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# Keynote Address

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# KEYNOTE ADDRESS TRANSCRIPT

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REED HUNDT: Thank you all for inviting me. This is a return engagement, which I never have. But I know so much about my classmate Dean Joan Wexler that if there is anyone here who would like an office assignment or something like that, I can help. But I do honor what she's doing here, and I'm sorry I haven't been able to visit with her.

This is the most grandiose title that I was able to think of: "The Rule of Telecom Law in the 21st Century." I was thinking of saying "in the next millennium," but I think the century will do. So I thought this would take about twenty minutes to cover.

Your Professor Paul Schwartz is the best reviewer of my book, the only really good reviewer, that I had with this book that had a very tiny circulation. Sales have been flagging. So I thought that I would take plenty of time to pay attention to my book here.

It ought to be assigned, everywhere in the world. I just got an e-mail from my publisher who asked if I would agree that it could be translated into Japanese for $100 due to the strength of the dollar vis-à-vis the yen. But that's okay, I said yes. And then I got an e-mail from the translator in Japan. The Internet is really great, but I'm a little worried about the way this book is going to come across. The translator e-mailed the following: "What exactly is the Federal Communications Commission? Is it a business and can you buy its stock?" The answer is, in a manner of speaking — that is the story of the book. Anyhow, we're not going to re-translate the Japanese back to the English, if any of you do want to assign this book in its original beginnings, you can still get copies from the remainderman.

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I left the FCC at the end of 1997 and like Rip Van Winkle, I just went to sleep, and I woke up here today, and the NASDAQ is up and the Dow is up and there doesn't seem to be anything to worry about. And yet everyone is overcome by misery with respect to both of these indices. In the beginning of the year 2000, the telecom sector of the American economy began to drop. It actually played a very big role in dragging down the S&P 500, just as the information sector and telecom in particular within that sector pushed it up in the previous two years.

There's nothing about this story that has made anyone happy. I've been on the boards of five companies that have gone bankrupt or closed their doors in this time period. They were all start-ups, they all had very interesting ideas, and they all ran out of money. As mentioned, I am fortunate to be on the board of Intel, which during the worst year for semi-conductors in history, made $1 billion in profit. If you're very, very big and you have tremendous scale, you can cope. But if you're not so big and you haven't achieved economies of scale, you can't cope. This is a very simple thing to say that has the merit of being true about the telecom sector: many of the companies that have collapsed had never gotten to the economies of scale necessary to run their businesses.

Here is an obituary list for the sector. There are twenty-two companies on it. I knew most of the CEO's of these companies. They raised in debt and equity totaling $95 billion — that's actual dollars received in the company — and in these cases they spent all that money. At the peak of the market, these companies collectively had a $260 billion market cap. That means that they were worth almost as much as the incumbent former monopolists in telecom. Not quite as much, but in the same order of magnitude.

The view was that the attackers were going to be able to build the networks with very, very low costs, much lower than the incumbents; they were going to be able to take market share hand-over-fist; they were the new wave of innovators and they were going to replace the old — and now all the money's gone. Some other things have happened in this time period. Some people made money. In the time period from the beginning of the 1990's to the beginning of this decade, American households sold on a net basis, $1 trillion of stock. That's a lot of cashing out by American households, and that is one of the reasons why the consumer sector has fought so valiantly

against the downturn and why our recession on a macro basis hasn't been that significant. All that cash has created a tremendous reservoir of consumer spending which you're continuing to see be tapped.

Now, of course, the paper wealth in these households has greatly declined. You heard Alan Greenspan making that point, worrying about the negative wealth effect, this week. The question raised is whether our regulatory policies in the United States, which we have fought for on the global level all through the 1990's, were wrong. Have they led to this boom and this bust? Did they precipitate the bubble? Were we at the FCC really the [Dutch] Tulip Commission? That is the question that is presented. I don't think that it does any good to pretend the question is not bouncing around.

Yesterday I got back from Poland, where I was trying to sell my book the previous three days. It hasn't been translated into Polish yet either, and based on my remarks I don't think it's going to be. The big question in Poland was this: Were they, because they didn't adopt these reforms, lucky? Have they had their scalp creased by a bullet? Are they warned now that they should retain regulations that promote the Polish telephone monopoly? Was that really the lesson to be learned from all this history?

This discussion in Poland led to still another discussion, which is the most important discussion in Poland and many of the Eastern European countries. What do they do about the fact that they have, plus or minus a few points, about 20% unemployment? If you graduate from school today in one of the former communist bloc countries, your odds of getting a decent job are maybe 50/50. There are no jobs in the manufacturing sector for these folks. Poland either becomes a service economy fairly quickly, or in the long run they won't have a competitive economy at all. [Charts presented].

So this chart is about fundamental demand. What this chart says is that consumers have paid more money and devoted a greater percent of their wallets, to communications services steadily through the 1990's.

And what have they bought? They've bought things that didn't previously exist to be bought. They've bought a widespread variety of wireless services, narrowband Internet access that you dial up to, at around fifty kilobytes a second. They've bought broadband, one and a half megabits a second. They

bought vertical services, the batch of extra line items on your bill that in fact practically doubles the average telephone bill in the United States. People are paying more for more. That's why this is a growth sector. That's why we're a successful service economy.

This underlying demand is continuing at a staggering rate. Cable TV is an industry that was built under the United States decision that it would be lawful to have monopolies — to achieve economies of scale. But the cable growth is essentially correlated to the GDP, which is not bad, but not eye-popping. However, when you look at the new services driven by the Internet, and the use of the existing networks through the new technologies that are associated with the Internet, the growth rates are prodigious. After the Twin Towers were attacked, you may have read, there were 1.2 billion instant messages sent within the AOL community alone that very day. Five or six per person in the United States. IM is a service that didn't exist a handful of years previously.

In the thirty-eight years after the telephone began to be deployed in the 1890's, 10% penetration was achieved. Cable TV took thirty years for 10% penetration under the monopoly paradigm. By contrast, narrowband is the fastest growing communications service in history. In two years, 10% of the United States had adopted the Internet.

There's one fundamental reason. The regulatory policy of the United States was to create the lowest input costs for Internet service providers of any country in the world by a factor of ten to 100. Let's say that same thing another way, because it's so incredibly important. We consciously decided in the United States to have Internet service providers be able to borrow the existing networks at very, very, very low costs. By regulation, we obliged the proprietors of those networks — the telephone companies for the most part — to sell on a wholesale basis the use of their network to Internet service providers at a very low incremental cost.

The result was that almost overnight 5000 Internet service providers sprung into being in the United States. One of them was called AOL. There was a tremendous winnowing process that went on here. But by and large, this huge industry, growing like Kudzu vines, shrinking like Darwin might have imagined, created massive penetration. In the exact same time pe-

riod, the regulators in Asia, particularly Japan, made the exact *opposite* decisions and produced the opposite results.

It cost 100 times more in Japan to be an Internet service provider, in the early years of the Net, than it did the United States. And ten times more in Europe. That's the reason why in Japan, Internet household penetration, as of six months ago I think, was under 10%. It's about 56% in the United States. First, if you've read about NTT Docomo, the wireless company, sending all these different messages, remember it's nine kilobytes a seconds. That's one-sixth of what narrowband access is in the United States. And second, it is popular because you don't get the Internet in many places except through that technology in Japan. The reason is that the parent company, the existing telephone company, charges so much to ISPs that comparatively few thrive.

In the U.S. we purposely created a new mass medium called the Internet. That's the reason the Internet is in English. It didn't start out that everybody said this Net is going to be in English. That is what I started out with in my book, if I haven't mentioned my book lately.

Broadband is the second fastest growing communications service in history. The United States has more broadband users, the last time I looked, than in all the other developed countries added together. Our percentage is lower than South Korea, which has adopted the American narrowband policies to broadband, meaning they built the facilities and obliged that they be made available at almost no cost to any broadband provider. They lowered the input cost and created a competitive market so that the output at the retail level is very, very low, and they have 45% household penetration for broadband as a result of that.

Do regulatory policies matter? They are one of the top two most important considerations, the other being the capital markets. And that's always been true. This is what we've learned in the last few years. We've learned that when you talk about communications services you should talk about four different demographic groups: big businesses, small businesses, mobile or wireless users, and then household residents. What we've learned is that each of these "buckets" actually calls for a different set of services. There's intense competition for some of these services in some of these areas, and in other areas there isn't.

So we've gotten smarter about understanding the business. The corollary is that there ought to be a different regulatory policy for each of these groups, which we did not recognize as a country a few years ago, and that isn't the way the law is written. When you talk about the future you need to look into the world of opportunity. What we've learned is that our legal and regulatory policies ought to be shaped around the future, not about the past. We ought not to have this spate of regulation and judicial decisions that reflect and help cause stock market decline. We ought to have decisions about what is the right paradigm to approach all of the stuff that hasn't yet been done.

About 70% of households in Europe lack Internet access – 45% in the U.S. And 56% of U.S. consumers don't have a cell phone yet. These are the services that have yet to be sold. If you do a demographic analysis, you see that unless there are ways for the services to be priced at lower levels, or to have more value per dollar, we're not going to increase penetration. There's no question that the Internet is going to shape the future. I just want to point this out. What wireless LAN and free high-speed data means is that in about three years every PC is going to have embedded in it — at a cost of about a penny to you the consumer — a chip that is going to mean that if we ever go in a room where someone has installed (talk about bad branding) an "802.11 hub site," then you are automatically going to be on the Internet.

This is what it means. Within three years everybody walking around with a PC, every time they go to Starbucks, they're going to be automatically on the Internet. They probably aren't going to be paying for it. It'll probably be in the price of the cup of coffee. That means that the mobile telephone industry that you know today isn't going to be the mobile telephone industry of three years from now. They're either going to adapt to this change or not. But if we're talking about regulation and law, what should they do in Poland, what should we do differently here, then the number one thing that I've learned in the last several years is this: You have to have a vision about where technology is going and you have to have a point of view about whether you want regulation, to try to stop it (a hopeless effort), or try to embrace it in some way, in a manner consistent with the national interest.

For example, maybe the right thing to do is to have innovative, constructive technologies not just for the sake of change —

although, maybe that is a sufficient reason — but for the different reason which is they're more efficient, they produce more services at a lower price, they produce higher productivity gains and they create a wealthier economy. If you don't have a wealthier economy, you can't talk about education and health care, social security, and military defense.

So in Poland, they're talking about the telephone company, and I was very struck by the following that one of my McKinsey colleagues shared with these folks: China was so committed to catching up in the 1990's, that they built one Bell-telephone-company-size phone network every year for the decade. Every single year. And now they have millions of telephone lines that they believe are stranded assets, that no one is ever going to use efficiently. They built yesterday's technology. They didn't build to what, in fact, is the overtaking technology, which is wireless phones, and they absolutely did not build an Internet network.

So this is what happens when the *state* decides either to close a particular monopoly or establish regulatory protection; or alternatively just to make the investment decisions itself. That's a staggering amount of money perhaps wasted in a relatively poor economy like China's. Is this one of the reasons why China Telecom hasn't yet gone public? Perhaps they can't figure out how to describe themselves to investors in some way that makes them look like they have the right business model.

Of course efficiency is a terrible thing because look at what can happen. Over sixteen years, long distance prices dropped gradually due to the introduction of a modest amount of competition by regulators. But on the private version of the Internet, where there's never been any price regulation of long haul data transmission, the drop in price was huge over a short period of time. So when you read about a Global Crossing going bankrupt, behind that there is a price drop of 90% in five months.

If you're a trader of bandwidth, like somebody in Houston, you'd say, "Well, if I could figure out how to trade this and catch those peaks, I could make a lot of money as a trader." But what if you're actually in the business of building one of these networks? In February you decide to spend $100, on the assumption that you're going to get your money back over time, and you find out by May that you've got to cut your revenue line by 92%. We had fourteen long haul data networks built in

the United States in a few years. We will end up probably with two, maybe three that will survive bankruptcy.

Our government can make its contribution to the uncertainties of business and to the fundamental problems of change that technology drives. [Chart presented]. This is a chart that shows the biggest single mistake ever made by any government in the history of communications regulation. This is a chart that shows the effect of the auctions of 3G Spectrum in Europe. This is a cash flow chart. This is break even up here. They started off by selling off by auction licenses at such a high price and transferred so much cash so quickly in the auction sale, that if you look at what it will cost to build the system and where you will have to get in terms of cash flow to have operational break even, the bottom line is that these systems can't make money. The governments sold the spectrum at such a high price that they immediately put out of business any 3G industry in Europe. They happened to sell it to their national carriers, who are fixed wire based companies, and that's why all of them are now struggling to keep away from bankruptcy.

That's a heck of thing for a government to do, just in one decision, to be able to cripple an entire industry across a continent. At the FCC, it took many decisions for us to do that much harm, even according to our critics. You cannot have a policy unless business is willing to spend money to make the policy go. Investment is gas in the tank. For those who are business historians or legal historians, telecom is going to feel like anything that you've ever read or learned about railroads in the United States in the 1870's, 1880's time period.

So now we'll talk about "the sunny side of the street." This is supposed to be in the future — this is the theory of the future, the theory advanced by the tech community — it is not a theory that to my knowledge is embraced anywhere in government at the present time. We have a government right now in Washington that for ideological reasons doesn't wish to be involved in the thought partnership with technology that existed through the 1990's. Argentina and telecom both are too far South for this Administration to pay attention to.

They may be right. They may be wrong. But the cool theory is that more megabytes a second; faster, more efficient networks — specifically IP networks — will lead to the greater use, measured by message instructions per second, reflecting the power of your computer chip, which in turn will produce

new services. This means you will be able to do things with your computer that right now you don't do. You can download movies, you can make movies.

Some people here have read Larry Lessig's new book, *The Future of Ideas*. The beginning of that book, the *McGuffin* that gets the whole plot going, is a discussion about how everybody ought to be able to make their own movies with their computer. One of the reasons that they can't is because they don't have enough megabytes per second of bandwidth to challenge the PC's computing power. The new services then would be driven by this increase in the MBPS, and you would have a good virtuous cycle. Instead of the vectors being negative, they would all be positive, and the economy would be growing again. I'm going to briefly summarize the confession part — as to the mistakes that were made in the United States, in large part by me. But if you could just not pass this information on, I would be grateful.

In the residential market, there was no chance of having real competition in the fixed wire residential market without rebalancing — meaning without deregulating prices and allowing telephone companies to charge some price above cost. We didn't do that. We didn't have any rebalancing. It wasn't in the 1996 Telecommunications Act. The power to set these retail prices is with the states. The states have taken the FCC to the Supreme Court repeatedly over the jurisdictional question of whether the FCC could preempt the states on this. The states have fought every jurisdictional issue since the telephone was invented. And typically they've won because our Court, particularly in the last couple of decades, has been quite sensitive to the claim of states on jurisdictional issues. One of the results is a lack of adequate power to have a national paradigm. Therefore, there is not enough competition in the residential market of fixed wire.

But there's wireless. That's intermodal competition. The FCC did create a competitive market in wireless, with many, many carriers. It's the most competitive market in the world, and competition caused the price of wireless to drop very, very radically so that it began to substitute for wire. This was our way to pull the rug out from under those states that were trying to restrict, through their pricing mechanisms, competition in the residential market. And this technique will work in the fullness of time.

In the small to medium size enterprise market, unbundled elements work. If you allow . . . a new entrant to borrow the existing company's network, the retail prices are high enough so that the new entrant can afford to compete. But Darwin rules. This is a case of survival of the fittest. There were 300 competitive local telephone companies started in the wake of the 1996 Telecommunications Act. There was never any rational chance for more than about four or five big ones to survive.

Actually, I knew that. Nobody asked me, but I did know that. The reason I knew that is that a bunch of economists told me, and nobody was more surprised than those of us at the FCC to see the private equity community fund 300 CLECs. None of us to this day have been able to figure out what we could have done about it. But one idea is perhaps, contrary to any notion of free market behavior — we should have licensed the number of competitive companies so as to stop private investors from losing their minds and their money.

The problem now is that there's definitely a possibility that baby and bath water will be thrown out at the same time. Henry Ford was one of about 200 people who were inventing automobiles at the turn of the century, and it was his second company (the first went bankrupt) that became Ford Motor Company. This is an extremely common pattern of innovation. There were, I think, 1000 companies in the late 19th century that sold sweet, dark colored syrupy drinks, and one became Coca-Cola and the others eventually did not exist. Whether we're willing to have this Darwinian struggle work its way out in telecom depends on whether the investors in Manhattan are treated in a way that investors have historically been treated, or whether this sector is exempt by government from the harsh downside of competition.

Among large businesses, the buyers get the best prices in America that they get in any country in the world. It may surprise you to know that in the large business data market, AT&T and WorldCom collectively have about 80% market share. They've held it through thick and thin, because it's so difficult to service large businesses and because there is buying power.

Among global users, we have the best story in the world. When you free these markets to competition, you discover unmet demand, and it's a fantastic story. The nicest thing that I

learned in Poland is that, with competition, in five years they've completely eliminated the waiting lists for telephones, which used to be between five and ten years long. That's true on a global basis. In Brazil there's no longer a waiting list. It used to be one to two years. In none of the former communist bloc countries is there a significant waiting list. It used to be that you had to be the son of a high-ranking party official to get a telephone. And all that is gone. The unmet demand is being met, and new demand is being discovered.

Efficient universal service works, we've learned this in the last few years. What this means is that if you give the subsidy money to the buyer, and let the buyer do the shopping, you get a really great system.

Here's an example. The 1996 Telecommunications Act said we needed to have the Internet in every classroom in the United States. The previous paradigm was to tell the service provider — the telephone company — to put this in the classroom. Under the 1996 Telecommunications Act, by contrast, the paradigm was give the money to the school district on a matching grant basis, and then let the school district shop for the Internet. Ninety percent of the school districts in the United States found money for the matching grant within two years, and we went from 9% penetration in classrooms — not just in the buildings, but in classrooms — to 84% penetration, in four years. It's the most successful universal service story in any kind of state-mandated activity that I can think of.

And last but not least, we learned that everything is about market structure. In wireless, we've had a competitive market structure and produced great results. The market of long haul data was divided among fourteen carriers. There was no way that government could save many of those people from going under, and that's what's happened. In the local exchange and the cable market, the economies of scale and the network effects are so vast that it is very hard for regulators to create competition among rival identical networks.

We've also learned that ideas matter. So I'm just going to talk about the top one: Metcalf's Law. It is that the value of a network increases exponentially according to the number of users — meaning, if one more person joins a network, the value of that network increases for everyone on the network. Or to put it more simply, if Paul and I can talk to each other, that's great, but then we add Susan. So if I can call her and he can

call her and she can call us, we've suddenly got many more lines of potential calling available. The value of the network is greater for me, it is greater for him, it is greater for her . . . it has gone up exponentially. So what this tells you is the bigger the network, the more people it reaches, the more valuable the network is. That is the fundamental economic reason why the Internet has created so much value in the United States: because it increases value for all users. This notion that communities increase in value as they grow larger is the fundamental idea behind the way the Internet works. If it means anything, it must mean this: we really do want the Internet to be a mass medium.

How to achieve goals is the primary question for a regulator. It's almost certainly the case that we need to set, as a country, the goal of deregulating all retail prices. The idea of telecom was that one company would be regulated, originally voluntarily, to provide a "vanilla quality" product at a price that everybody would subscribe to. We need to recognize that if you're going to embrace competition, you need to have the other side of it, which is to be indifferent as a country to the regulation of retail prices.

We don't regulate the price of any of the necessities of life. You don't regulate the retail price of butter, DVDs, bread or wine, any of the necessities. So why are we regulating the price of telecom services?

There are at least two telecom services where we do not regulate the retail price. One is wireless and the other is the Internet. I can't see that any harm has come from either of those acts of deregulation. But we might never be able to deregulate the price at which a small company can connect to a big company's network. That's why phones may always have to be regulated; otherwise the network effects for the big company might mean that absent inter connection, any market would collapse into monopoly.

The other thing to decide is: are we going to be so eager to get economies of scale that we sacrifice diversity. The broadcast industry was regulated to guarantee diversity really until the administration of the present chairman, who has said he has less interest in doing this. And yet I think we have to recognize that during the period of the most intense regulation, there was really one kind of audience, one notion of the ideal American. And you look today at the content of TV and you say

there's just no question whatsoever that it is so much more eclectic, even in networks, than it has ever been before. But I think you have to ask the question: What is really the truth about diversity? Is it pluralism or multiple ownership? Which goals are those we're really trying for? Ownership diversity? Are we trying to have women and minorities own the stations? Lessig and others of that group would tell you that the main goal is to have a platform diversity, to make sure that none of these emerging broadband networks can design software systems that can preclude other people from inter-operating or interacting.

I think we have to recognize that on TV, the news has moved to the right, and entertainment has gone to the left. The news is much more conservative now than ever before. The entertainment is far more liberal, in a very general sense of the term. You can get what I would call a liberal point of view all over the entertainment media, to an astonishing degree. Look at shows like "West Wing." But that's far less true of mainstream media journalism. That's my view. But is it important that the government be concerned with this particular topic?

This is probably the most important of all these topics for a functioning democracy. It's the one that no one in government cares to talk about but everybody always cares about. I'm going to leave this one as just a huge question, and I'm going to move directly to the international piece.

There isn't any doubt that globalization is a more dramatic phenomenon with respect to the technology information sector than it is with respect to any other sector of the economy. I think I can say that without fear of challenge. There are other sectors that are massively globalized, such as financial. But the "financial services world trade organization treaty" doesn't exist, whereas there is a telecom and information technology world trade organization.

There is only one sector where as a matter of treaty on a global basis all nations are obliged to have a regulatory agency that follows the exact same four point precept for creating competition and providing a rule of law, and that's the communications sector. It's the only global treaty in which there is an independent agency that must be created in each of the sixty-nine signatory countries. And I was just in Poland talking to the first and second chairmen of their "FCC." Anywhere in the world that you go now you can find somebody who's the first or

second person to have ever held that regulatory job in their country. As we speak, they are trying to find lawyers, trying to figure out what ought to be in their codes and what ought to be their paradigms. And they're all vastly more similar than different.

This is the only industry on a global basis where this common rule of law is developing in this way; so the following questions have to be answered, because everybody around the world is asking for the answers: Is there some fundamental right to know with respect to content that ought to be embedded in the regulatory schemes of every country? We have, for example, in the United States, a number of notions kicking around in the administration to the effect that information should be precluded from the Web. Various government agencies are being ordered, as we speak, to take information off the Web or not to provide it on the grounds of security concerns. What's the right paradigm? We don't actually have an answer to that question, and we've got a lot of reasons to debate it seriously on all sides. But this is a question that exists in every country in the world, and we need answers.

The world of capital similarly wants to know the rules of competition, and we absolutely need this . . . we need to have some notion of how we're going to enforce on a global basis this particular treaty. And this is a huge field of conversation where there are no answers provided yet.

When everybody was talking about the Internet, they said: All of the people who get on the Internet here — and it's 8% of their population — are going to the United States for their information. They're all getting on the Internet and traveling to the U.S. They said 30% of all the international communication in and out of Poland is this 8% of people reading the Web in English in the United States. We don't like it. We think that there ought to be a Polish Internet country, just like there's a real physical Poland. What should we do? Should we charge different prices so it's too expensive for people to travel over the Internet to the United States? Raise the price, limit the amount? Should we have the government translate Yahoo into Polish? Should we just cut the Internet off? Should we supervise the websites? They're asking in effect: What's purely national here about communications? Is it the case that there isn't a national boundary?

The conference ended, and I was going to the airport. As I was driving by a wall along the road, I saw the answer. Somebody had spray-painted on the wall, "No borders, no nations." And I thought, "well, you know, this is great," because that actually *is* the answer. Now, I didn't say that's the answer as a *matter of law*. That is inevitably the answer as a *matter of technology*. It's not possible to look at the power of this technology and say that it has borders and that it respects nations.

It is also the case that any particular country can adopt a national paradigm that limits the efficiency, reduces the efficiency, limits the reach, shrinks the audience, creates less than a mass market, for these new technologies. But they can't alter the fact that the technology is a road. There can be barriers, and countries certainly can so slow the rate of change that they will make their country poorer or make their people more discontented, and many are choosing that particular path as we speak. The price of the Internet in Poland is 100 times higher than it is in the United States as we speak. There's a reason why it's just 8% online.

But is that really the right choice? It's immensely important at this conference and others like it. We continue to take the lead here in the U.S., and join with anybody anywhere else in the world and try to advance the ball, because at the other end of this story, in spite of the rainy weather in the market, it's absolutely the case there are pots of gold from a social perspective, from a wealth creation perspective, and it's up to us to find where the rainbow ends. Thank you very much.