries have abandoned it completely. With regard to c), lending to the government, which used to be a very profitable activity for central banks, is either limited or completely forbidden by best practice. Lending to banks (once the financial system is cleaned up and stable) should be only exceptional. One would like to think that with the NSFR (Net Stable Funding Ratio) and LCR (Liquidity Coverage Ratio) ELA (Emergency Liquidity Assistance) would rarely be needed. Finally, (d), in a low interest rate environment and with still negative interest rates on deposits in some institutions (which hopefully will not last too long) those sources of income for central banks are not as abundant as they used to be not long ago. Nobody knows if interest rates will ever be at the levels before the crisis, or in the 90's, but it is not likely that it will happen any time soon.

Therefore, central banks should pay more attention to their efficiency because the world they operate in today is much more transparent, they are held more accountable than before and their sources of income may decrease in the long run.

[8] https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op201.en.pdf

A final note on central bank governance and the push on efficiency. Yes, we all agree that central banks have changed and will probably have to speed up the process even more in the future. But the big question is how to initiate this change? The reason I am raising this question is as follows. As mentioned before, central banks borrow many management techniques from the private sector. But the private (corporate) sector is changing because of the market pressure. If you do not adapt to the new environment, you disappear, as companies, such as PanAm, Kodak or AOL, have learned the hard way. However, central banks do not vanish, they are public monopolies. It is so much harder for them to find motives to change. Indeed, peer pressure during meetings of governors can make those lagging behind blush or feel embarrassed that they do not have a modern risk management function in place, for example. So does transparency and public attention if a central bank is spending on fancy cars or excessive travel abroad. But, these are different motives than the motive coming from the "death threat" of the markets. They can be called a “nudge”, to honour last year’s Nobel Prize winner Prof. Thaler. The big question remains: how should central banks adapt to new complexities and realities around them, where to find internal motives for permanent changes? Once they realise they need to change, there is the second question of how to do it, as there are often no in-house skills and knowledge on such topics. So, some banks formally have departments for change management and hire experts from the private sector, or pay external consultants. More and more central banks adopt the functions/positions of Chief Operating Officer (COO) or Director of the bank.

The comparison of those four areas, mandates, instruments, transparency and internal governance are a good indication of how central banking has changed. And I bet they will continue to be challenges in the future. But there will be additional challenges, so I am sure central banking in the next two decades will be anything but boring. Actually, it stopped being boring about ten years ago.[9]

Therefore, in the last part of my speech I would like to have a quick look at the crystal ball and add some additional challenges.

3. Additional challenges ahead

There is an old French saying: *"Un homme averti en vaut deux*", or in plain English: forewarned is forearmed. But, how much do we know about the future? Central banks regularly publish inflation forecasts and announce what they intend to do in the future, i.e. they give forward guidance. This implies that they know the future and can predict what they will do so as to anchor expectations. But, does it work? Without any econometric analysis, I confess that I am not a big believer in fortune telling for

[9] See prof. Tabellini's article at https://voxeu.org/article/why-central-banking-no-longer-boring

different reasons. I will rely on two stories. The first one goes like this. A then young psychologist by the name of Philip E. Tetlock did not believe much in expert forecasts. In 1984, he started an experiment. What he did was that he asked about 300 experts in different fields, including government officials, professors, journalists, etc., to make more than 27,000 predictions about the future. He asked quantifiable, verifiable questions. In 2005, he published the results in a book entitled Expert Political Judgment. His finding? In their forecasts experts were only slightly more accurate than chance. Let me repeat: slightly more accurate than chance. Interestingly enough, they were worse than basic computer algorithms which extrapolated trends. In other words, expert judgments about the future are not very useful. We tend to believe them, we make them and yet, as Tetlock demonstrated, they are not very accurate. True, political forecasts and economic forecasts are not the same. However, even the Queen was puzzled: how come the profession did not see the GFC coming.

The second story is about Nassim Taleb, or more precisely his black swans. They are excellent examples of how difficult it is to predict what will happen, especially big events with significant consequences. In his 2009 text, Taleb et al. describes how both 9/11 or the GFC are events that we simply could not predict. My take on this is that we need to be humbler about our ability to predict complex and dynamic, usually non-linear systems such as our economies today. Or, one can conclude that the future is not what it used to be. With all those caveats, I still think some of the future challenges for central banks can be identified at least in the short to medium run.

a) **Changes in social attitudes or is the Washington consensus dead**? Populism is one of them (Goodhart et al.[10]). Will it put additional pressure on central bank independence? Will it influence central bank mandates, i.e. by putting more emphasis on employment in the future or subjecting banks to short-term political goals? Questions abound, but answers are few. Another, linked to it, is the rising protectionism. There is no doubt that a China-US trade war will have consequences not only for those two countries but for the global economy as well. How will it affect growth, will it have effect on the way monetary policy is conducted in the future? As discussed previously, central banks typically shy away from intentional distributional policies. But income and wealth inequalities are a hot topic. In the post-Piketty world, not even central banks can ignore these questions. One of the indications of such social changes translating into central banks mandates is the mentioned new PTA in New Zealand. Will others follow?

b) **Digitalisation of financial services and cryptocurrencies.** Digitalisation is changing the landscape of the financial industry very rapidly. There is an abundance of literature on this topic, without a consensus view of the outcome for central

[10] https://link.springer.com/content/pdf/10.1007%2Fs11079-017-9447-y.pdf

banks[11]. Some central banks embrace Fintech and promote their own sandboxes to allow stakeholders to play and see the consequences. Others ban outright trade in Bitcoin, for example. Some play with the idea to issue their own digital currencies, the Central Bank Digital Currency (CBDC), like Riksbank, the Reserve Bank of India, the People's Bank of China, etc. Others, like the Swiss national bank are vocal with warnings on the unmeasurable risks of issuing CBDC[12]. All seem to agree that the distributed ledger technology (blockchain) has a lot of potential, but it is not clear when its daily use will be functional and efficient. In the meantime, Iceland can hope that not all miners will move to their island and that they are left without electricity for their daily use. Obviously, digitalisation is here to stay and expand, so the challenges are how to reap the benefits and, at the same time, adequately regulate and manage risks, especially the systemic ones. Here, I will only mention the growing issue of cybersecurity. With an increasing interdependence and interconnectivity of institutions, including central banks, the consequences of a potential cyber-attack for the stability of the financial system are growing[13].

c) **Artificial intelligence (AI)**. Will AI replace central bankers one day? Probably governors need not worry about their jobs in the short run. The other day I asked Siri over my iPhone: "Hey, Siri, should the US raise its interest rates?" Siri replied: "My web search turned something up for: US raise interest rates" and suggested five articles, all recent and relevant. I can only wonder if Bezos' Alexa would have a better response. But, I am sure that in five years from now their answers will be more sophisticated.
Obviously, there are benefits as well as risks in using AI for central banks. This is well explained in Wuermeling (2018)[14]. Some central banks like the Bundesbank (and I am sure others) are using AI to monitor parts of the financial markets. Combined with big data and data analytics, and central banks have plenty of it, AI could be wisely used to increase our knowledge. But supervisors should beware as relying too much on AI can make markets less stable. We do not know, so let us be cautious. Remember the LTCM Fund? Two Nobel laureates were certain they had managed all their risks. The real world proved them wrong.
My last comment on AI is that, to the best of my understanding, AI can deal with measurable risks. As the old saying goes: Not everything that counts can be counted, and not everything that can be counted counts. This is the very nature of human behaviour and our economic system.

[11] See, for example, Prasad's work: https://www.brookings.edu/wp-content/uploads/2018/04/es_20180416_digitalcurrencies.pdf
[12] https://cointelegraph.com/news/govt-issued-digital-currencies-threaten-financial-stability-says-swiss-central-banker
[13] https://www.bis.org/review/r170811a.pdf
[14] https://www.bis.org/review/r180307d.htm

d) **Too many balls in the air.** Central banks are already juggling with a lot of them. Price stability, financial stability, now (un)employment, being the only game in town when a crisis hits, etc. Frankly, I was somewhat surprised to see the recent FT.com article entitled "Central banks chiefs sound warning on climate change"[15]. Yes, it was on the consequences of climate change for the financial system (complex, are they not?) but still. The article suggested "carbon stress tests for banks" and further elaborated on links between climate and economic scenarios. It looks as if climate/carbon risk will be next to credit and liquidity to be regulated, monitored and measured. Are other negative externalities far behind? Not long ago, Baron King issued a warning that: "… the biggest threat to the future and independence of central banks comes from the twin risks of promising too much and acquiring too many responsibilities."[16] Over-promise and under-delivery is a real danger for the credibility of central banks in the future, as well as for their efficiency in performing their core functions.

With all of this in mind, what advice can one give to governors?

4. Some unsolicited advice

Advice No. 1: Beware of cognitive biases. Groupthink and intellectual capture can be dangerous. Remember how almost everyone in the profession believed in the Washington consensus? In general, there is always a problem in saying the truth to power. Remember when Raghuram Rajan, IMF Chief Economist, issued warnings at Jackson Hole but the elite were not willing to listen. Or, in his own words: "I felt like an early Christian who had wandered into a convention of half-starved lions."[17] Or, think about the famous Greenspan put. One cannot identify the bubble, so central banks should do nothing. Once it bursts, you can mop it up. The challenge is that it is necessary to follow developments in central banking, academic and practical ones. But one needs to think hard about what novelties mean for a country and a central bank. As already mentioned, price stability as the only goal and inflation targeting for central banks was the way to go, but now we have different, more nuanced views. The lesson I am trying to distil out of it is the need to use common sense and not just to follow fashions or theories, especially as every country is different. I appreciate that the euro area central banks may not have that choice. This is especially true if we consider theoretical views on central banks and what is sometimes labelled as definite proof. To quote Yogi Berra: "In theory there is no difference between theory and practice. In practice there is."

[15] https://www.ft.com/content/888616d6-3b07-11e8-b7e0-52972418fec4
[16] https://www.fnlondon.com/articles/fn-future-of-finance-central-banks-mervyn-king-20160926
[17] Raghuram G. Rajan, Fault Lines: How Hidden Fractures Still Threaten the World Economy (p. 3), Princeton University Press, Kindle Edition.

Advice No. 2: If anything can go wrong, it will. There is an old rule in central banking: *Always take good news as temporary and bad news as permanent*. The point here is not to be permabear, meaning you are permanently in a bearish mood. But one has always to consider downside risks and make plans for the least possible events. If we have learned anything from this crisis, it is that tail events can happen and do happen. Look at the euro. Today, we fully realise that at its launch almost twenty years ago it was a half-baked product at best. In its design, no sovereign defaults were envisioned and no exit from the euro anticipated. How realistic is this? Again, the message is not to be pessimistic. But all policy makers must think and have some contingency plans ready even for the worst moments. It can be very costly and dangerous to assume only optimistic scenarios. One is much better off if prepared for negative shocks. Because of the asymmetry of the payoff matrix, it is very relevant to have contingencies and be ready for the materialisation of downside risks. This means having sufficient cushions in macroeconomic fundamentals for unexpected external (or internal) negative shocks and one should work on building resilience. One should remember the old central banking wisdom: *Central bankers are paid to worry*. Corollary to this one: **If something looks too good to be true, it most probably is**. There are many possible experiences to draw from, but I will mention only your own experience: the Irish economy and its banks. The Irish model of growth, the Celtic Tiger, was a showcase for many small economies, including my own, which looked up to Ireland and its speedy convergence growth (in the period between 1995 and 2007). Until the crisis, Ireland was a success story of what the EU and euro membership could do for a small country to speed up its convergence. But it turned into a problem country that needed a bailout. One should remember that Ireland had low public debt and deficit until it had to rescue its banks. What is the lesson here? Miracles do not happen. Real estate prices do not grow indefinitely. Bubbles burst. However, banks were considered too big to fail so the state had to underwrite their liabilities. Let us remember the old economic policy dictum: *All problems that are now too big to fail started as too small to bother with.* The overexposure of Irish banks to real estate and the real estate bubble did not happen overnight. And who is to be blamed? According to one report (the Nyberg Report), a national mania or the happy-go-lucky attitude of the Irish were the culprits. Some may blame Alan Greenspan and his dictum that central banks should not try to prick asset price bubbles as they are difficult to identify and there is not an adequate needle for this (i.e. monetary policy instrument). It could have been intellectual capture (as mentioned already).
Which brings me to my next advice.

Advice No. 3: Be humble and modest about what you know about economics, but do not forget the simple rules of a healthy lifestyle. Economies are complex, non-linear, dynamic systems, to a large degree driven by human behaviour that is not always predictable. We need to be humble when it comes to our understanding of economic phenomena. We did not master all the risks and we cannot predict all future events (as Tetlock and Taleb[18] remind us). So, are we helpless? My answer is – no. Central bankers and economic policy makers in general can follow a healthy lifestyle advice: like prudent fiscal policy, sustainable debt, low inflation, take pre-emptive actions to correct growing macro and financial sector imbalances (including unorthodox measures) to minimise the impact of unexpected negative shocks and, above all, be resilient. Even if we cannot predict where the next crisis will come from, we can be prepared for any kind of shock with adequate buffers. Today's expression is to be resilient.

Advice No. 4: Trust yourself. In this context, "trust yourself" means several things. First, trust your intuition and knowledge against others, especially the know-it-all gurus. Second, trust your intuition as against models and fancy and complicated instruments that guarantee you infallible outcomes. Third, trust yourself when it comes to academic publications and economic theory that guarantee rock solid proofs. This does not mean you should not listen to others, on the contrary, look at models and read academic papers. But, ultimately, trust your central banking instincts. Nobody knows your country better than you do or at least should not know it better if you are a professional. That said, read and follow what others are doing, be up to speed, but at the end consider your own problems and think: what are the main lessons you have learned from all of this. Prioritise, see the forest through the trees and find your own solutions. If this means going against the conventional wisdom (be it politicians, the IMF or academics) and you are confident you are right, do it. This applies to the use of models. Overconfidence in models can be dangerous. My own experience tells me that decision-makers are sometimes afraid to ask what something means in plain language in reports they receive from lower levels within the central bank. Here is a false security example I would like to recount. Before the GFC, I worked for the Independent Evaluation Office of the IMF and visited a country in central Europe. One Deputy Governor, a good friend of mine, told me that their banking system was stable. His main argument was that they had stressed the banking system several times, with the devaluation shocks of 15% for the domestic currency against the euro, adding that such a huge depreciation could never happen, but, still, they had done it. Sure enough, a year and a half after the GFC hit, that country's domestic currency depreciated by almost 40% (more precisely 38.7% from July 2007 to January 2009) and the banking system needed a lot of assistance, including help from the EU and the IMF. Indeed, I understand that there was no shortage of stress tests of your banks before your crash. For me, those are good examples of overconfidence in techniques/models.

[18] https://hbr.org/2009/10/the-six-mistakes-executives-make-in-risk-management

Where do we go from here? Should governors be worried? My answer is negative. They should not be worried, but they should be prepared for challenges that lie ahead of them. And not only the "known unknowns" such as cryptocurrencies, cyber-attacks or fintech, which are already identified as potential threats. They should prepare for them by continuing to create sandboxes or fintech accelerators, as the Bank of England has done. They should think about the "unknown unknowns", i.e. black swans. As Taleb would recommend, one should not try to anticipate where the next crisis will come from, but be ready for any eventuality, beprepared.

Finally, let me share with you my last central banking wisdom, *Governors earn their wages when models stop working*. I have no doubts that in the years to come the remuneration of the central banking community in general, as well as that of governors, will be well deserved.

Thank you so much for your attention.

REFERENCES:

- Bank of International Settlements, 2009: *Management of non-financial risk* (Chapter 8).
  Available at: http://www.bis.org/publ/othp04_8.pdf

- Frankel, J., 2012: *Inflation targeting is dead: Long live Nominal GDP targeting*, VOXEU.
  Available at: https://voxeu.org/article/inflation-targeting-dead-long-live-nominal-gdp-targeting

- Goodhart, C., & R. Lastra, 2017: *Populism and central bank independence*, Center for Economic Policy and Research.

Available at:
http://eprints.lse.ac.uk/83164/1/Goodhart%20et%20al._Populism%20and%20Central%20Bank%20Independence.pdf

- Khan, A., 2016: *Central Bank Governance and the Role of Nonfinancial Risk Management*, IMF Working Papers.
  Available at: https://www.imf.org/external/pubs/ft/wp/2016/wp1634.pdf

- Lybek, T., & J. Morris, 2004. *Central bank Governance: A survey of Boards and Management*. IMF Working Papers.
  Available at:
  https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Central-Bank-Governance-A-Survey-of-Boards-and-Management-17846

- Prasad, E., 2018: *Central Banking in a Digital Age: Stock-Taking and Preliminary Thoughts*, Brookings.
  Available at: https://www.brookings.edu/wp-content/uploads/2018/03/es_20180416_digitalcurrencies_final.pdf