Critical Issues Confronting China Series featuring Hanming Fang — Population Aging, Pension System, and Retirement Income Security in China, March 23, 2022

– [Narrator] Hello everyone and welcome to today's talk. We will get started shortly after we give another minute or so for people to log on. We thank you very much for joining us.

– Right, good afternoon, good morning, good evening. Welcome to the Critical Issues Confronting China seminar series at the Fairbank Center. I am Winnie Yip and I was a past Acting Director of the center, and very glad to be back here to moderate this session. Today, one of the critical issues that we are examining is aging. Aging imposes a lot of challenges on China's economy, social structure, and its social system as well. And today we're going to look at China's pension system. To what extent the pension system is going to be able to serve the needs of this growing aging population today and in the future. What are the challenges? Is it sustainable? What can be done about it or not done about it? And today we're very delighted to have Professor Hanming Fang to be the speaker. Professor Fang is the Joseph Cohen Professor of Economics at the University of Pennsylvania. And where he's also department Chair of Economics. And this is also the same institute where he got his PhD in Economics. He has done extensive work in insurance, long term care, in the US and also in China. And he has a general research interest in population aging. And in fact, he just told me that he's organizing a group with a large number of institutions in Asia to examine various aspects of population aging, and the challenges associated with it in Asia. And without further ado, I'm gonna turn it over to Professor Fang. And just a note for the audience, please put your question in the Q&A box. And if you prefer not to be named, you can choose to be anonymous. And I would like to encourage you to be succinct and brief in your questions so that we can screen them efficiently. So, thank you very much and over to you Hanming.

– Thank you very much, Professor Yip for your kind introduction. And it's a great pleasure to have the opportunity to share some of my research about population aging issues in China with the audience. I will share my slide if you don't mind. Let me see where the slides are. Okay, so can everyone see my slide?

– Yes.

– Okay, so as Winnie said, the topic I would talk about today is population aging, pension systems, and retirement income security in China. I know I have limited time. I have prepared more slides than I can finish. But please feel free to interrupt me anytime you have questions. So, population aging issue in China really results from two changes in demographics in China. One is the rising life expectancy in China right. So, life expectancy at the birth in China grow from about

30 years to now close to 76 years, from 1850 to 2020. Even if you look at the time period from 1980 to 2020, you see that Chinese are living longer, which is a great thing okay. And the second demographic change is really the right panel. It's called a total fertility rate. This is basically the average number of children that a woman in China will have during her lifetime. And you can see that in China, the big reductions in total fertility happened actually from the end of 1960, from early 1970. This appeared when China started family planning policy. During the decade of 1970, this policy is commonly known as "Later, longer, fewer" policy. Having children later, having fewer children, and have longer spacing in between children. And then the end of 1970 or early 1980s, it's the one child policy came into effect, but you can see that the big declines in total fertility rate, will actually happen before the one child policy came into effect. And now of course, China has officially ended the one child policy, as has been encouraging couples to have more children. As of the data of 2020 come in, year 2020 actually had the fewest number of birth in China ever since 1950. So, we are seeing that Chinese are living longer and Chinese couples are having fewer children, and these two demographic changes result in something economists will refer to as a rising old age dependency ratio in China. Old age dependency ratio is a measure of the population age above 65, divided by the number of population between age 15 to 64. You can think of people aged between 15 and 64 as working age population, that can contribute to the social security system, while people aged 65 or above are the retiree population who made your revenues, will receive payments from the pension system. And this ratio population age 65 per, divided by the population age 15 to 64 represents what is called old age dependency ratio. The higher the ratio, it means that, there are more older people for every working age individual in the economy, which is bad news for a social security system okay? So in China, the old age dependency ratio in China right now is still quite reasonable, is about 16% right. Or right now I mean in 2020, is about 18% actually. Which means that for every retiree older than 65, there are about five working age individuals possibly supporting them. However, this ratio is projected to rise to more than 45% by 2050. That will translate into a scenario where for every retiree, there are only two working age individuals that can support the retiree. And that is ultimately one of the major sources of the population aging problems in China, that will cause some issues for the pension system okay. With this background, this is another way of showing the change in age structure in China. In 1990, you can see that the Chinese age pyramid, right population pyramid, is pretty stable right. So there are a lot of young people and quite a few, a lot of young people, this vertical axis represents the age and the width of these bars, represent the fractions right. So you can see that most of the Chinese populations is young in 1990. And then by 2020, last year, you can see that this pyramid becomes a little bit narrow at the bottom right. Fewer young people in the population. And at this, the bulge of the population pyramid is moving up to over, 45 and above okay. By 2050, you'll see that this age pyramid looks much

more precarious right. That's another way of showing the changing dynamics in population structure in China, that I showed previously using the old age dependency ratio okay. So with this said, I will spend a few minutes talking about China's pension system as it currently stands right. It's mostly background information. China has a multi-layered pension system right. The first layer is known as a Public Pension Scheme right. This is aimed at providing Basic Old Age Social Security to all residents, regardless of whether or not they were employed, and there are two systems. One is mandatory system for employees okay. The mandatory system consisted of two components. One is known as basic Old Age Insurance System. And the other one is called Public Employee Pension System. I will provide more details in a second okay. And the way it's mandatory is because, all these individuals who are employees are required to participate in this system. And then there's a second component, which are for residents. They are voluntary. There is two components of the resident pension system. One is for Urban Resident Pension Scheme. Then the other one is for Rural Resident, New Rural Resident Pension Scheme. These are voluntary because the residents can choose to participate or not in these schemes. And both schemes receive substantial direct physical services from the government. And in terms of participants, China has actually quite a lot, high coverage rate in terms of the pension schemes right. The number of participants in China by the end of 2017. But then the recent numbers are slightly higher, but not so much higher, was more than 915 million people okay, which is about 66% of the total population. And China's total public pension expenditure accounts for about 5% of China's GDP okay. So that's the first layer, the Public Pension Scheme. The second layer is basically related to employers. These are called Employer sponsored annuity programs. In the US, Oh, sorry I should have said, in the US, the analog of the Public Pension Scheme will be social security okay. The analog of the second component in the US will be 401k plans or 403B plans okay. And they basically, they are tied to employer. They are provided by employers voluntarily as a supplement to the public pension schemes. The only problem that in China, the second layer is very, very small. Only about 80,000 firms, which is less than 1% of all firms in China, provide employer sponsored annuity programs. And it covers only 23.3 million employees in 2017. So, 23.3 million is not a small number, except that in China, given the large population, it's a very small percentage okay. And the third layer of pension system is basically household savings in the form of annuity insurance policies and so on right. So in the US, some families have annuity insurance on top of their social security and retirement accounts from their employers right. And in China, this system, the third layer is basically in its infancy. The government is trying to encourage a development of, expansion of the voluntary annuity insurance market by providing tax preferences and so on. But it's really small at this moment. So just a little bit of background. In terms of where things stands, on the three pillars in 2020. This table is in Chinese, but I can read off the numbers right. This is first pillar, the basic old age pension system. There are two components, this is the urban, this is the employer base. This is the urban, the public pension system. And you see that in 2020, the total number combining these two is about 100 million okay. Previously there was about 1 billion actually. Is that right? Yeah 1 billion. So, previously I said, at the end of 2017, the total number of participants was about 950 million. In the last five years, it's increased somewhat, but not a lot okay. Then the second pillar is very small, it's only 27 million people okay in 2020. And third pillar essentially is the individual annuity insurance programs, they don't have a number from the Ministry of Human Resources okay. So, how do things, how does the public pension system evolve in China, in the last 10 years or so? Right up to 2015, 2015, there is a big reform, that merged many systems together right. So, up to 2014, there are four schemes in the public pensions scheme, in the broader public pension schemes. One is Old Age Insurance System, BOAI. This is for employees in for-profit enterprises, including for-profit public enterprises and all other private sectors right. So, the Basic Old Age Insurance System was for employees in for-profit enterprises. The public employee pension system were for civil servants and employees in non-profit government institutions, such as schools, culture, and health facilities. These were two separate systems. The first system BOAI requires contribution from the employees. The Public Employee Pension System for civil servants and so on, there's no employee contribution required, up to 2015 okay. In 2015, these two systems are merged. I will explain in the next slide. So these are all for employees, the first two right. Then there are resident pension. The resident pension systems before 2015 are, includes the urban one and the rural one. URP are for urban residents 16 and over, without a formal non-agricultural job. And the New Rural Resident Pension Scheme are for rural residents, 16 and over, without a formal non-agricultural job. And basically these residents schemes are people who couldn't get into BOAI or PEP, because these two, the first two were employment-based okay. So, in 2015 Public Employee Pension Scheme is merged to BOAI, right? Then BOAI became the uniform program for all employees in urban sector. And then the resident pension systems, urban and rural resident pension systems, were also merged into the uniform resident pension okay. So right now there are two pension schemes in China. One for residents, called the Uniform Resident Pension System. One for employees right. They are called Basic Old Age Insurance Scheme, BOAI okay. And the total number participants in resident pension was 512 million. And the number of participants in the BOAI for employees were 403 million okay. The total sum is 950 million in 2017. And now it's slightly above 1 billion as of 2020. Okay, and this summarizes the thing, let me just mention briefly here, BOAI as I mentioned merges right. The Olde Age Pension System and the Public Employee Pension System, and in terms of contribution, if you were in the Basic Old Age Insurance System, before the merge, it's a Pay As You Go system, what does Pay As You Go mean? It means that the workers make contributions, and that money is not saved in an individual account. It's paid out to the current retirees and benefits. So money is collected every year from the workers, in terms of payroll deductions. That money is paid out to the current retirees as benefits right. That's Pay As You Go component is 20% of the payroll okay. And if you were under the old age, Basic Old Age Insurance System, there's also an individual account component, which is 8% of individuals wages. So individuals contribute about 28% right. 20% goes to the Pay As You Go component, 8% go to an individual account, except that I will later on point out that individual account is only notional right. You will be told that, if you were to contribute to the individual account, the taxes will be paid from your monthly payment and monthly stipend. And you were told that you have an individual account with certain balance, but the money is actually not there. It's only notional, you are told that you have the individual account with this amount of balance in it, but the government actually doesn't have the money put aside for you to withdraw later right. It's only notional. That will cause some problems, I would explain later. And the Public Employee Pension System before the merge, is really good. There's no contribution required right. It's basically, that's why the... Before the merge in 2015 right. There were two layers of public employee-based pension systems. One layer for workers, for-profit workers, requires contribution, but for public employee, in non-profit public employees, they don't require contribution. And moreover, as you can see, the replacement ratio is much more generous for Public Employee Pension System. What's the replacement ratio? Replacement ratio is basically a term that is defined as the average benefit level right. Social security benefit level, you'll receive divided by your pre-retirement income right. So 82% replacement ratio means that, after one retires, your monthly pension income will be about 80% to 90% of your pre-retirement income. Right that's quite generous. Now, if you were in the public, in the Basic Old Age System, the benefits is not as generous, it's right. The total replacement ratio from both is about 60% okay. So I will explain a little bit more of these details later okay. Now the resident pension was unified in 2014, but previously there was one for urban one for resident. Again, this is voluntary right. And the individuals only pay into the individual contribution, only go to the individual account. The basic pension component of the resident pension system is all financed by government subsidies right. This resident pension system has a lot of government subsidy going in. And that's why it can quickly cover more than 500 million people as I mentioned right. That resident pension system quickly grew to 512 million participants, because of the very generous government subsidy to actually finance the basic pension component of these resident pension plans okay. Individuals will be silly not to actually contribute to participate in the resident pension system okay. Okay, so I already mentioned, there's a Basic Old Age Insurance System is compulsory scheme, momentary scheme with both defined contribution and defined benefit features that on the contribution side, employees are quite required to pay 20% of the employees wages as a contribution, even though there are a lot of underpay under contribution to the system. And there is a cap of a range of local, a range of wages for which the contribution will be required right. If your income is below 60% of the local average wage, then you don't have to contribute to social security. If your income is above 300% of your local average wage, any amount above that, 300% of local average wage does not need. You don't have to pay the 20% right. Only the income between 60% and 300% of your local average wage is subject to the contribution requirement. Local, the world "Local," is actually not uniformly defined, right it could be at the provincial level, could be the city level, or even county level, depending on the elementary region of the public pension fund. So for the US audience here, it may sound very strange after all in the US right, the social security system in the US is a national system right. Doesn't matter where you live, which state, whether you work in Boston or in Philadelphia, we are all subject to the same social security contribution rules right. In China, one feature is that, the public pension system is very fragmented. It is not at the national level yet. The government is trying to actually, this year is trying to switch it to a national level kind of uniform public pension scheme. But as of now, it's still very local. Some provinces do the social security at the province level. So only one risk pool in the province level. Most provinces actually are administering the social security system at the city level or even county level. And that creates lots of regional disparities. On the benefit side employees with the 15 years or more contribution history, are entitled to the pension benefits. The replacements ratio depends on the number of years of contribution and the individuals wage relative to the local average wage okay. And the individual account is financed by individuals eight contribution, which is 8% of his or her wage. This is a notional account as I mentioned. Individuals do not have the authority to make any allocation decisions, regarding how his or her contribution will be managed, because this is really notional account. The money is not there, it's different from 401k okay. You can see that you're putting some of your 401k funds into S&P 500, in a mutual mutual funds. No, there's no money, like no money like that for you to manage, or it's only notional okay. When can you be eligible to the similar time and benefits? Well, the eligibility age is 50 for female blue collar workers, 55 for female white collar workers, and 60 for male workers. You will see, oh that's very young indeed. In terms of the retirement eligibility age. The retirement eligibility age is very young okay. So one reform idea will be to raise the retirement age. And I will talk about that later. Self-employed workers in informal sectors may participate in the Basic Old Age Insurance voluntarily. The contribution rate is 20% of local wage, average wage, among which 80% is recorded into individual account okay. The Public Employee Pension System, is basically just coming from the government budget. No contribution required. It's more generous than the other schemes. And importantly does not require any contribution from public employees. Public employees have an average pension replacement ratio of 80% to 90% of pre-retirement age, and that's very generous. And the eligibility age is 55 for female workers, because they are white collar female workers and 60 for male workers. But I would say 95% of female workers in China are blue collar workers, according to social security statistics. And there at the time, eligibility age is 50. Okay so, even though there's 55 here for some female workers who are white collar, but majority of female workers in China are eligible to retire at age 50 okay. Then it's merged right. The Public Employee Pension System was finally merged into the Basic Old Age Insurance Scheme in 2015. And the rules are, the public pensions public employees will now switch the rules of BOAI. So, the rules now is being uniform, and there's some provisions during the transition. Okay I will skip that for the interest of time. The rural resident and the urban resident pension schemes were established in 2009 and the 2011 respectively for non-employed residents right. 'Cause the previous two schemes that I mentioned were for employees, they are voluntary scheme funded in conjunction with government subsidies, very substantial government subsidies. Individual contributions into this scheme are putting into individual accounts. So this is no, basically you contribute into the system, that your contribution go to the individual account, and that the basic patient component is purely coming from government subsidies right. The basic pension component is coming from the government subsidies okay. And that's basically, explains why just, in very less than 10 years, the resident pension scheme attracted more than 500 million participants. And they were merged in 2014 eventually. Okay, and the pension eligibility age for the resident scheme right, urban or rural are 60 years for both male and females okay. The second pillar, enterprise annuity and occupational annuity is very small. Only 1% of the Chinese firms are providing such annuity benefits to their employees. And most of these firms that do provide pension plans are large state-owned enterprises, or monopolistic companies such as railway, electricity, communication industry and so on. Basically, firms that could... Only the firm that could afford it right. Afford these enterprise annuity plans are providing this to their workers. But this part may grow over years. Right now is still quite small. Private annuity insurance is something that the government is trying to encourage development right. But at this moment, I will say it's still quite small. Up to 2018, there was no tax preference in commercial annuity insurance, but from 2018, there's a pilot policy that provides individual income tax, deferred annuity insurance products in Shanghai, Fujian, and Suzhou industrial park. The tech deferred annuity insurance products basically says, if you were to contribute to these, to purchase these private annuity plans, you don't have to pay income taxes for the premium you paid into this annuity insurance products. You pay taxes only when you withdraw the benefits. Okay so that is called tax deferred. You deferred the tax payments for your annuity insurance premium payments, defer until when you withdraw the annuity from these plans right. So, for those of you who are not familiar with what annuity means, is the works as for us right. So annuity insurance is basically a financial product that ensures the annuity policy holders against their longevity risk. Annuity means that you'll receive a monthly payment for as long as you live right. So, it's not time defined right. If you live to 120, the insurance company will pay you until 120 every month. A certain amount of annuity benefit. Social security is a form of public annuity, because we can get social security benefits for as long as we live right. The private annuity is basically analogy to social security, except that you have to pay for the annuity insurance on your own. And it's offered by a private insurance company okay. That differs from 401k plans right. 401k plans here, 401k plans that we are familiar in the US You have certain balance your 401k plan. But if you exhaust the balance and you are still alive, you run out of retirement income okay. Annuity by making the end of the payment period, to be right the end of your life, it provides insurance against your longevity list okay. So this is called a private annuity insurance. And it's relative small in China. I already mention the number of participants, and the total expenditures in China. You can see that, the old age insurance scheme provides a bulk of expenditure right. The total expenditures on orange is by far, the largest component is Basic Old Age Insurance. The resident pension have lots of participants, but very small amount fraction of total expenditures. And one reason is that, I will show you later. The resident pension scheme is not generous. It's tiny, right so in terms of payout okay. That's one big problem because, there's lots of disparity in terms of the pension benefit levels. I will skip this. Oh, maybe before, I would just look at the one thing, which is ensure the workers, divided by urban resident right. This is the ratio. You can see that this is basically the Basic Old Age Insurance Scheme participation rate right. Urban employment are the eligible workers who participate in the Basic Old Age Insurance, ensure the workers are basically those who actually participate. You can see that this ratio is now above 70%. Not all the urban workers are participating in the old age insurance scheme, only 70% participate okay. A lot of migrant workers are not participating for example. And ensure workers are growing right. And ensure the retirees are growing. And the ratio of the orange over the blue will be later on called in-system old age dependency ratio okay. The ratio of the blue over orange is in-system. In-system means in the BOAI system. What's the dependency ratio right. Instead of the population dependency ratio okay. So I would mention, summarize a few facts that are maybe interest to you. China's in-system dependency ratio. By in-system means within the old age insurance scheme. What is dependency ratio? What is the ratio of retirees in the system divided by the ratio of working participants? That's about 38%. Now the higher this dependency ratio, the worst the system financial sustainability yes okay. In 1990, this ratio is 18.6. So which means that in 1990, for every retiree in the system, about five workers are paying into the system in terms of pension contributions. In 2017 is 38%. So it's basically for every retiree, there are slightly more than 2.5 workers, are paying into it okay. And the population wide dependence the ratio however right. This is not looking at just participants in the system. It's looking at population wide right. Including those migrant workers for example, were not participating in the system. You see the population wide dependency ratio is about 26% in 2017. The smaller this number, the better the financial sustainability of the system here right. So you can see there's divergence between in-system dependency ratio, and population wide dependency ratio, because of non-participation. A lot of Chinese workers who could have been part of the system are not participating okay, in the pension scheme. Migrant workers account for a large chunk of that, of non-participation. Okay, second thing is that China has one of the highest statutory pension contribution rate at 28%. Statutory pension contribution rate is basically saying, what's the rate of, percentage of your wage that are required to be contributed to the pension scheme by law right? That's the law is a statutory. The word "Statutory" means legally prescribed contribution rate. That's actually 28% okay. The 20% is paid by the employer, goes to the Pay As You Go component of the social security. Employee contributes 80%. That goes to the notional individual account. And the total contribution rate is 28%. That is as high as we can see on this table right. In the US we all know that we contribute 6.2% of our monthly income to social security, and our employer contributes another 6.2%. And with a total of 12.4% contribution rate, China 28%. Now the third factor is that, average replacement ratio keeps declining right over years right. In 2000, I defined the replacement ratio previous right. It's basically the ratio of the retirement pension benefits divided by the pre-retirement wages. Okay, and in 22,000, this replacement ratio is about 63%. Now it's about 46% in 2017. And the blue bars are the average pension income over time. So average pension income is rising, but the replacement ratio is declining okay. So, average annual pension income in China in 2017, is about $35,000 IMB, which is about 46% of the participant retirees, are pre-retirement income okay. Now the fact number four is about age, retirement age. And this I already mentioned is very young right. Retirement age is 64 men, women is 50. If they work in blue collar jobs, and 55 if they are working in white collar jobs. And about 95 right of the women, are required to retire at age 50 because their jobs are defined as blue collar jobs. And these are incredibly young ages to retire. And these retirement ages were established at the beginning of 1950s. When the life expectancy at birth in China was about 43 years. And now we know the life expectation at birth in China is more than 76 years. Nonetheless, the retirement age has not changed. And you may say, well that makes it relatively easy for government to raise the retirement age, in order to resolve some of the financial issues that the system will be facing. And I will later on explain what are the challenges that raising retirement age policy may face. And indeed the government has been talking about raising retirement age from 2010 right. Now 10 years later, we are still, we are still, China is still thinking about piloting raising the retirement age. And eventually I think it'll happen. But it just, there is a reason. I think we have to understand, that raising retirement age is not easy for multiple reasons. I will mention one of that later okay. Fact number four, is that despite the high statutory contribution rate, the Basic Old Age Insurance Scheme would have run into fiscal deficit in 14 provinces right in China if there were no government subsidies okay. So this is already quite surprising. I already mentioned the total pension expenses relative to GDP was only 5% okay in 2017. And the statutory contribution rate is 28%. So how come that the government, the social security is correcting 28% of the payroll income. And the government is spending about 5% of GDP on a retirement expenses. How come the government may... 14 provinces in China would've run into deficit in their B0AI system. Well, because in China the systems are very fermented. Some provinces now have a lot of young workers relative to their retirees. And some provinces have very few young workers for their retirees. And let me see if I can show that table. I will come to that table in a second. Let me not skip the orders okay. That's one of the big problems that China face. There's large regional disparities in the pension scheme, in the pension systems. I'm gonna skip this. Now notional individual account. You may be wondering, well individuals are told that they're contributing 80% of the income to the individual account, but the money is not there for them to manage. How is the return to this notional individual account calculated? Well, you'll be surprised to know that the government basically provides 8.31% interest rate to all individual contributions, to their individual account, even though the money was not invested in anything, because the individuals contributions to their individual account was actually spent on other things okay. So, individual account was meant to be fully funded, but it was borrowed against to pay for the transactional cost of the Public Pension Reform of 1997. So individuals who were thinking that they are contributing to the individual account, but the money was spent already by the government for other things. So that makes it a notional account. In 2013, the Chinese government officially gave up the fully funded individual accounts, and started to follow a model of notional account. Interest is credited to the accounts each year by the local government. With the interest rate, depending on the growth rate of the local average wage, bank deposit interest rates and the investment rate of the pension fund. Prior to 2016, this is the notional interest rate was less than 4% in most of the provinces. In 2016, the Ministry of Human Resources and Social Security, published and mandated a unified interest rate, which is 8.31%, a great deal right for individuals, except that it's notional okay. That's fact number six. What are the problems in this current pension scheme? Why is financial sustainability, obviously because of the rapid aging, the share of population over 65 years old in China will double between 2010 and 2030, and Chinese older age dependency ratio will be close to 40%, meaning that for every retiree, there will be only 2.5 workers working to pay for the system okay. The fiscal subsidy for the public pension system now stands at about 800 billion IMB a year, about 1% of GDP. And then if the reform doesn't take place, the system would require much larger infusion of fiscal subsidies in order for it to be financially sustainable. I'm gonna skip this. Now, I already mentioned, there is a big difference between the in-system old age dependency ratio, and population wide dependency ratio. The reason for that was, there's wide scale evasion of social insurance contribution are in China. In 2015, only 70% of firms. 70% of firms pay less than the prescribed social insurance right. So the firm will pay the, contribute to the social insurance, but they massage it in way manipulate the wage in the way that they pay less than what's needed okay. The contribution rate in China is higher than in most countries, except that, that lots of employees are not willing to join the insurance scheme. The low income group face unstable employment, and they worry that they contribute to the social insurance scheme. Will they be able to get it, if they were to leave the firm that they currently work in, and they don't know if they will be eligible to receive future benefits right. So, given that uncertainty, they will refuse to participate in the insurance scheme. Young people have high demand for current consumption, and high contribution rate reduce their consumption. So they also have some incentive to evade contributing to the social insurance system. And local government are not very strict in punishing these evasions to the contribution of paying into the social security system. The second big problem is regional disparity. I already mentioned, China's public pension system is managed by local governments. Several provinces on, are pulling the funds at a provincial level. But most provinces are putting the funds at a city level or even county level. In other words, if you and I live in the same province, but in different city, we may be facing very different, such as security pension benefits when we retire Okay. The amount of contribution benefits, have large disparities due to waging equalities across our regions. When additional problem for this... No the fragmented system is that, when workers move from one city to another to get a better job, they remain tied to the pension plan in their original city. This creates serious inequality issues, as well as problems with labor mobility. If I had worked in city A, for a long time, have contributed to city A's pension scheme, I may hesitate in moving to city B, even if there's a job opening at city B that suits me better. That's called the portability of the social security system, might deter label mobility, which is bad for economic efficiency of course okay. So this table, this figure is one that illustrates the regional disparity in the inter circle support ratio. This is the ratio of contributors right, to the social security divided by the number of retirees. The higher the number the better right. So Guangdong province, the southern province to the north of Hong Kong right. This support ratio is 9.28. In other words, for every retiree in Guangdong, there are close to 10 workers contributing to social security. So Guangdong as what you would imagine has a pretty good social pension scheme financially. Look at the bottom of this chart right. The province is with the lowest support ratio, Heilongjiang, Jilin and Liaoning right. These are the three provinces in Northeast China right. These were three provinces that used to be the industrial base of China when the People's Republic China was founded. But now it faces a lot of migration of its population, lots of young workers from the three provinces, Northeast in China, they move to, they work in other provinces right, Guangdong number here is high because Guangdong attracted large number of migrant workers from the rest of China right. Fujian, Beijing, they all have reasonably good kind of support ratios. But not the three provinces in Northeast China right. Any provinces or municipalities that have seen lots of auto migration of young workers will have, will see a big problem in their social security system. And the government is trying to reform this, making it a uniform, a national kind of a system. But you can imagine there will be a lot of negotiations required for Guangdong and Fujian. These provinces that benefited from these young migrants from other provinces, to agree to participate in the national system. But I think it will have to take place okay. Finally another problem, even though we are talking about large coverage rates of the pension system right, close to 70% of the Chinese population are eligible to one form of pension benefits or another, Right, either the employee pension system or the resident pension system, but the pension adequacy is quite suspect right. So, know compared to the pension level, the basic pension is about 10% to 25% of consumption per capita varying from regions. Compared to the income level is even lower. It's about 7% to 20% of household income per capita okay. So government is trying to... Now I will just spend a few minutes. I'm running out of time almost. I'm spending a few minutes to talk about some ideas for future reforms. One is to basically, infuse money into the system okay. There are two basic ideas. One is to, basically, mandating that 10% of the profits of state own enterprises will be paid into the pension system right. So basically use the state owned enterprise profits as a source of revenue infusion into the system. The second is to that the Chinese government establish something called National Social Security fund as a strategic reserve fund to cope with a future pension pension needs right. So the dividend from state-owned enterprises will go into this. NSSF any surpluses from the system will be invested into, invested and try to get higher returns from this investment. This, I will skip this, actually this national, NSSF has quite a large assets in its portfolio right. In 2012, this was the number that I had in the paper that I wrote for Handbook of Chinese Financial System. It has actually 893 billion RMB assets under management. In 2012, it got a return of 7.01%. Now the second thing is improving productivity of course, right so if one way to make the pension system more financially sustainable, is to improve productivity, so that workers wage would rise faster. And so, the contribution rate of 28%, multiply by higher wages, would result in better financial, a better revenue income right to sustain the pension system. Now, the problem is that a population agent itself will have implications about the prospect or the opportunities to raise productivity. Now this picture shows a relationship between population age and entrepreneurship right across different countries. So this will appear, a figure from Edward Lazear. Lazear's paper with his co-authors publishing JP Demographics and Entrepreneurship in 2018 right. It's the picture show three plus, country level plus, dividing the countries into young countries, countries with medium ages, 1137, older countries, countries whose medium age of the population above 41 and middle countries right. You can see that young countries tend to have higher entrepreneurship rate right. Entrepreneurship rate is the fraction of the individuals in the population of a given age, who actually start its own business okay. Young individuals are more willing to take risks. They are more willing to start a business right. So old population will reduce the entrepreneurship rate. This is the figure from the US in the part, in a given country like US you an see the age at which individuals are most likely to start their own business are basically '30s, or in the late '20s and early '30's okay. In terms of that's entrepreneurship so far right. In terms of patenting, this is a figure coming from paper written by James Feyrer, by looking at over time right, the age distribution of inventors, among those who have been granted a pair of patents. You can see that inventors, the peak age is actually over 40 right. But you can see that older, if the probably becomes very old, it also becomes less likely to create patents. Both would be an implication of the population aging okay. Now that something that I will briefly mention that, well, life expectancy is rising in China. I mentioned that already right. In China, the life expectancy is now about 76.6 years at birth. Luckily, most of the rise in the life expectancy is actually rising healthy life expectancy right, which means that there is a lot of potential for older workers to work longer right. Because they're healthy, they live longer, but most of the increase in the life expectancy, is how increasing healthy life expectancy. So, in principle, the older workers can work longer okay. So indeed the reason and time, age has been a proposal that has been mentioned all the time. One problem that, and I think eventually it will, it will have to happen. One problem however, is that older workers may be willing to work, but you need a firm to be able, to be willing to hire them. One problem that in China that happened was, in China there is a very serious kind of seniority system right. In other words, old workers actually expected to be paid more their junior counterparts. That creates a problem for the firm side, the firm side maybe saying, well you are now 60, or more than 60. You are still healthy and productive. I'm willing to hire you if you are willing to be paid a wage that is not higher than the young workers okay. But older workers actually expect to be paid higher than the young workers, because of the long tradition of seniority in China. As a result, raising retirement age will, if the government want to raise the retirement age, you will have to, the firms must be willing to hire those old workers. And that takes, I think quite a bit of policy interventions for first of all to essentially de-link or weaken the link of between age and wages. Older workers should be more flexible in the wage. They get paid by their employers. And second, the funds must actually redesign jobs and workplaces to accommodate older workers. Older workers, and young workers, maybe willing to work in different hours right. The workplace need to be more friendly to older workers and so on. And that is just, I think being discussed in China. And in fact, a job redesign and workplace we designed to accommodate old workers, must be an important policy response to, if we are thinking about raising a retirement age okay. Last thing I will say is, there are other opportunities and challenges, as the population age. Older people and the young people tend to be different in their risk attitudes. The older individuals tend to be more risk averse than young, and that will have implications on financial risk taking, in terms of whether between bonds versus equity, and so on right. Older individuals are less sensitive to interest rates. Why? Because old individuals are not borrowing as much right. We have paid out, they paid off their mortgages. They don't have auto loan anymore. While young workers are still borrowing, they are very sensitive to interest rates. So that means the monetary policy, the typical tools of monitored policy instruments, which is the interest rate is gonna be less effective in an older society. The park consumption bundles differ between old and young workers. So young workers spend a lot on education, on travel, on entertainment, on housing. Old workers, they spend more on healthcare, on nursing homes, and so on. And it will have huge impacts on the industry right. So, typically demographics really will have a strong impact. Demographic changes will have a strong impact on the industry. And finally, the retired income needs and long-term care would require innovative financial product redesigns. I'm running out of time because I really want to give at least 15 minutes for Q&A, but I do have a few slides actually prepared for this last item, which is innovative financial products, but I will skip that. I meant to say something about reverse mortgage products in China. Because in China, the housing wealth accounts for close to 80% of the household wealth, much higher than the fraction of housing wealth, a fraction of wealth in housing in the United States. And being able to developing financial products, that will allow individuals to tap into their housing wealth, to pay for their retirement income needs and long term care needs will be very important. And so far, the reverse mortgage products, are not very major players in the US And it is basically very difficult to introduce in China. One large pilot in China in actually six major cities in China, only attracted 138 participants in... So, it's really requires redesign of the traditional reverse mortgage products in order for the reverse mortgage products to play an important role here. And my own study tried to tackle that question. How can one redesign the reverse mortgage products to appeal to the Chinese market okay. But I will stop here.

- Right. Thank you very much Hanming. Yes, in the interest of time,

- I will stop sharing.

- I'm gonna go straight to some of the participants' question. And some of them is actually relevant to the last point that you were making, but let me go to the first one. The first question is from William Shao, who is also a co-organizer of this seminar series. He wanna thank you for a very clear picture of the very complex pension system in China. And you pointed out several problems, including disparities of the pension benefits, underfunding, inadequate replacement ratio of them. He has two specific question. The first question is that, with such low replacement rate, how is it affecting individuals saving and consumption behavior? You alluded a little bit to that, but I think he was also interested in how that also affect the macro economic development if you would think about it as China is actually trying to encourage people to spend more.

- Right.

- And meanwhile, this low replacement rate probably is going to motivate people to say, I need to save myself because I can't count on it. So that's his first question. The second question is the huge disparities that you show us. In a way the Chinese pension system mirror very much with the social health insurance system. In terms of an urban scheme, a resident scheme, and huge disparity. And so, his question is what might be some of the approaches in a step by step way to solve this disparity problem. Now, you mentioned that China's trying to unify, same as in health, China said they wanna unify. What do you anticipate that China will be doing to solve this problem? So, these two question first.

- So thank you William for great question. For your first question. How does the low kind of replacement ratio affect people's behavior on saving and consumption, and what's say macro implications. So, first of all, for the current retirees in China, indeed their pension replaced income is low. However, this generation of retirees benefited from China's rapid growth of the housing sector. So in other words, China started its housing reform in 1993. And introduced the commercial mortgage in 1998. And then after that basically housing, housing market took off right. And this generation retirees are essentially the lucky IPO kind of holders of the Chinese housing market right. They basically got to purchase housing at very low price. And many of them got their housing, converted from their initially estate provided housing right at nominal price. And now these housing is worth a lot okay. At least for urban residents. So for the urban residents, their retirement will be fine in the sense that, the pension is not the only source of income. A lot of their wealth come from their housing wealth, which have seen huge appreciation. In rural area, of course, that's not the case. And except indeed I will say, if indeed China wanted to convert to a consumption-based growth model, the biggest disparity that it'll have to address is a rural, urban disparity right. Because most of the Chinese population is still in the rural area. They did not experience as much of income and wealth growth as the urban area. And if you want them to spend, you have to give them, essentially either have more transfers to the rural area, or making a component of their assets, appreciating value. And for rural residents, the biggest asset was the land. But land market has now been reformed. And I think that people have been proposing to make rural land more transferable and being the assets of the rural resident, which is the land, when you have a land market that can go appreciating value, it will allow the rural residents to consume more as well. So that's part of the answer to your first question. Macro command policy implications is huge right. So, China has a large savings rate, very high savings rate, in the excess of 45%. There are a lot of explanations, but I think one of the major explanations indeed, is that the Chinese households feel like they need to save in order to prepare for their retirement, because of the inadequate replacement ratio of the social security system, health insurance system, and so on right. So the anticipated future risk at the retirement is providing strong incentives for the household to save rather than consume. And that will of course be a problem for the government to switch on consumption-based growth model. For a second question, what might be the step by step to solve the serious disparity problem. It's not gonna be easy. I think that there is a historical reason for the system to be very fragmented when Chinese government wanted to introduce the pension system, it needs to get all the provinces on board. And the provinces in 1990s were very diverse in their per capita income. So, the government kind of compromised by saying, look you guys, each province you have your own system. So, the rich provinces are more willing to join the pension system, knowing that they can have their own kind of, most of their social security contribution revenues within their province. But now I think the government is attempting to unify the system. Details are not clear yet, I will say eventually, the state-owned enterprise, dividends infusions to the national social security fund would have to play an important role. But some opponents would argue that, the financial sustainability problem of the pension system in China is not just the fragmented, is not due only to the fragmented nature of the system. Even if the whole system is unified nationally, the system still faces fiscal sustainability problem, because of just the demographic changes. So, but to address the regional disparity, I think unify the system at the national level will be a step, but I don't think it's gonna solve the whole problem.

- Great, thank you. I wanna pick up on your point about old people investing in housing. It's almost like as a way of savings as well. That's part of the other assets portfolio. But with the recent developments or crises that we're seeing in the housing market. And is revealing that there has been a bubble that people are just avoiding. How do you see that threaten this whole alternative of housing as a saving?

- Yeah, so as I mentioned, it really depends on when you get into the housing market right. It's for the current retirees, they are essentially the generation of, who were the first group of people who bought the Chinese housing, even with the downturns in the housing market. I think they are still coming out really well okay. The problem in terms of using housing as a source of wealth really will come up for the next generation, not even for my generation, I was born in the 1970s. For the people born in the '80s and '90s, who bought housing at a much higher price. And they had to buy housing because they need to get married and raise a family and so on, they bought at the time when the housing was hot. And then when they retire, they may run into a prospect of housing market being a lot cooler. Hopefully it will not collapse, but it'll just go down. Housing as a source of their wealth become problematic. So, I would say the generations born in the '80s and '90s, I think they should diversify. Housing is no longer the kind of instrument, investment instrument that will make you wealthy right. I think that for my generation, '70s generation and '60s generation. If we have bought housing in China, you do well right. It doesn't matter if the housing price were to jump by 10%, 12%. I don't think it'll be a problem for the early generation. It's the '80s and '90s generation, and the 2000 generation. They really need to think about alternative investments.

- So let me just ask you one question, final question, but before we have to close, unfortunately. I mean the recent 14, five year plan, actually aging and pension system, everything, a lot of social programs surrounding aging is really, really a top priority, taking up lots of, that a lot of new announcements. In the area of pension system. So for example, you have already announced that China has raised its retirement age. What do you think if you were gonna advise the government, what do you think will be the number one policy that you think would help alleviate the financial sustainability problem?

- Right, so I think there's some low hanging fruit. First low hanging fruit is actually, make the system cover more people, particularly the migrant workers. I did not have time to go through one table, where I present simulation results about the fiscal conditions of the pension system, depending on the fraction of migrant workers, will be incorporated into the pension system, meaning that they contribute to the system, and later on become eligible to receive benefits right. So, there are a large fraction of actually only 20% of the migrant workers are in the system now. And there's still large room to go. And just by say, raising the coverage rate of the migrant workers from 20% to 60%, could actually go a long way in improving the fiscal conditions of the pension system. Secondly, I think raising retirement age is really something that is economically sensible. And even, is because wasting of human capital right. Individuals who are young and healthy and still productive and letting them retire is really a large waste of resource. And I think that right now, the problem of raising retirement age is that, the system is designed in a way that, make it feel, will dis-incentivize people to actually retire later. So, there are ideas about incentivizing individuals who retire later, they work longer. But adjusting their retirement benefits once they retire at the older age, in a way to make them feel beneficial. And so that's one thing there is, redesign of the benefit schedule as a function of your retirement age, that can incentivize more people to retire later.

But that's still assuming that firms are willing to hire older workers. And that I think is a fundamental issue that has to be addressed. When I raised the issue, the very obvious idea of raising retirement age. The readers of a newspaper commented that, but who's gonna hire them? The older workers felt it's very difficult for workers older than 45 in China to find employment. Firms are just hesitating in hiring older workers. And in China, age discrimination is actually very prevalent. So, I would say reforming the laws, making, breaking the norms of wage seniority, and making the workplace more friendly to older workers, making the job designed more acceptable to older workers, will be directions that one can do at the micro level. And eventually the government can raise retirement age without just pushing the older workers to retire later, and not being able to find jobs.

- Great, thank you very much. And I'm sure if we stay on for another hour, two hours, there will be many more questions. And because of your deep insight of the Chinese system, not just pension, but it's broader labor market as well. So, I hope that in the near future, we would be able to have an update opportunity to interact with you, to talk about the broad implication on the economy and other parts as a result of aging today. We just focused on pension as one of them. So, on behalf of the Fairbank center, I thank you for sharing with us your knowledge, your wisdom. And we look forward to talking to you again and to continue to learn from you. Thank you, and thank you, for all the participants.

- Thank you very much Winnie.

- Thank you everyone.

- Thank you.

- Bye, bye.

- There are couple more questions but let me see.

- If you can, I will copy them actually.

- Do you want to, yeah.

- Yeah.