北京大学国家发展研究院
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Gender Pension Gaps in China

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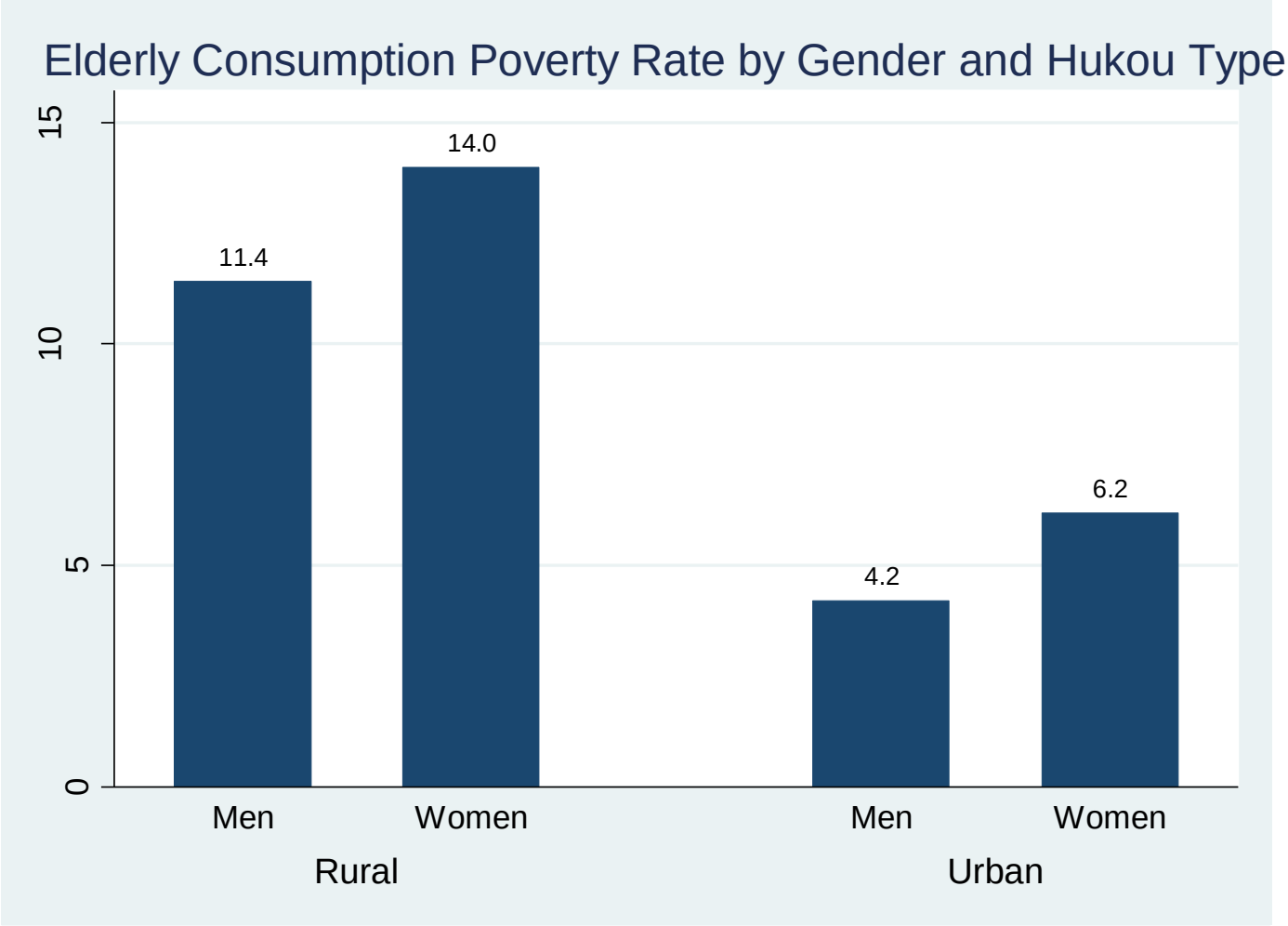
Introduction

- Poverty rates among older women are the highest of all groups due to less retirement incomes.
- Older people in developing countries often fail to accumulate significant assets, thus gender gaps in public pensions are likely more prominent.
- Given population aging, gender income gap at older ages will affect more people than ever in the future.

Introduction (cont.)

- Chinese elderly are especially disadvantaged economically as a result of rapid economic growth in the past three decades.
- Although the government has strengthened social security in recent years, elderly poverty, especially among women, remains a serious problem.



Source: CHARLS, 2013

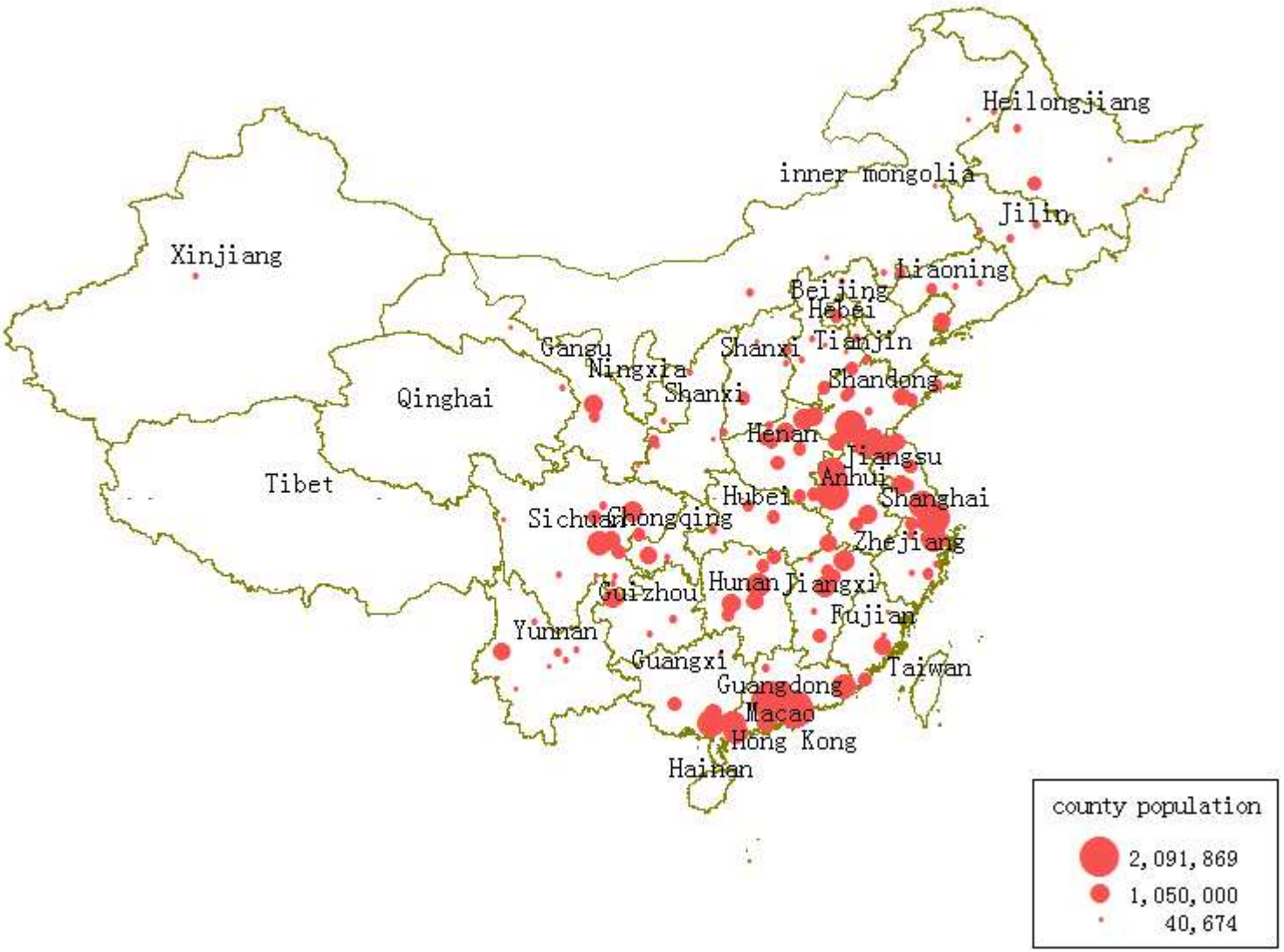
Goals of this paper

- Measure gender gaps in government provided pensions in China for all persons 60+
- Explore reasons behind the gender gaps

Data – CHARLS

- China Health and Retirement Longitudinal Study
- Nationally representative of population over age 45
- Multi-stage PPS random sampling
  - Counties, Villages, Households, Persons
  - 150 counties in 28 provinces
    - Baseline survey in 2011-2012: 10,257 households, 17,708 respondents
- We use the second wave in 2013 and Life History Survey in 2014

County distribution

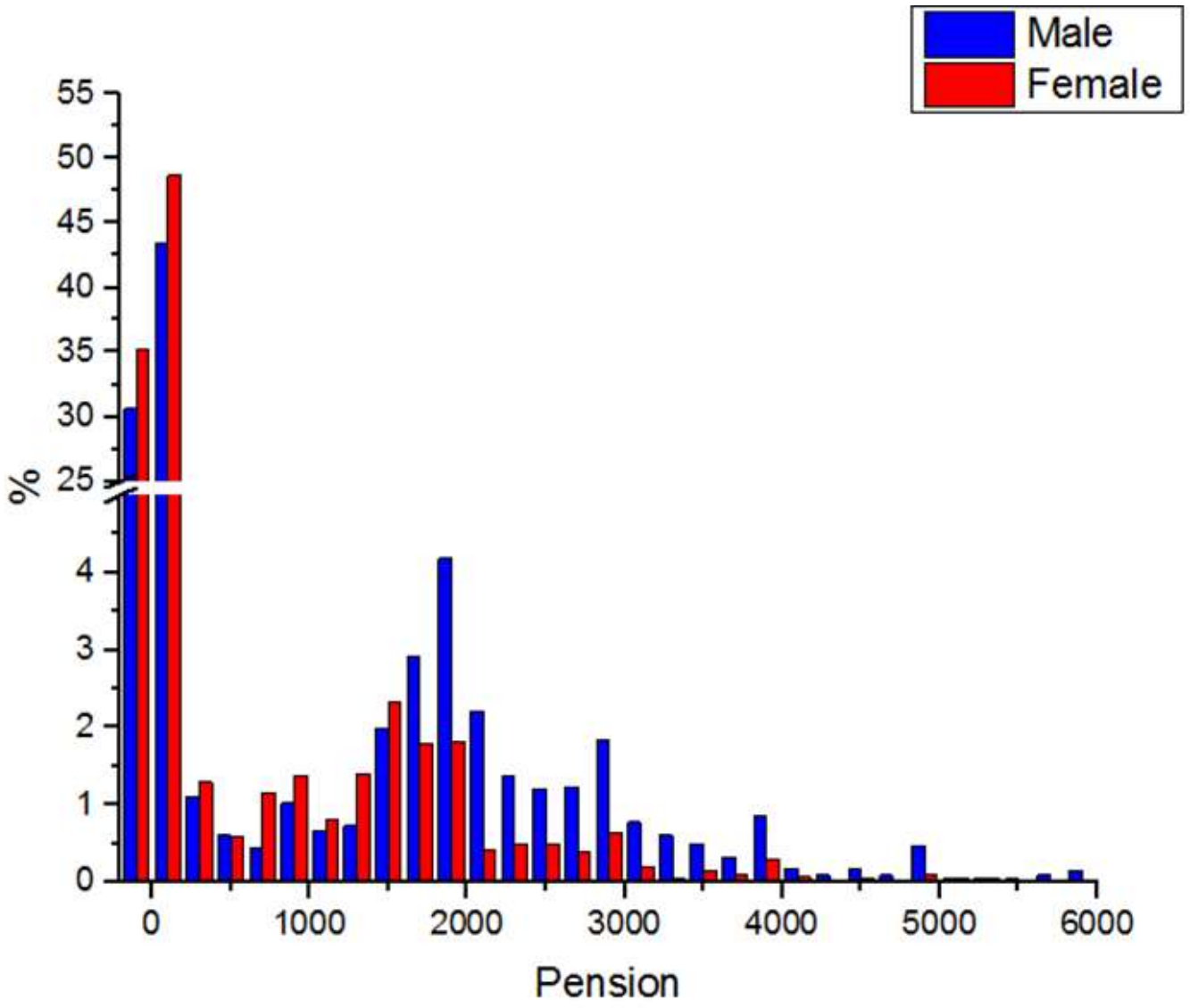


Sample

Table 1. Sample Size and Composition

	N	%
Men	4081	50.2
Women	4047	49.8
Urban	1989	24.5
Rural	6139	75.5
Urban		
Men	1121	56.4
Women	868	43.6
Rural		
Men	2960	48.2
Women	3179	51.8

Distribution of public pension incomes



Women are highly concentrated in low pension incomes.

Overall picture

	Monthly Pension （Mean: Yuan)	Monthly Pension among Recipients （Mean: Yuan)	Pension Coverage Rate （%）
Men	839	1,130	81
Women	394	588	75
Urban	1,718	2,202	86
Rural	110	163	75
Urban			
Men	2,108	2,500	90
Women	1,230	1,754	80
Rural			
Men	156	227	76
Women	67	102	74

1. Women's pension incomes is a little less than half of men's.
   - Pension coverage rate is 6 percentage points lower.
   - Conditional on receiving pensions, women receive less.
2. Within urban or rural residents, large pension gaps also exist.

Sources of the pension gap

- How much of the gender gap is due to participation gap, and how much due to benefits gap?

$$Y_m - Y_f = \frac{1}{2}(Y_{pm} + Y_{pf})(P_m - P_f) + \frac{1}{2}(P_f + P_m)(Y_{pm} - Y_{pf})$$

- $\frac{1}{2}(Y_{pm} + Y_{pf})(P_m - P_f)$: Gap Due to Gender Difference in Participation
- $\frac{1}{2}(P_f + P_m)(Y_{pm} - Y_{pf})$: Gap Due to Gender Difference in Pension Benefits

Among Those Who Receive Pension

Decomposition results

Table 3. Decomposition of Gender Gap in Pension Benefits for the Elderly

		Total Gender Gap	Gap Due to Gender Difference in Participation	Gap Due to Gender Difference in Pension Benefits
Total	¥	444	61	383
	%	100%	14%	86%
Urban	¥	878	303	576
	%	100%	34%	66%
Rural	¥	89	5	84
	%	100%	5%	95%

- Taking the population as a whole, most of the gender gap in pension comes from benefits gaps.
- This is especially true among rural residents where gender gap in participation hardly explains any of the gender gap.
- Within urban residents, gender difference in participation is relatively important.

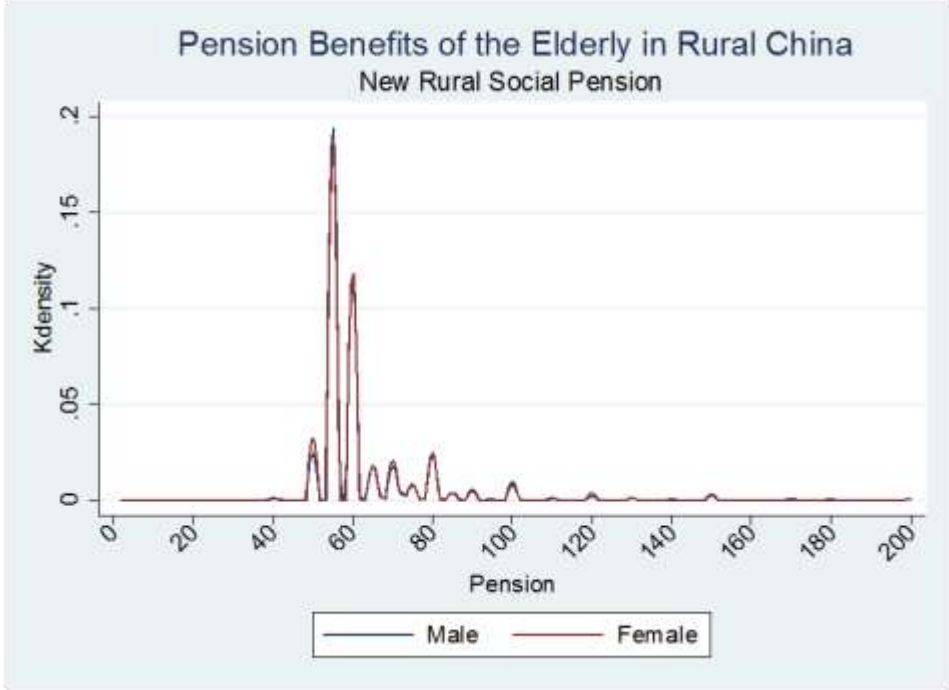
Next: Sources of the benefit gaps

- Background: China has a highly segmented pension system with entitlement based on identity
  - Government employees: financed by tax revenues
  - Urban firm employees: financed by firm and individual contributions
  - Urban non-employees: resident pension (since 2011)
  - Rural residents: New Rural Pension Scheme (since 2009)
  - Unified urban and rural resident pension: since 2013

Table 4. Types of Public Pension Programs and Benefit Levels

	Urban		Rural		Total	
	Men	Women	Men	Women	Men	Women
Government & Institutions‘ Pension(%)	32.8	18.8	4.1	0.9	14.1	6.0
Monthly Pension(Yuan)	3,346	2,706	1,715	949	3,097	2,558
Firm Pension（%）	52.8	43.8	3.3	0.7	20.6	12.8
Monthly Pension(Yuan)	2,168	1,739	1,594	1,230	2,109	1,717
Urban Resident Pension（%）	5.6	12.7	0.7	0.6	2.4	4.0
Monthly Pension(Yuan)	1,483	1,261	850	324	1,351	1,166
New Rural Resident Pension（%）	3.5	6.5	68.6	70.6	45.9	52.6
Monthly Pension(Yuan)	146	212	86	77	88	81
Unified Resident Pension（%）	2.1	2.9	1.9	1.9	1.9	2.2
Monthly Pension(Yuan)	840	496	137	274	335	335

- Government and firm pensions pay higher benefits – “good” pensions.
- Women are less likely to receive good pension.
- Even within good pension programs, women receive less benefits.



- Within good pension programs, women receive much less benefits.
- There is hardly any difference within bad pension programs.

Decomposing the benefits gap

- Decompose gender gaps in public pension benefits into
- 1. Due to gap in receiving good pension
- 2. Due to benefit gap conditional on receiving good pension
- 3. Due to benefit gap conditional on bad pension

Formula

$$Y_{pm} - Y_{pf} = \frac{1}{2}[(Y_{gm} + Y_{gf}) - (Y_{bm} + Y_{bf})](P_{gm} - P_{gf}) + \frac{1}{2}(P_{gm} + P_{gf})(Y_{gm} - Y_{gf}) + \frac{1}{2}(P_{bm} + P_{bf})(Y_{bm} - Y_{bf})$$

- $\frac{1}{2}[(Y_{gm} + Y_{gf}) - (Y_{bm} + Y_{bf})](P_{gm} - P_{gf})$: Due to gap in receiving good or bad pension
- $\frac{1}{2}(P_{gm} + P_{gf})(Y_{gm} - Y_{gf})$: Due to benefit gap in good pension
- $\frac{1}{2}(P_{bm} + P_{bf})(Y_{bm} - Y_{bf})$: Due to benefit gap in bad pension

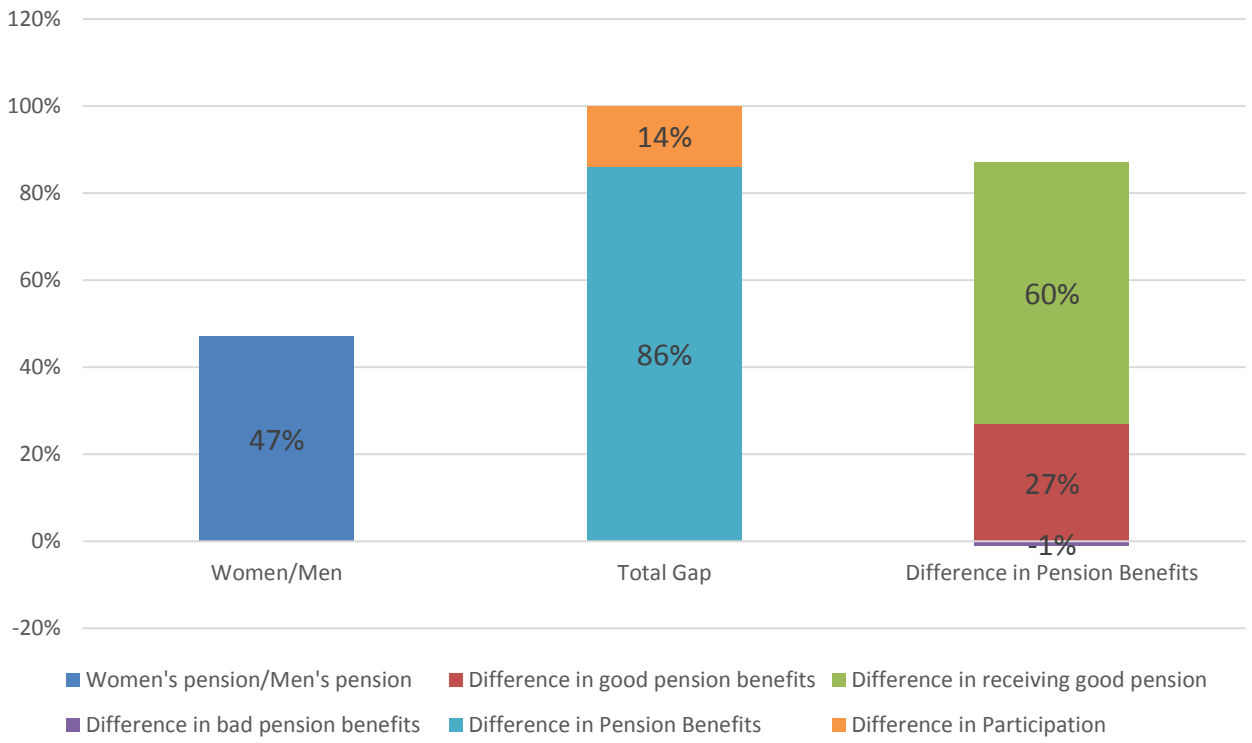
Decomposition results

Table 5. Decomposition of Gender Gap in Pension Benefits for Those Receiving Pension

		Total Gender Gap	Due to participation in "good" pension	Due to benefit gaps within "good" pensions	Due to benefits gaps within "bad" pensions
Total	¥	542	376	173	-7
	%	100%	69%	32%	-1%
Urban	¥	746	232	502	12
	%	100%	31%	67%	2%
Rural	¥	125	86	28	11
	%	100%	69%	23%	8%

- Overall, most of the benefit gaps are due to participation in "good" pension programs. This is driven by the pattern among rural residents.
- Among urban residents, benefit gaps within good pensions are more important.

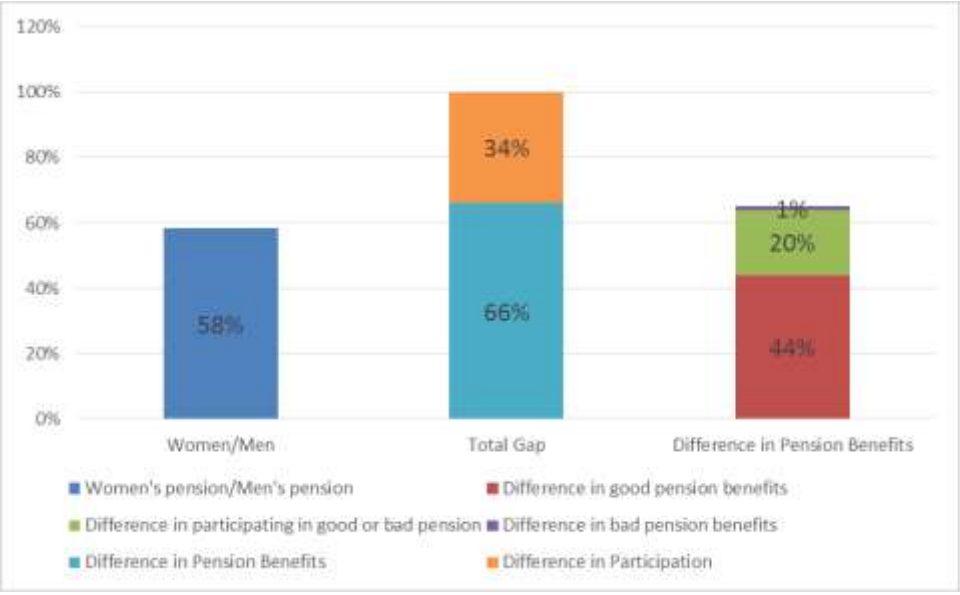
Summary - 1



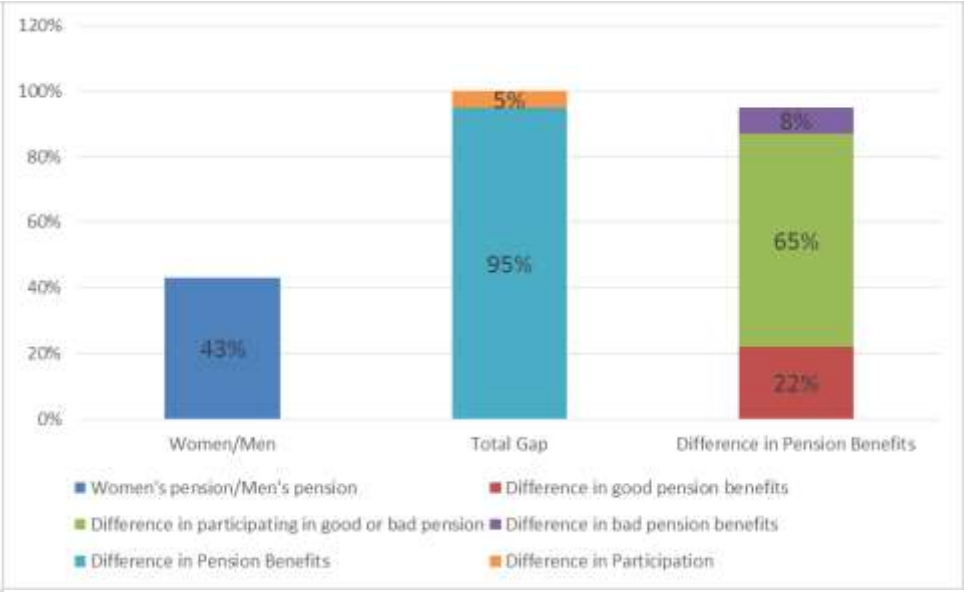
- Gender gap in pensions are mostly explained by coverage in government and firm pensions.
- A little over a quarter is also explainable by difference in benefit gaps within the government and firm pensions.
- 14% of gender gap can be explained by coverage in any pension.

Summary - 2

Urban



Rural



- The sources of gender gap are different in urban vs. rural areas.
- In urban areas, gender gaps in pension benefits, especially in government and firm pensions, has the largest explanatory power, followed by gender gap in having any pension.
- In rural areas, coverage gap in government and firm pension explain nearly 2/3 of the gender pension gap, a smaller part is explained by benefits within good pensions.

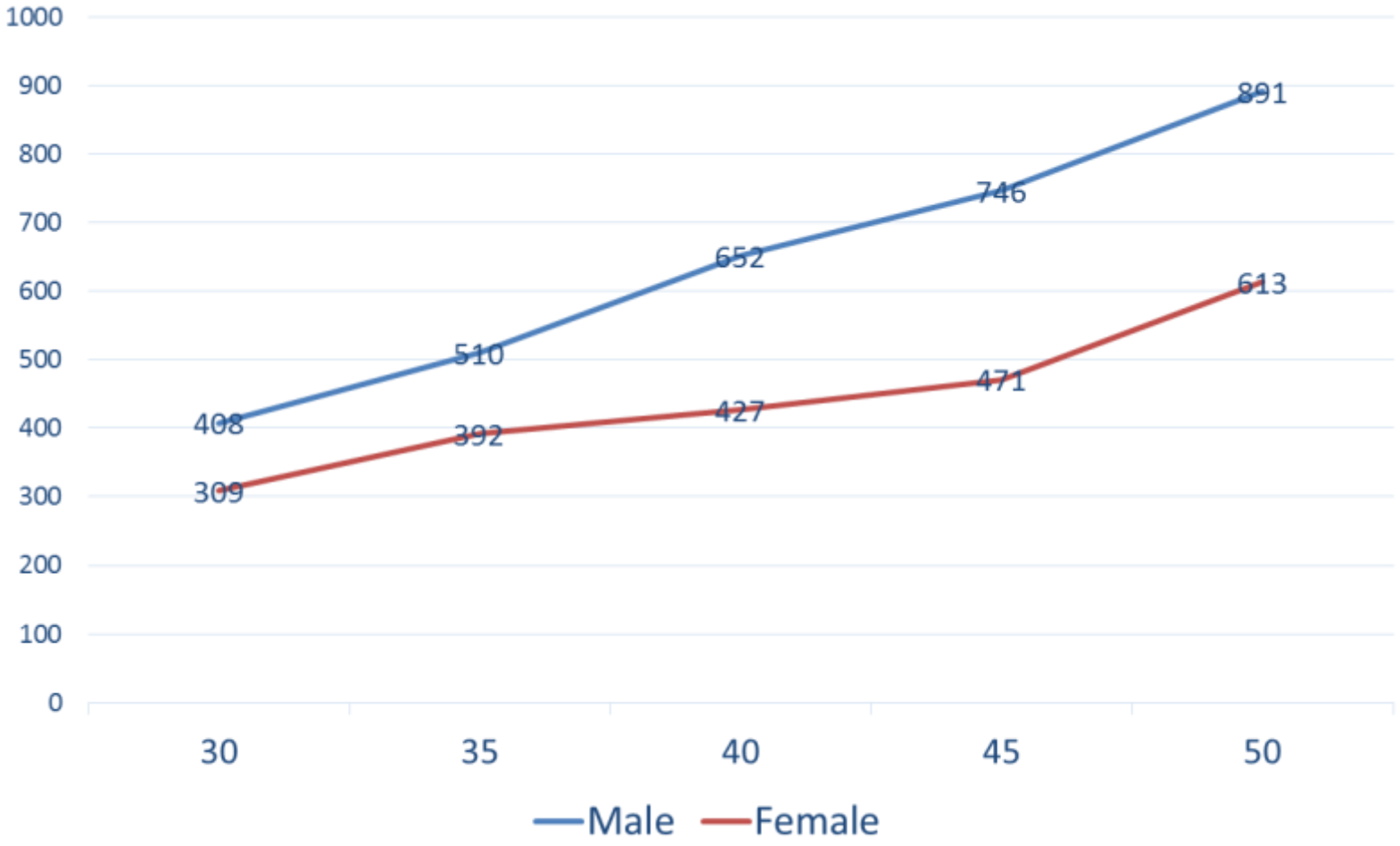
Next ask

- Why are women less likely to receive government and firm pensions?
- Why do women receive less benefits in good pensions?

Table 7. Summary Statistics

	Among those having any public pension			Among those having good pension		
	Male	Female	Diff	Male	Female	Diff
Receiving Good Pension	0.30	0.16	0.15***			
Pension Benefits				2452.60	2010.70	441.91***
Age	69.05	69.11	-0.06	69.85	69.33	0.52
Age Square/100	48.08	48.23	-0.14	49.19	48.48	0.72
Agricultural Hukou	0.72	0.81	-0.09***	0.10	0.03	0.07***
Education						
Illiterate	0.19	0.54	-0.35***	0.05	0.13	-0.08***
Did not finish primary school	0.23	0.18	0.05***	0.12	0.10	0.02
Finished primary school	0.31	0.15	0.15***	0.25	0.20	0.05
Middle school	0.17	0.08	0.09***	0.28	0.31	-0.03
High School and Above	0.10	0.04	0.06***	0.30	0.26	0.04
The Type of Retired Unit						
Government				0.12	0.04	0.09***
Insititutions				0.19	0.19	-0.01
State owned firm				0.20	0.36	-0.16***
Collective owned firm				0.03	0.11	-0.07***
Other firm				0.01	0.01	0.00
Firm(type missing)				0.07	0.07	0.00
Informal sector				0.00	0.01	-0.01
Unit type missing				0.38	0.22	0.17***
Years of formal employment	8.60	3.48	5.12***	31.41	26.38	5.03***
Wage at Age of 45				729.03	451.24	277.79***
N	2431	2305		512	231	

Wage gap given employment



Explain pension coverage and benefit gaps

- Run regressions of
  - Coverage by government and firm pensions
  - Benefit levels
- Explanatory variables
  - Years of formal employment before age 60
  - Wage levels before retirement
  - Hukou status
  - Other controls

Regression results – Good pension

Table 8. Linear Probability Estimates of Participation in Good Pension Programs

	(1) Male		(2) Female		(3) All	
Variables	Coef	SE	Coef	SE	Coef	SE
Female					-0.010	(0.006)
Age	-0.016	(0.013)	-0.013	(0.009)	-0.012	(0.008)
Age Square/100	0.013	(0.009)	0.009	(0.006)	0.010*	(0.005)
Agricultural Hukou	-0.494***	(0.015)	-0.379***	(0.013)	-0.449***	(0.010)
Education (Base: Illiterate)						
Did Not Finish Primary School	0.010	(0.014)	0.015	(0.010)	0.013*	(0.008)
Finished Primary School	0.040***	(0.013)	0.026**	(0.011)	0.035***	(0.008)
Middle School	0.055***	(0.015)	0.063***	(0.015)	0.055***	(0.010)
High School and Above	0.060***	(0.018)	0.048**	(0.021)	0.060***	(0.013)
Years of formal employment	0.014***	(0.000)	0.019***	(0.001)	0.016***	(0.000)
Constant	0.935**	(0.460)	0.792**	(0.334)	0.810***	(0.281)
Province FE	Yes		Yes		Yes	
Observations	2,431		2,305		4,736	
R-squared	0.796		0.790		0.795	

Note: Use samples who are aged 61+ and receiving any pension.

Oaxaca Decomposition Results

Table 9. Decomposition of Gender Gap in Participating in Good Pension Programs

	Difference(Male-Female)	Percent
Total Difference	0.1487	100.00%
Explained Difference	0.1405	94.50%
Unexplained Difference	0.0082	5.50%
Explained Difference:		
Age	-0.0006	-0.37%
Hukou	0.0414	27.82%
Education	0.0163	10.96%
Years of formal employment	0.0823	55.34%
Province	0.0011	0.75%

Regression results – Benefits

Table 10. Pension Benefits Estimation Results

	(1) Male		(2) Female		(3) All	
Variables	Coef	se	Coef	se	Coef	se
Female					-0.143***	(0.034)
Age	-0.043	(0.055)	-0.066	(0.071)	-0.048	(0.044)
Age Square/100	0.030	(0.038)	0.047	(0.049)	0.035	(0.030)
Agricultural Hukou	-0.303***	(0.062)	-0.823***	(0.152)	-0.354***	(0.055)
Education (Base: Illiterate)						
Did Not Finish Primary School	-0.034	(0.092)	-0.007	(0.096)	-0.044	(0.066)
Finished Primary School	0.078	(0.085)	-0.069	(0.089)	0.018	(0.060)
Middle School	0.158*	(0.086)	-0.024	(0.083)	0.082	(0.060)
High School and Above	0.370***	(0.085)	0.212**	(0.091)	0.299***	(0.061)
The Type of Retired Unit (Base: government)						
Institution & NGO	-0.017	(0.063)	-0.156	(0.125)	-0.014	(0.055)
Stated Owned Firm	-0.174***	(0.064)	-0.305**	(0.126)	-0.163***	(0.055)
Collective Owned Firm	-0.101	(0.108)	-0.290**	(0.141)	-0.129*	(0.077)
Other Firm	-0.052	(0.246)	-0.467*	(0.279)	-0.161	(0.183)
Firm(Type Missing)	-0.191**	(0.084)	-0.283*	(0.149)	-0.167**	(0.070)
Unformal Sector	-0.234	(0.413)	-0.473*	(0.263)	-0.250	(0.229)
Unit Type Missing	-0.169***	(0.058)	-0.328***	(0.125)	-0.161***	(0.051)
Years of formal employment	0.006***	(0.002)	0.008***	(0.003)	0.007***	(0.002)
Ln Wage at Age of 45	0.059***	(0.019)	0.112***	(0.024)	0.083***	(0.015)
Constant	8.682***	(2.010)	9.390***	(2.545)	8.773***	(1.574)
Province FE	Yes		Yes		Yes	
Observations	568		237		805	
R-squared	0.328		0.570		0.377	

Note: Use samples who are aged 61+ and receiving “good” Pension

Oaxaca Decomposition Results

Table 11. Decomposition of Gender Gap in Pension Benefits

	Difference(Male-Female)	Percent
Total Difference	0.1820	100.00%
Explained Difference	0.0702	38.58%
Unexplained Difference	0.1118	61.42%
Explained Difference:		
Age	0.0005	0.29%
Hukou	-0.0257	-14.10%
Education	0.0132	7.28%
The Type of Retired Unit	0.0209	11.46%
Years of formal employment	0.0457	25.10%
Ln Wage at Age of 45	0.0366	20.13%
Province	-0.0211	-11.58%

Conclusion

- Women's public pension income is 47% that of men in China
  - 14% of the gap comes from participation differences,
  - 86% comes from differences in benefits given participation.
- Among pension recipients, women's benefit level is 52% that of men.
  - Most of the benefit gaps are due to coverage in "good" pension programs. This is driven by the pattern among rural residents.
  - Among urban residents, benefit gaps within good pensions are more important.

Conclusion

- When receiving public pension, women are 50% less likely to receive good pension
  - Women's deficit in years of formal employment explains 55% of this gap
  - Women being more likely to have agricultural hukou explains another 28%.
- When receiving good public pensions, women are paid 18% less.
  - Women's deficit in years of formal employment explains 25% of this gap
  - Women's wage deficit at age 45 explains another 20%.

Conclusion

- Years of formal employment explains 44% of total gender gap in pension benefits.
  - 10% through participation in any pension, 31.4% through participation in good pension among participants and 2.6% through explaining benefits gap in good pension.
- Formal employed is most likely linked to care responsibilities by women.

Future research

- How does caring responsibilities contribute to the shortened years of formal employment and lower wage among women?

Thank You!