

# The Impact of Extended Retirement Age and Population Ageing on Chinese Pay-As-You-Go Pension System

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Our research uses data from the sixth census of China conducted in 2010 to verify whether ageing will lead to payment crisis of the pay-as-you-go system, and whether the policy of deferred retirement age will solve the crisis in the context of population ageing.

## Will Population Ageing Lead to Payment Crisis of the Pay-As-You-Go System?

Table 1: Calculation of the growth rate of China's ageing population from 2012 to 2066

Year	Growth rate of the population of the elderly (%)	Year	Growth rate of the population of the elderly (%)
2011	—	2039	0.41
2012	4.05	2040	0.28
2013	4.13	2041	0.29
2014	4.33	2042	0.22
2015	3.42	2043	0.73
2016	3.17	2044	0.72
2017	2.42	2045	0.49
2018	2.73	2046	0.70
2019	4.68	2047	0.40
2020	3.77	2048	0.17
2021	3.02	2049	0.26
2022	2.64	2050	0.10
2023	2.47	2051	0.14
2024	4.17	2052	-0.32
2025	4.44	2053	-0.87
2026	3.69	2054	-0.98
2027	3.54	2055	-1.15
2028	2.84	2056	-1.33
2029	2.76	2057	-1.44
2030	2.90	2058	-1.65
2031	2.36	2059	-1.70
2032	2.11	2060	-1.73
2033	1.64	2061	-1.63
2034	1.38	2062	-1.63
2035	1.21	2063	-1.63
2036	0.95	2064	-1.58
2037	0.60	2065	-1.59
2038	0.70	2066	-1.39

Table 2: Calculation of the speed of the ageing in China from 2012 to 2055

Year	Speed of the ageing (%)	Year	Speed of the ageing (%)
2012	2.95	2034	1.23
2013	3.06	2035	1.08
2014	3.32	2036	0.88
2015	2.47	2037	0.61
2016	2.29	2038	0.74
2017	1.62	2039	0.54
2018	1.97	2040	0.43
2019	3.99	2041	0.61
2020	3.16	2042	0.59
2021	2.45	2043	1.12
2022	2.18	2044	1.31
2023	2.01	2045	1.10
2024	3.79	2046	1.42
2025	4.16	2047	1.17
2026	3.40	2048	0.83
2027	3.32	2049	1.06
2028	2.62	2050	0.73
2029	2.55	2051	0.47
2030	2.71	2052	0.11
2031	2.10	2053	-0.66
2032	1.97	2054	-0.10
2033	1.49	2055	0.24

According to table 1 and table 3, if the growth rate of per capita pension for the ageing population is zero, as long as the growth rate of total output is not less than 5%, payment crisis won't happen before 2066.

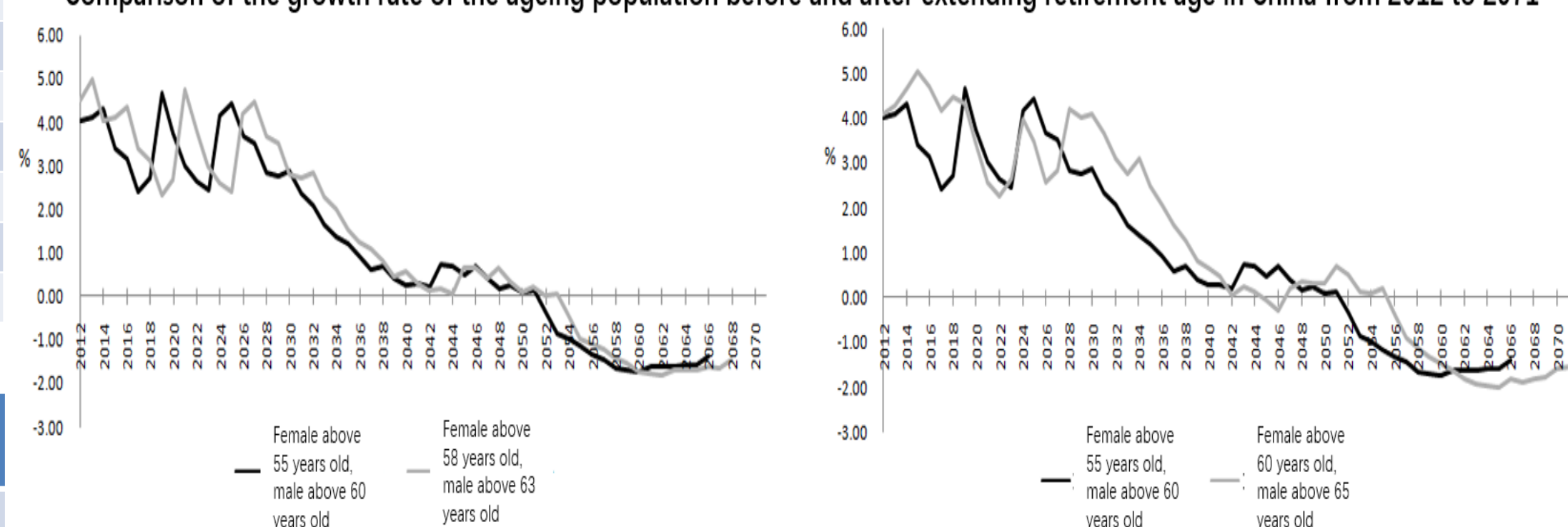
Table 3: China's GDP growth rate and per capita GDP growth rate from 1995 to 2014

Year	GDP growth rate (%)	GDP cumulative growth rate (%)	Per capita GDP growth rate (%)	Cumulative growth rate of per capita GDP (%)
1995	—	—	—	—
1996	17.08	17.08	15.85	15.85
1997	10.98	28.06	9.85	25.70
1998	6.87	34.93	5.85	31.55
1999	6.25	41.18	5.33	36.88
2000	10.63	51.81	9.77	46.64
2001	10.52	62.33	9.72	56.36
2002	9.73	72.06	9.00	65.36
2003	12.86	84.92	12.17	77.53
2004	17.68	102.60	16.98	94.51
2005	15.67	118.27	14.99	109.50
2006	17.09	135.36	16.43	125.93
2007	23.14	158.49	22.50	148.43
2008	18.18	176.68	17.58	166.01
2009	9.12	185.79	8.58	174.58
2010	18.31	204.10	17.73	192.32
2011	18.40	222.50	17.83	210.15
2012	10.33	232.82	9.79	219.94
2013	10.09	242.91	9.55	229.49
2014	8.14	251.06	7.60	237.09

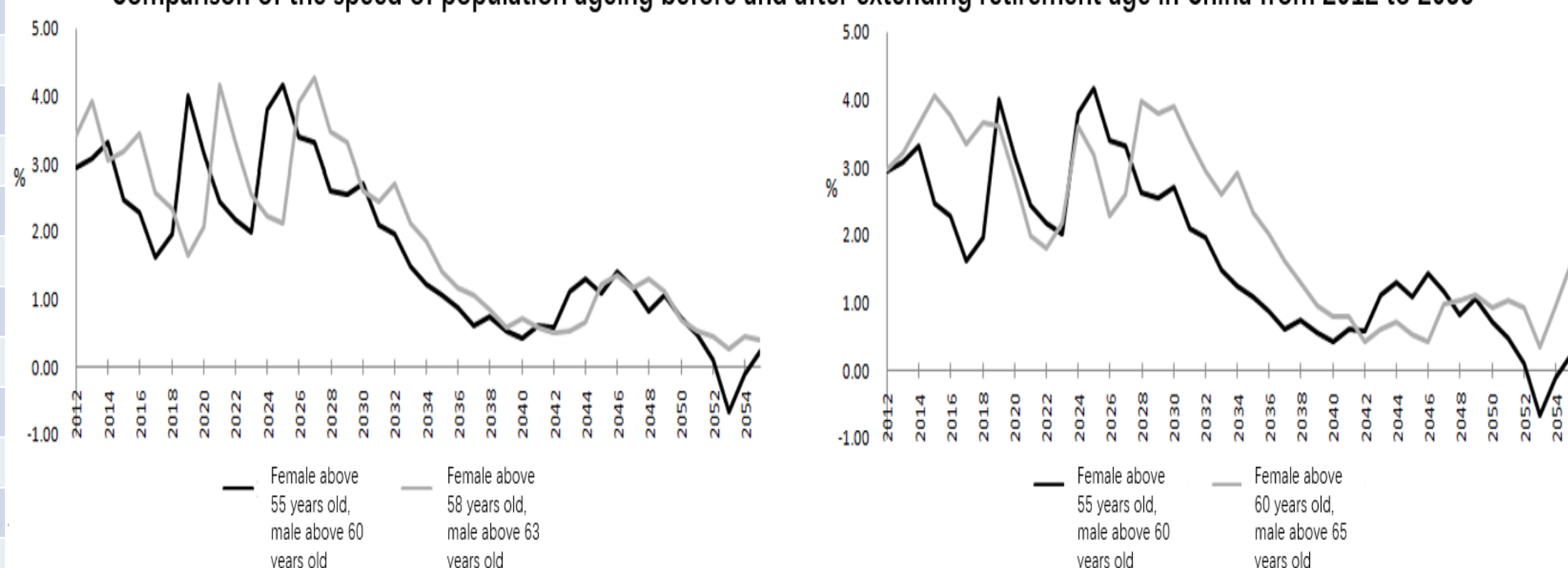
According to table 2 and table 3, China's average growth rate of population ageing is less than 4% between 2012 and 2055, and the percent of per capita output is more than 5% in the past 20 years, therefore the per capita pension level is able to increase at a rate of 1% at least during this period.

## Will the Extended Retirement Age Solve the Crisis on the Background of Ageing?

Comparison of the growth rate of the ageing population before and after extending retirement age in China from 2012 to 2071



Comparison of the speed of population ageing before and after extending retirement age in China from 2012 to 2055



## Conclusion

- The ageing of the population will not necessarily lead to the payment crisis of the pay-as-you-go system.
- Extension of the retirement age does not have an obvious effect on the sustainability of the pay-as-you-go system which suggests that the impact of population ageing on the sustainability of pay-as-you-go system cannot be mitigated by delaying retirement.