

**The Policy Pitch – Australia in the age of discovery: navigating new risks and opportunities - Melbourne – 13 September 2016**

The world economy has never been more interconnected, and scientific discoveries and technologies are changing it quickly. Australia has navigated the challenges well so far. But much of the world is struggling: the gains from trade and innovation are unequally shared, trust in institutions has faltered, politics too often becomes a blame game, and pressing challenges are neglected.

This *Policy Pitch* event brought together the author of a fascinating new book, **The Age of Discovery**, and Australian policy thinkers to assess how Australia should confront the challenges of this age. The broad-ranging discussion covered:

- What drives the pace of innovation, and which technologies are most transformative?
- What new risks arise from global connection and interdependence?
- What lessons does the Renaissance, the first ‘Age of Discovery’, hold for our current era?
- What, practically, should Australian policymakers do to capture the opportunities and mitigate the risks?

**Moderator:** Dr Jim Minifie, Productivity Growth Program Director, Grattan Institute

**Speakers:** Chris Kutarna, Co-Author of *Age of Discovery*  
Kathryn Fagg, Australian chair, board member and senior executive

JIM MINIFIE: Thank you so much for that inspiring introduction. For Grattan, the partnership that we have with the State Library is such a valuable one and it's great to see everybody here tonight. I'm delighted to introduce Chris Kutarna and Kathryn Fagg. Chris is the co-author of this 2016 book *The Age of Discovery* with Ian Goldin. The two authors of the Oxford Martin School have taken the opportunity to zoom back from the near term that Grattan deals with to try to look at some of the big challenges that world society is facing, and the point of tonight is really to integrate some of those big themes with Australian policy debates.

Chris is a two-time Governor-General's medallist, a Sauvé Fellow, a Commonwealth Scholar and a Fellow of the Oxford Martin School. Chris, in what seems to be another one of your many strings to your bow, your PhD work was actually on contemporary politics in China; so if anybody has questions about that I'm sure you'd be willing to field them towards the end. Tonight Kathryn Fagg is joining us. Many of you will know Kathryn, you're an experienced Chair of boards and board member, you're a member of the Board of the Reserve Bank of Australia, Incitec Pivot, Boral and Djerriwarrh Investments so you've really got a uniquely broad exposure to the economy. Not only that, you're also the Chair of the Melbourne Recital Centre, of the Breast Cancer Network of Australia, and you're a member of a number of other non-government organisations, World Vision's Business Advisory Council, and you're actively involved with Chief Executive Women. From our point of view, the reason why it's so exciting to have the two of you join in discussion is that we're looking for a creative tension between the big picture reflecting on some of the themes of history in light of the current moment and to draw those into a much more concrete frame.

If I can start with an obligatory quote from Winston Churchill, himself active for good and bad in a number of historical arenas, “The farther backward you can look, the farther forward you're likely to see” and that was a quote that seemed apposite to me as I was reading your book, Chris. You're

reviewing our point in time in light of another really fascinating pivot period in history from about 500 years ago. So let me just start with a few questions to you Chris. Why did you and Ian write the book?

CHRIS KUTARNA: First let me say thank you to you, the Grattan Institute and the State Library for hosting this wonderful *Policy Pitch*, and thank you all for coming to be a part of it, it's a real honour to be here, so thanks for that. This book has had a pretty long germination. I pitched it to my co-author in 2010 and we started working on it in 2011 and so it was very much in the aftermath of the Global Financial Crisis. The basic inspiration for it was one of the lessons, and there are so many, from the Financial Crisis is global finance is one of the best resourced domains of international policy, a lot of PhDs are working on understanding the system and making it function well, and yet it so catastrophically failed in its governance.

The lesson that I drew from that is I think that to make good sense of the present, to see the shocks coming, yes, we need facts and analysis, but that's one half of the crystal ball. We also need strong imagination which is going to stretch our thinking outside of linear expectations of the present continuing and start to imagine what are the disruptive shocks that could completely upset this applecart? I'm mixing metaphors now. So that was the inspiration, this feeling that there is a torrent – and I was in an academic environment at the time, started my PhD at Oxford – analysis going on, but there's very little effort being done to take a deep breath, take a step back and just make sense of the time we're in. Why is it that so much of reality is not conforming to our expectations and so we feel these shocks?

I think what's been interesting is in the limp toward the finish line on this book, to finally really finish it in 2015, it felt like the world was continuing to validate this notion. You know, Brexit, Trump, a lot of improbabilities that have come to dominate our reality I think reinforce this idea that maybe we don't have the handle on the present that we thought we did and so okay, can we step back and try and make sense of it in a better way?

JIM MINIFIE: What surprised you most as you were researching the book? Did the world turn out to be more interconnected than you thought or was there an angle of interconnection that was very different than you expected?

CHRIS KUTARNA: A couple of things surprised me. One is how apt the lens of what I now think of as the first Renaissance, the first age of discovery really was making sense of the present, and I guess we can get into that later. But the initial inspiration for it, actually I was on holiday in Florence and I went to see Michelangelo's David. Has anyone here been to Florence and seen it? Okay, a good crowd of us.

The reason I had to see this thing was because my parents honeymooned in Florence and my mother had brought back as a souvenir a 2' replica. So if you've been to Florence you see these things on the street corners everywhere and you think, "Who on Earth buys these?" My mom, she buys these things and every Christmas she would decorate him in new ways. So I just had to see it and what was striking about the original. It is so impressive, but I was also reading about the history, the art history of it and what struck me is what Michelangelo's message was. There was a reason that he didn't carve the moment of victory, David standing over Goliath, which was the classic portrayal. He carved the moment of choice, the moment of decision when David recognises there's this wider contest going on and he has an opportunity to step in and shape it, and I thought, "Wow. That is a great metaphor

for what we're trying to say with this book". Then going into the history library and realising that there was a rich metaphor there that really actually, as I read into the history, helped me to understand the present better.

So what had begun as just a cute moment of insight really became a robust framework. I think that really surprised me.

JIM MINIFIE: You've used the term "the age of discovery" not, for example, "the age of flourishing art". What is it about the discovery aspect of that period in history that's so relevant now?

CHRIS KUTARNA: So behind the scenes you cannot imagine the conflict that goes on with a big publish about what the title of the book that I wrote, excuse me, I think I know what I want. But the thing about discovery that was important to me is that there's a duality there, there's a sense of possibility and positivity, but also anxiety and risk. Some discoveries turn out to be terrible and one of the big themes throughout the book is we need to do a much better job at recognising the duality in so many changes, whether it is these technologies. For 20 years we really focused on how they empower individuals. Now we have a much more profound understanding of how they empower the state as well, for example, but that this duality just pervades so much of our current experience and I really wanted to put that idea forward. Also apparently no-one in the US knows what "Renaissance" is, so that didn't work – literally we nixed that one.

JIM MINIFIE: To me, the core of the book is the idea of interdependence or what you call entanglement and you show I think very credibly how that first era of transcontinental connection led to a type of entanglement, a type of interdependence. There was upside in new trade and so forth, but there was also enormous cost, especially to the Indigenous peoples of the Americas who were suddenly subject to measles, smallpox and other old world diseases to which they had no immunity and they were really decimated. Can we dig a little bit into that angle around interdependence and entanglement and why to you is that such an important theme for today?

CHRIS KUTARNA: It's so important I think as a conceptual shift from connectedness and I think that in the 1990s there was sort of an interesting global moment where you had in very rapid succession the fall of the Berlin Wall, the end of the Cold War, the founding of the WTO, China comes on board to a market economy, waves of democratisation across Latin America and Sub-Saharan Africa and parts of Asia, the end of Apartheid in South Africa, the advent of the world wide web, and suddenly so much of our discourse became about how we are connected now and that this is a strongly positive global moment of coming together.

So I think entanglement really challenges us to recognise that there's a kind of naivety in this notion. Being tangled together is very different from being connected. One it's kind of non-optional, so we saw that in the Financial Crisis that when you're tangled you can't just disentangle when you would like to, but instead contagions can spread globally. Goods and bads flow through this tangle we've created, so you look at pandemic models that show that, because we are so much more urbanised now, because we have built such tremendously effective transport networks, now 90% of humanity lives within one hour through transit to a major city, pandemics can flow faster and farther than was ever possible before. Also I think a big, big aspect of the global entanglement we've created is that cause and effect is becoming so hard to understand and we have many consequences of that, but one is our politics. I mean, when questions of fairness and responsibility and accountability are so

difficult to answer because our systems are so convoluted, it becomes very difficult to achieve strong action, to mobilise public awareness about issues like cybersecurity and so on.

So I think that it's the conceptual shift that we really need to take from thinking of our connectedness to thinking of our entanglement and being a lot more mature in this global moment about the duality of what we've created for ourselves.

JIM MINIFIE: Kathryn, it would formerly have been said that Australia was subject to the tyranny of distance, that we were comfortably isolated from that kind of interconnection. Is that your experience on the boards of these major Australian entities?

KATHRYN FAGG: Jim, it's probably worth saying that as well as being on the Reserve Bank board, and I'll talk about that a little, I'm also on industrial company boards and the feature of the industrial company boards is that they have been intrinsically international now for decades and they just actually can't compete at purely a domestic level. But let me talk about from a Reserve Bank point of view, and I am not a spokesperson for the Reserve Bank at all.

I think many of you would be aware that in the last week or so there's been a lot of publicity around the fact that Australia has just tipped over 25 years of growth in our economy, which is almost unheard of in the world. We're catching up now on the Netherlands and in the coming year we're likely to go past them. As was discussed this week, it was actually the fact that we opened up our economy in the early '90s that laid the groundwork for that flexibility in our economy, and the ability to adjust and also to take advantage of the huge opportunities that came particularly from China as it grew and built its infrastructure and opened up to the world. So we were a huge beneficiary of that, but it does mean that we are now very connected and if you look at what's happened in the Australian economy, we have just gone through our biggest terms of trade in a century, we've gone through the biggest investment in the mining sector. For example, we're going through a substantial shift now and a very key feature of that of course is what is happening internationally, so even things such as our current growth rate in GDP and our current unemployment rate are very much affected by the slower growth globally, as well as monetary policy overseas.

So to some extent we obviously can make our own decisions and there are some sectors, particularly the very regulated sectors like the banks, who are still primarily domestic, but anyone who is not really protected by a domestic environment, we are absolutely out there in terms of being connected to the world. I just use the word "connected". I do think it's very clever to introduce the idea of being "entangled" because "connected" does suggest it's just a positive connection, whereas it's much deeper than that.

CHRIS KUTARNA: If I can just add onto that, "connected" was a word that we used for a long time and then people started to put adjectives on it, like we are "hyper-connected". The problem with that is it just means "more", but that's not what's happened. It's not just more connected, it is connected in a qualitatively different way, and you've just described it beautifully how the issues as policymakers or as corporations, the factors that affect us have changed. So I think our language does need to change. One of the broader takeaways in the final chapter is how we need to make new maps the way that Europe re-made it's maps of the world, we need to make new cognitive maps in a lot of areas if we're going to intellectually navigate this time that we live in, and I think that's an important shift.

JIM MINIFIE: Do you think when you look around at the different components of this entangled world there are some areas that are doing better than others and they've got distinct characteristics that we can learn from? Or is everybody on a learning curve and we're, to a much greater extent, having to just experience the shocks as we go and try to adapt to them, rather than get ahead of that curve?

KATHRYN FAGG: Let me just take it from a very pragmatic point of view, Jim. Certainly sitting on the boards of companies, people are extremely aware of how the world is changing and I would think that any of the serious companies in Australia are being proactive about saying what changes do we see happening, how are we preparing for those, where are the opportunities and also where are the risks. I think it's very interesting post-GFC, because initially after the GFC the immediate response was everyone just said, "Batten down the hatches, cut costs. Do what we need to do to survive". There was a very strong survival mode, but after a couple of years people realised of course well, we're not just going to pop out the other side of the GFC and the world is going to be the same. It fundamentally isn't going to be the same and therefore we need to change our business models and accept that that's the world we're going to be in. So I think there has been in most, I'm going to say, professional companies a real shift in attitudes.

JIM MINIFIE: So just thinking about the spectrum of different risks or different exposures, you've got the cyber, there's trade and finance, you'd have climate, arguably that's another shared resource where suddenly what we all do is collectively important in a way that we wouldn't perhaps have anticipated, then Chris you've already mentioned the risk of pandemics of so forth. Do all of those collectively mean that we need a new set of more regional, more even global institutions and capabilities? Or can we handle them in a decentralised fashion?

CHRIS KUTARNA: First a broad comment on that and I guess it gets to this duality. I think this is the best time in history to be alive and there really should be no argument about that.

JIM MINIFIE: You're sounding a bit like our Prime Minister there.

CHRIS KUTARNA: I haven't read what your Prime Minister has said, but I'll go out on a limb and say there's a strong fact base to make that case. By macro measures of health, wealth, education, the flourishing of ideas and the pace of scientific discovery, and I can give you the fact base and the Q&A if you want, we should walk out of this room with no question that this is the best moment in history to be born.

Ours is the golden age and any civilisation in history at its peak would gladly trade places with us and our problems. But, and the giant caveat to that, is that equally this is the most vulnerable moment to be alive and, again, there's a strong, strong fact base to make that argument. The answer is everything. Some of the issues that we face, climate change is a good example, you could argue it requires strong co-ordinated global action, but I think we also have to get more intelligent, so we have to get deeper at a policy level and recognise there are some issues. You could also argue that climate is that, where a coalition of the willing, of those who are the biggest parts of the problem and also the solution can get together and get started. Four countries are responsible for half of all CO<sub>2</sub> emissions in the world, I think it's the US, China, Russia and India. The Paris Accord is great, but until those four countries come on board and say, "We're ratifying it, we're going forward" that agreement really isn't worth the paper that it's written on. There are other issues that affect us all and there's really no sense in trying to deal with them at even a country level.



I don't want to get too far out and scary with people, but one is the security of our public data infrastructure to astronomical phenomenon, like solar flares. To some extent people might say, "Well these are things that rarely happen so we don't really need to worry about them", but a little known fact is that in 2012 NASA recorded the largest ever solar flare from the sun that they had ever recorded since they have had the instrumentation to do it. They calculate that if this solar flare had hit the Earth it would have caused over US\$40 trillion in damage to our communications infrastructure, to say nothing of the kind of chaos that would ensue – I keep picking up my phone because it's just so important for everything – after these devices go dark. That solar flare was in the right place, so it tore directly through Earth's orbital path, but it missed us by two weeks. So these events do occur and actually nothing that we have done as a civilisation over the past 30 years has done anything to alter the likelihood of that event happening, but everything we have done in concentrating more and more what we value on a diminishing set of platforms has increased the cost of these shock events if they do occur.

It's true with many sensationalist examples, like solar flares, it's true with hurricanes, it's true with a wide range of natural disasters that we've increased the cost of, and resolving those kinds of issues I think really does take global action to understand where are the pain points in our globally shared infrastructure and what are we going to do to try to mitigate the costs of these events.

JIM MINIFIE: Kathryn, do you see Australian organisations taking these types of risks seriously, or is it more a question of we've got a short term target to meet, people understand there are certain risks, we're not the right people to bear them, let them diversify and if it hits our industry so be it?

KATHRYN FAGG: Jim, I think one of the interesting things that are happening is people are recognising it's harder and harder to diversify risk. Once upon a time you went into different geographies and it actually gave you a great deal of protection or you went into different sectors, say if you were in resources you went into different commodities. The reality is most of those are now highly correlated and it's because of international trade, it's the growth of China, and so you're having to deal with different questions, which is much more like if something goes wrong we need to recognise it could well go wrong in most parts of our business and can we sustain that shock?

So there is a real shift going on and in some ways I think it gets described as people being more risk-averse. I think there are good reasons for people being more risk-averse. On the flipside, of course it means that there are opportunities, so if you have a solution that works well it's actually easier to take it internationally and grow the business because typically in Australia the biggest challenge for us commercially is our domestic market is just too small. Therefore if you're looking to grow a business you have to look outside Australia and obviously Asia is extremely attractive, but other parts of the developed world are as well. We're actually grabbing those opportunities much more quickly than we would have historically, so there's both obviously opportunity, but the downside risks are much more obvious and people are taking them into account.

JIM MINIFIE: Chris, other thoughts about those risks before we move onto the upside, the flourishing genius or the innovation side?

CHRIS KUTARNA: I'm going to have to write about this or something, this notion that risk is getting harder and harder to diversify away makes a lot of sense to me. One of the ideas that we talk about in

the book as kind of a foundation of risk is increasing concentrations and you actually see it throughout human society.

What's interesting is in the 1990s I think there was really this sense that this global moment of connectivity, we can all diversify risk away. What we've discovered is that's not how human society behaves at all. When you increase everyone's power of choice and the variety of choices they can make, then more people or companies or even policymakers make similar choices. We all choose to relocate to the coast if we can afford to do so because we're motivated by a similar set of values. The global hard disk manufacturing industry, everybody relocated to Thailand and then there was this massive flood event in 2011 and the whole industry went underwater. I guess the people who benefited were those who were developing flash memory, but the point is that because the whole industry was motivated to cut costs, when you look through that lens there's one place where it makes most sense to relocate your manufacturing and everyone piles into there.

That kind of behaviour where, in fact, presented with more choice and optionality we're reducing the varieties of consumption and production is sort of ubiquitous in human society right now and is a kind of foundational driver of augmenting these risks.

JIM MINIFIE: Let's turn now to the innovation side. So the book, as you said, has got a really strong optimism about the prospects for further innovation in a range of fields to really improve things that people care about, not just consumption of goods and services but better health, much more inclusion of people who are still on the fringes and so forth. You tell some terrific stories about the first time round, the importance of the printing press in disseminating ideas and speeding up the flow of scientific practices which over the ensuing centuries did lead to real improvements. It was a slow process. Oxford Martin School has got a unique visibility into a whole range of technologies. To you and to your co-author Ian, what are the most exciting technologies that are coming down the pipeline?

CHRIS KUTARNA: So one thing maybe as a preface to that, because there is a discourse out there and a lot of economists say this, is that innovation is slowing down, and you look at the productivity statistics to support that argument. But I really think this is a measurement question and a time horizon question. If you look at the science itself that's underway, pretty much in every science we are at the base of a very steep learning curve and there is amazing work happening largely thanks – again, I'm picking up my mobile phone – to computers. We've been with computers for a while now, so they've kind of just faded into the background as tools, but we all do need to take a step back and recognise how transformative this device is for scientific work. I mean, the computer is more impactful to the study of astronomy than the invention of the telescope. The Earth has two moons, did you hear this? They just discovered the second moon this year. Anyone else hear this news, that the Earth has two natural moons?

JIM MINIFIE: I discounted as just internet gossip.

CHRIS KUTARNA: It's 100m in diameter and it's 30 times farther away than the regular moon, but computers have the necessary resolution to see it in the data that no optical telescope has. Similarly, the computer has been more impactful to biology than the invention of the microscope and probably, to get to your question, one of the most impactful areas of science without question is biology, genetics, synthetic biology. Now we're talking about the power to design life, putting it into human hands. We already have this. I mean, we are doing weird things in the lab. You can take genes from a

jellyfish, splice it into pig DNA and give birth to pigs that glow in the dark. Isn't that great? We can do this. Actually, we did that five years ago.

JIM MINIFIE: This is the kind of thing that should be showing up in the national accounts, you were saying?

CHRIS KUTARNA: But more usefully, we can take the same technique and modify a species of yeast so that instead of turning sugar into alcohol, it turns sugar into painkiller medication. We're now designing organisms to be pharmaceutical factories. Far more profound is what we can do to modify the human organism and a lot of our barriers to that right now are ethical only. We're already capable of far more aggressive experimentation with human embryos than most of us do. Actually, mainland China is a place where this research is probably going to get ahead of the rest of the world because there are fewer ethical constraints on it. But when you're talking about we are now going to have the capacity to decide should we accelerate evolution of the human species, what if some countries decide yes and move that process forward and others do not? What does it do to our conception of human identity, to inequality? These are the deepest questions that science has ever presented us I think and we're going to deal with them; our children are going to have to answer them in our lifetime.

JIM MINIFIE: Yet, as you say, confronted with such challenges, policymakers seem to be struggling to avoid recession, to get out of stagnation, so in many respects we're struggling with the basics even as the longer term potentially looks exciting?

CHRIS KUTARNA: That's the challenge to all of us. I think that we have to recognise that policymakers, education, us individually, we all need to do a much better job of just taking an interest I think in these evolving areas of science.

Another one is robotics and automation, by 2050 a study at Oxford Martin suggests half of all current jobs in the developed world are going to be automated or at high risk of automation. What is that going to do to society? Does it mean that a lot of us are going to have abundant leisure time? Does it mean that there's going to be much higher structural unemployment? These are real questions, problems that we are in the midst of creating right now. In the first Renaissance there was a strong view that we should try to learn a little bit about every domain of human knowledge and now that these domains are so impenetrable I think we don't even try to read chapter one. But I think we're going to need to, as societies we're going to have to get much better at reading chapter one of every one of these areas. Sorry, I'm going onto my rant.

KATHRYN FAGG: Actually Chris, I must say, reading your book, which I can assure everyone is a great read and you can hear the breadth that it covers, looking at Copernicus and how fundamental his thinking was to changing the view of the world and the role of faith, when I reflected on that I thought to me that probably was just as profound a change into the understanding of who we are as human beings and where we fit in the world certainly as we're going through now.

I wanted to touch on that point you made around how the work that was done on looking at jobs and how robotics and automation is changing that. There's been similar work replicated in Australia that I'm sure many people are familiar with that CEDA did which indeed did say around 40%, so basically the same ballpark, of jobs, maybe not individual jobs but parts of jobs will change. I think it's really important that we remember how fundamentally our economy has changed over, say, the last 100



years and like many people I bet in this room, my grandparents were of the land, and being in this beautiful library reminds us just what wealth was in Australia and particularly Melbourne. Then we went through that transition in the 1950s where it was about 30% of the population was in at that stage manufacturing, and now most of our people are in services. I think it's really interesting in the Australian context, especially if we're talking over the last 25 years, people are concerned about the loss of manufacturing jobs and indeed we have lost a net of around 100,000 manufacturing jobs which we should certainly be concerned about. The reality is about 4 million other jobs have been created in the services sector.

So this isn't going back centuries, but we have actually learnt over the last 100 years or so how to get more flexible as this evolution does occur in the way the economy and the world works. I talk to people who remember, say, 25 years ago when we last had a recession, and I can tell there are other people in the room who can remember that time, just how devastating it was for people to have to deal with the fact of taking a redundancy and of course the community has actually shifted. In fact, I don't think you mind because you disclosed to me earlier and I can disclose, I've had a redundancy package, 20 years ago that would have been a big deal, now of course many of us see that as an opportunity to go on and do different things. And I'm not trying to make light of this because I do think the big challenge we have is are things moving so quickly that we're really going to be able to make the changes quickly enough, particularly on the social side? But our experience is that we do continue to create new work and new opportunities because of technology changing.

JIM MINIFIE: Yet there are, as you already alluded to Chris, not just pockets of discontent, but a sense among many people in Europe, in the US and increasingly even in Australia that the system is not working for them. They've been exposed to significant new risks. They've seen an increase in income inequality, a diminishment in the market value and the social value of their skills and their communities and so forth. Before we open to questions, the final topic that I wanted to touch on is around this divergence of experiences, a rise in anxiety, a clash of expectations that is manifest in support for often very poorly articulated and even incoherent political ideologies. In the book you observe that, and the Renaissance was hardly unique in this respect, there were many such conflicts and differences of experience leading to outright rejection of this pace of change.

So Chris, what do we do about that? Do you just say, "Well, they'll always be with us, steel yourselves, not everybody's going to get a great ride as the world moves forward"? Or is there a more well-judged response you can make that would actually resolve some of these conflicts?

CHRIS KUTARNA: I think you're exactly right and I feel like we've all gone through a kind of realisation maybe just in the last couple of years of just how unequal, how wide-ranging the experiences of the last 25 years of globalisation have been, that there are strong winners and clear losers in the process. I look at it almost as maturation in our thinking. I mean, there was the neoliberal model of globalisation that was put forth in the 1990s that said to everyone, "Look, we're all going to benefit automatically through some trickle-down phenomenon, the gains are going to spread". What we've re-learned I think is the lesson that history continues to show us, that distribution is a political question.

Left to its own devices, if you remove some barriers to the flow of capital and goods and services and ideas then they don't just automatically flow everywhere. Instead they just pool more strongly into those hands, into those places that have some advantage along whatever the remaining dimensions

of difference are, say your human capital or your location, your geography. So I think we've all woken up to that and there are lots of historical illusions. You look at Renaissance Venice, which around 1490 was probably the richest part of Europe. It had this vastly profitable overland spice monopoly from the Spice Islands all the way to the Mediterranean and then, through no fault of their own, Portugal discovers a sea route to those same spices and Venice suffers an economic shock. The world moves on from city states to nation states, from the Mediterranean to the Atlantic, and Venice is just wrong-footed to succeed in this new world and it falls behind. So the lessons are there. What can we do? I think the big thing, maybe the biggest thing, is to recognise how political this moment is, that now is the moment to really lean in and become not optimistic or pessimistic, but activist.

In the run up to the Brexit referendum the UK, so based in the UK while we were writing this book and as it was coming up in the run up to the referendum everyone was asking, "So what do you think is going to happen there?" My big message pre-Brexit is that I think we're in a moment where we just can't trust the status quo to be there tomorrow. You either have to renew it, you have reaffirm whatever values or virtues you think are important in the way that we've ordered society right now, renew it or lose it to people who think that it is not well-suited to the new world that we've created. "So let's all agree," I would tell crowds, "Whatever the outcome of that referendum is, the next morning we're not going to wake up and say to ourselves 'Oh that was unimaginable. I can't believe that this thing broke'". What I was trying to do was shock people into recognising that you cannot take this moment for granted and you cannot take political systems for granted; you need to actively step in and with your voice vote and shape it. I wish I'd reached more people actually, in hindsight.

JIM MINIFIE: You only needed about 0.5%.

CHRIS KUTARNA: That's right. I should've slept less.

JIM MINIFIE: Kathryn, any thoughts before we open up to questions?

KATHRYN FAGG: I just really would like to build on Chris' point, because I think also what clearly comes through your book in the end is the critical role that leadership plays and that there is, especially at critical times like this, a question of whether people will step up and show great courage and act in the interests of the broader group.

You mentioned Jim early on that I've been very involved in trying to support more opportunities for women in leadership roles, and I would say that's been one of the huge changes that we've had that's historically significant and that has really emerged over the last 50 years. Every time when you look at that and say, "What's really made the difference?" in the end it's people showing real leadership and stepping up. I think one of the interesting discussions, and I'm just going to tie this a little bit back to the Reserve Bank with Glenn Stevens leaving, he retires on the 18<sup>th</sup> of September. I was talking to him about whether his job had changed over the ten years that he'd been Governor and he said, "In many ways it hasn't changed. The thing though that has really changed is that there is much greater focus on the leaders as an individual now than there ever was ten years ago. It was about the institution ten years ago, it is now much more about me personally" which obviously puts much more pressure on the individual.

The flipside is it makes it even more important that we have people who really stand up and are willing to take on the duty, obligation and responsibility associated with being a leader.

CHRIS KUTARNA: So you're a Trump supporter?

KATHRYN FAGG: You can well imagine that before we got onto the panel we had a lovely discussion of what's happening in US politics right now.

JIM MINIFIE: That's quite a challenge for all of us in the room, Kathryn. I propose that we now take questions in groups of three and we look forward to the discussion.

AUDIENCE: Are we starting an era of population deflation where actually we're going to see a significant decrease in population because you're getting a much better quality of life with a smaller number of people?

AUDIENCE: In the book I think you talk about the period of the Renaissance lasting for 100 years and we're entering that phase now. Are we at the beginning of this, are we midway through it, or are we at the end of this flourishing this time around?

AUDIENCE: I'm actually an American but I've moved to Australia because I'm hopeful that there's more chance for me to make a difference here. I've started my own business and I would like to ask what would your positive advice be to me from that perspective?

JIM MINIFIE: Excellent, okay, they're three challenging questions. Who wants to have a go at the population question?

KATHRYN FAGG: Well I might start on the population question, because I think if we look around the world and say what is the impact of having a declining population? Obviously the case study here is Japan where they've basically had a reducing population for about 20 years. It is extraordinarily problematic for them, both in terms of how they care for their aged people and also how they get some vitality into their economy. So they're being pushed to say how do we break the pattern that we've got ourselves into? Now, quality of life there is still very high, there's no doubt about that, but if they want to continue to grow their economy they're being forced to deal with things they've never really thought about before. I think it's extremely challenging for us to deal with a long term declining population.

JIM MINIFIE: Chris, thoughts on population?

CHRIS KUTARNA: I guess just to parrot that and I think the challenge is growing and it's shifting. The best projections that I've seen are that between 2025 and 2050 China is going to lose about 65, 75 million people in population and by 2050 India will be by far the largest country in the world, maybe 1.7 billion to China's 1.35 billion. So there's going to be a really interesting shift I think. In the way that ten years ago we all ran to China we will be running to India, including China will be running to India in 2050.

The beginning or the end? I think we're near the beginning of this. There are a lot of things that have happened so quickly, that have shifted the human condition, but really haven't had much time to wind their way through our society. Take, for example human health. Life expectancy has risen by 20 years in the last two generations, by 20 years over the past 50 and, to put that into context, it took about one millennium to achieve the previous 20 year gain. We did it in two generations. The implications of that

in terms of just the size of the cohort that is alive to create and produce and also be a burden upon the Earth.

I mean, we've just gone through the fastest population doubling that we've ever gone through in human history since 1950 from 3.5 billion to over 7 billion now, and probably the fastest doubling we'll ever go through, at least until we start to colonise space. Similarly education, there are 3 billion more literate brains alive today than in 1990 and also what these brains can do. The most recent study I've seen estimating the impact in very crude terms and the quantity of information that we now create and share, there are four big information revolutions in human history: spoken language, writing, print and digitisation. This year we will produce more new data in a single year than those previous three information revolutions in the history of human civilisation, so we are awash. We've discovered the answers to a lot of questions already; we just don't know it yet. That's where science is at. There's a backlog of discoveries that we've already made, we just haven't processed the data yet, so we're very much at the beginning.

JIM MINIFIE: Those sound like some pretty good business ideas. I hope you're working in one of those. Was there another aspect to your question, because I'm not sure I picked up what other kind of input you were looking for?

[Audience response inaudible]

JIM MINIFIE: So for those who didn't hear, the question is about are there areas that Australian-based start-ups should really focus on. I would just throw in my two cents, which is that having 3 billion literate people online means that the market for any good idea is viable and that is what is underpinning the apparently huge valuations of some of these network businesses, that is what is underpinning this second wave of internet investment. The markets are now 30 times as big as they were back in 1995 or 2000, so there's plenty of room.

KATHRYN FAGG: Jim, I think what is interesting, if we look at the companies that traditionally have done very well globally they've built on a unique strength that Australia had, and the classic is the big miners, like BHP Billiton and Rio. I'm on the board of Orica and Incitec Pivot; two Australian companies that are the biggest companies in the world in explosives because we provide services to the mining industry. The big shift now though is that what is coming through in terms of the start-ups that are doing very well, they've almost got nothing to do with the fact that they're in Australia. They just have to do with the fact that they're particular people who happen to be in Australia and had good ideas that tend to work locally first, but then have application globally. I don't know if anyone saw Australian Story last night with that beautiful story about the new solution for beehives and how they had the quickest crowdfunding in history where they were looking for \$150,000 or something and got \$10 million, but it was just because it was a fantastic idea and I thought it was a great example. But there are other bigger companies in Australia that are doing well and it's just because they're applying their smarts and it's got application elsewhere.

AUDIENCE: Does the current corporate governance structure, i.e. governments' impede improvements in economic growth and in the future? My thinking is that the current structures are too rigid, too nationalistic, and impede economic opportunities, particularly for future generations. I mean, it's alright for me, I'm a baby boomer, I've had my fun, but what happens to my son, what happens to my grandson? What happens to future generations? My son is currently a self-employed person. He

pays for his own super, he pays for his own health benefits; everything is on him. I simply blame the corporate governance structure. You get rid of it and you get rid of regulations and you'd have a much better system.

AUDIENCE: Can I distinguish between commercial and scientific development and the kind of leadership you were talking about in terms of national government and so on? It's a very big difference here. We're talking about the need for leadership. Is it fair and reasonable to expect the kind of leadership in values and policy that we are beginning to demand from politicians and, of course, the media are a mix in this? Is it fair or is it asking too much of individuals?

AUDIENCE: You discussed entanglement and connection, my question is somewhat in line with the previous question. In political terms and the entanglement that we see globally today, we also have conflict of interest often with the wicked problems, such as climate change and also economic development at the same time. Are there issues with going in one direction but not the other and also politically are we able to go in the same direction? What are your thoughts?

JIM MINIFIE: Interestingly, three quite related questions around essentially the failures of our institutions to deal with these environments.

CHRIS KUTARNA: Maybe if I can start with a broad comment and then see where you both want to pick up on it.

So on this idea of making new maps I think one thing that we do need to do is sort of explode the traditional spectrum of policy options, so typical left-wing policies and typical right-wing policies, because I don't think that spectrum really helps in constructing the sort of policy package that we need for the moment we live in. I think on the one hand we need government to help make citizens bolder, because we do actually I think need to have a strong sense of self-reliance and initiative-taking in the way that we're restructuring the economies that we all work in. But I think, at the same time, benefit systems and welfare systems need to adapt, need to create support nets that, for example, encourage people to be in the gig economy, as we call it, to be self-employed. Because the sort of flexibility that them having the courage to make those choices brings to the overall economy has a broad social benefit and therefore it makes sense that the state is there to provide benefits for people who download so much more risk for their economic livelihood to their own shoulders.

KATHRYN FAGG: Are you happy for me to jump onto the values question, because I think it's a really terrific question around the importance of values, and you actually talk about the most important values that you think there are in the book.

I think the reality is that it's completely reasonable and fair to have a similar expectation around the values of leaders, whether it's in the public arena or in the corporate commercial arena, and I think people are going to be forced to have a high level of values, particularly because of the availability of media to get issues out very quickly. I mean, being an American political junky it was just fascinating, and other people will have seen this too, the fact that Hillary Clinton stumbled on her way out from the 9/11 commemorative service and that someone completely independent picked that up and has created a very major issue for that campaign. The reality is things are now so transparent that you just have to assume everything could get in the public domain, so you always have to act as though you're going to be challenged on it. I know as I went through my corporate career we use the question



“Would you be willing to defend this action on the six o’clock news, seven o’clock news?” or whatever. Well now of course it’s going to be “Are you going to be able to cope with this if it becomes an issue in the next hour or so?” and that’s a big shift, so it puts much more demand on everyone I believe.

I actually think there’s a much bigger discussion going on in our community about what are we looking for? I know that phrases like “decency”, we’re looking just for basic human decency in terms of guarding decisions. We’re looking for a generosity of spirit in the way that people go about things. I think the discussion of values is becoming much more important, partly because of the visibility but I also think because of some of the lack of faith in institutions.

CHRIS KUTARNA: If I can just build on that, I agree 100% and I think that it’s going to come to the point where we recognise that the reason for society and community is to help propagate the values and the virtues and the norms that are going to help us all to navigate this time we live in. One crucial value that I think the political class especially has to take responsibility for propagating is civility and recognising all of these risks that we talk about.

So we live in a moment of heightened risk and the shocks are going to come more frequently and they’re going to be more severe and, when they come, which communities, which societies weather them together versus turn against one another. Civility is the social technology that has us stick together through shock events. So the real danger of this tide of populism across the advanced democratic world is how it’s eroding civility, how it’s making it more and more acceptable to publically blame scapegoats who are not the real drivers of the stressors that we’re encountering increasingly in our daily lives, but to blame these scapegoats in order to build an alliance behind you and catapult yourself into political power. It’s a dangerous and, I think in some people’s case, deliberate erosion of a virtue that we are increasingly going to depend upon, and we have to I think demand our political class to not do that, but rather to build up the virtues that we need to be a more resilient society.

JIM MINIFIE: Thank you to the two of you for those fascinating answers, obviously there are subthemes in the questions that I’m sure we can’t fully touch on. We’ve got time for two more questions.

AUDIENCE: I think I’m going to touch on civility, entanglement, and also the idea that the population is going to be shrinking, but tying it to asylum seekers and immigration. We know that Australia’s being kept young by our immigration policy at the moment and that’s the only way we’re avoiding being Japanese, but we also have had the Brexit point of view and we’ve got Manus Island, and so enormous locating of incivility for a few people. We’ve got a huge fear about how we protect our borders, but the media today was saying we’re spending \$9.2 billion a year to keep people out and there was also I think some quite negative media about how much we spend of the parents of immigrants. So what should we be doing to be both civil and entangled in a nice way?

AUDIENCE: My question is one of measurement. When you start measuring something you invariably change behaviours and change outcomes, and what seems apparent to me is that the world has fundamentally changed but the way that we’re measuring it hasn’t yet caught up. I reflect on your comment that we’ve had 25 years of GDP growth. On the same day that we had that news there was also news that gross national income per capita in Australia had actually fallen from 2012 levels, but that’s not what we’re measuring success on. So I’m curious to know what changes should be made,

whether political or from a corporate perspective, in terms of the way that we measure success going forward?

CHRIS KUTARNA: So briefly on the measurement question, great question and one that we talk about in the book as well. On GDP I think, and I defer to the economists in the room to actually solve this one, we need to start thinking about risk-adjusted GDP. So many countries have gone through a moment of extraordinary economic growth over the past 20, 30 years but, again, my view is that's been accompanied by increasing systemic risks, which is the unavoidable flipside of how we've created this more rapid economic growth. So we've added risk as well as this economic growth and our public models don't quantify that. Any business that has a plan has to have some kind of discount rate applied to its profit projections based on future risk. Why don't we do that with our aggregate GDP statistics? So I completely agree there.

KATHRYN FAGG: I just wanted to touch on the measurement, which is a very challenging topic obviously and there's a lot of discussion about are there alternatives. I think in the end the only thing we know to do at the moment is to look at a basket of measures to get an indication of how we're doing, and the pure economic ones are an important part of that.

I just want to touch on the one that you talked about there in terms of GDP growth and the national income per capita. I think it's surprising to most Australians to know that since the early '90s we've actually increased our income per capita by 160% over those 25 years and I think if most of us actually looked at the lives we live today we would actually recognise that there is a lot more wealth in the community, and you can see that and you can feel it. The issue that you've picked up which is so important is that really that growth in income per person has plateaued since about 2008, so the GFC, and there's a strong view that that is causing some of the social tension that we're now seeing where people don't think that we're doing so well is because we did have this period of very strong income growth per person but that's now plateaued out. That's what is causing the general concern that we're not doing so well, so a really big challenge for us is how do we get that growth ratcheted up again?

CHRIS KUTARNA: Which I think goes directly to what I would have said to your question. We have to recognise that anger towards migrants, for example, I mean, there are real fact bases for anxieties that are growing in society and we shouldn't at all be surprised that they're on the rise. I know the US example much better. If you look at the bottom quintile of income earners in the US, they had higher income in real terms back in the 1970s. Can you imagine that we had more real income back when there was half as much income to spread around? That's going to create real frustration, real hardship, and real attention within communities. It's very hard to feel positive for the opportunities we're creating for other people when I myself and my community feel like opportunity is dwindling.

So yes, this is the best moment in history to be alive, we've never had more aggregate global wealth, but we have to seriously look at these questions of distribution if we are additionally going to ask our societies to be more generous and to be excited rather than anxious about this global moment we've created. And I agree partly it's about recognising how far we've all come, but I think there's also some hard political work of distribution questions that we also need to do within our societies. Tax the rich heavier.

JIM MINIFIE: Thank you Chris and thanks Kathryn. We've touched on a huge range of topics tonight, great participation from the broader group, thank you both so much for participating in what for me

was a really stimulating discussion. To our hosts, the State Library, thank you once again for being such great partners in what for Grattan is an important part of our annual calendar, and thank you all for joining us. We look forward to seeing you at the next *Policy Pitch*.

END OF RECORDING