Slovak NTA from 2005 to 2019

Štefan Domonkos (IER SAS)
Tomáš Domonkos (IER SAS and FSES CUBA)
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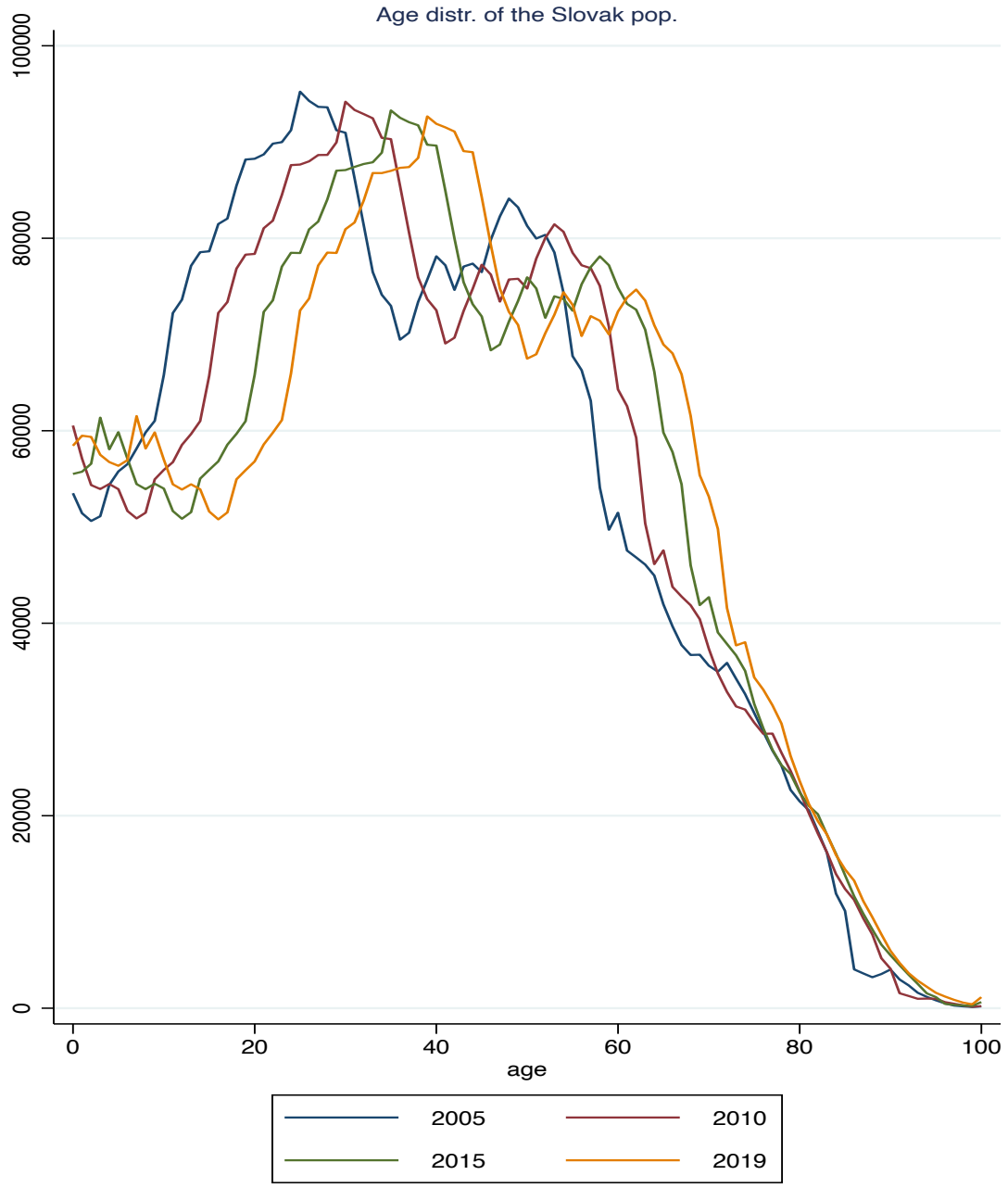
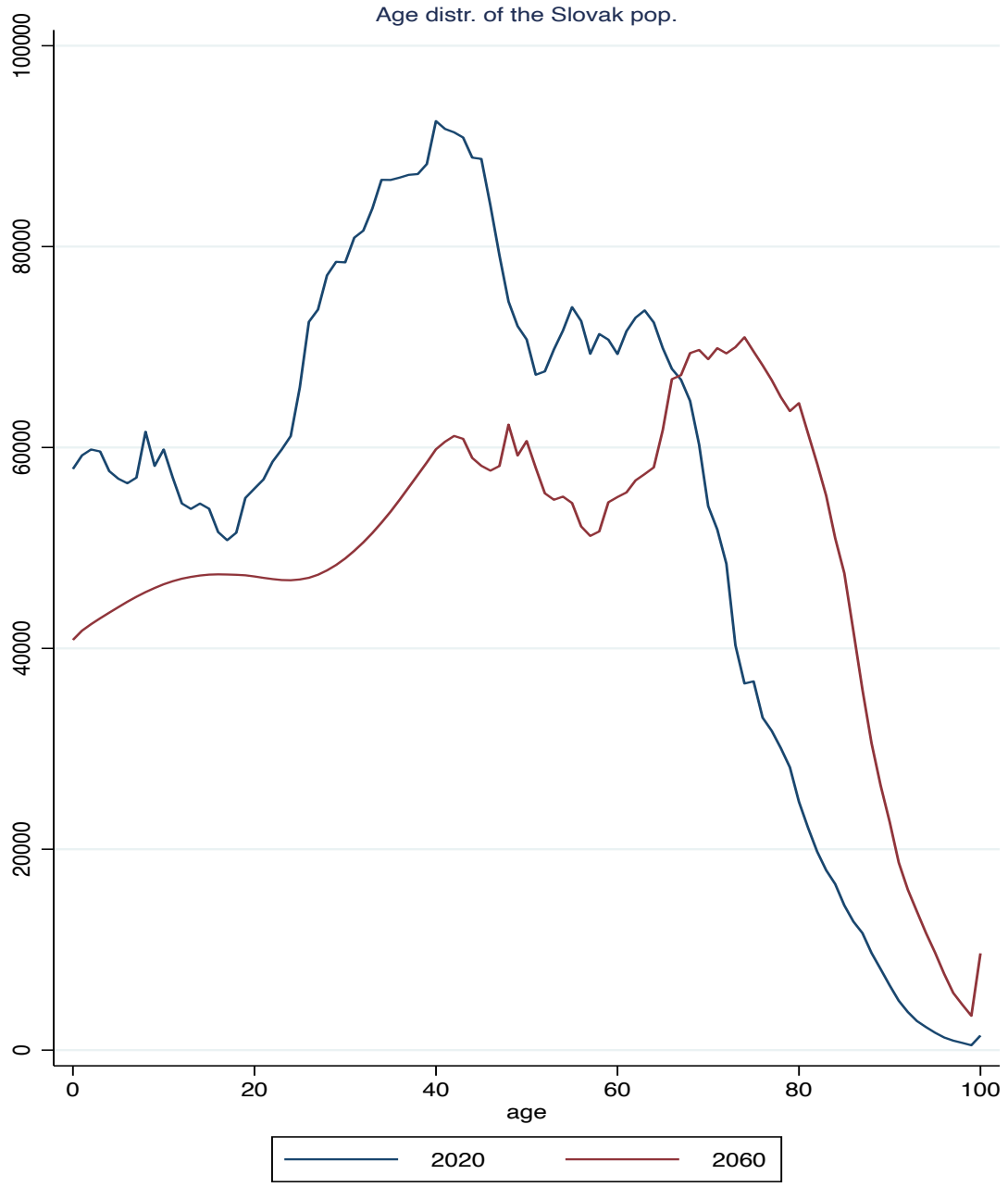
Introduction

- Slovakia is one of the **fastest ageing** countries in Europe
- Slovak NTA for four different time periods: 2005, 2010, 2015 and 2019


Age distr. of the Slovak pop.
100000
80000
60000
40000
20000
0
0
20
40
60
80
100
age
2005
2010
2015
2019


Age distr. of the Slovak pop.
100000
80000
60000
40000
20000
0
0
20
40
60
80
100
age
2020
2060

Introduction

- Slovakia is one of the fastest ageing countries in Europe
- Slovak NTA for four different time periods: 2005, 2010, **2015** and 2019
- **Motivation**: We are interested in whether there are significantly large changes in the shape and level of the NTA age profiles over the 2005-2019 time range
- Time period 2005-2019 includes major economic **upswings** (2005-2007 and 2015-2019) as well as years marked by **low- or negative economic growth** (2009-2013)

Introduction

- Evidence about the age patterns of:
  - labor income
  - consumption
  - life-cycle deficit
  - and other NTA age profiles
- Development of the age profiles over the analysed time range
- The results are complemented by several NTA summary measures
  - Interested in the dynamics of the support ratio, economic dependence ratio as well as public transfer dependence ratio
  - Interested in the dynamics of the human capital investment

Methodology

- While developing the NTA we followed the The European NTA Manual of Istenič et al. (2016) and the United Nations (2013) NTA Manual.
- While comparing the age profiles the following procedure was followed:
  - Visual comparison of the YoYl age profiles as well as the differences of the YoYl age profiles between the four time periods
  - The visual analysis was complemented with basic statistics
  - We additionally compared several NTA summary statistics
    - Support ratio Lee et al. (2014)
    - Economic dependence measures and public sector dependence measures according to Loichinger *et al.*, (2017) and Barslund and von Werder (2017)
    - Human capital investment according to Mason, A., Lee, R. and Jiang, J.X. (2016)

Methodology

- Support ratio according to Lee et al. (2014) :

$$SR_y = \frac{\sum_{x=0}^{D} \frac{\delta Y_x^L}{Y_{30-49}^L} P_{x,y}}{\sum_{x=0}^{D} \frac{\varphi C_x}{C_{30-49}} P_{x,y}}$$

- NTA economic dependence according to Loichinger et al. (2017):

$$ntaDR = \frac{\sum_{x=0}^{35} (C_x - Y_x^L) P_x I_x}{\sum_{x=0}^{D} Y_x^L \, P_x} + \frac{\sum_{x=36}^{D} (C_x - Y_x^L) P_x I_x}{\sum_{x=0}^{D} Y_x^L \, P_x}$$

$$I_x = \begin{cases} 1 & for \quad (C_x - Y_x^L) > 0 \\ 0 & for \quad otherwise \end{cases}$$

Methodology

- General NTA economic dependence according to Loichinger et al. (2017):

$$gntaDR = \frac{\sum_{x=0}^{35}(C_x + S_x - Y_x^L - Y_x^A)P_x I_x}{\sum_{x=0}^{D}(Y_x^L + Y_x^A)\,P_x} + \frac{\sum_{x=36}^{D}(C_x + S_x - Y_x^L - Y_x^A)P_x I_x}{\sum_{x=0}^{D}(Y_x^L + Y_x^A)\,P_x}$$

$$I_x = \begin{cases} 1 & for \quad (C_x + S_x - Y_x^L - Y_x^A) > 0 \\ 0 & for \quad otherwise \end{cases}$$

- Public sector dependence ratio proposed by Loichinger et al. (2017)

$$psDR = \frac{\sum_{x=0}^{35}(\tau_x^{+PUB} - \tau_x^{-PUB})P_x I_x}{\sum_{x=0}^{D}(\tau_x^{-PUB})P_x} + \frac{\sum_{x=36}^{D}(\tau_x^{+PUB} - \tau_x^{-PUB})P_x I_x}{\sum_{x=0}^{D}(\tau_x^{-PUB})\,P_x}$$

$$I_x = \begin{cases} 1 & for \quad (\tau_x^{+PUB} - \tau_x^{-PUB}) > 0 \\ 0 & for \quad otherwise \end{cases}$$

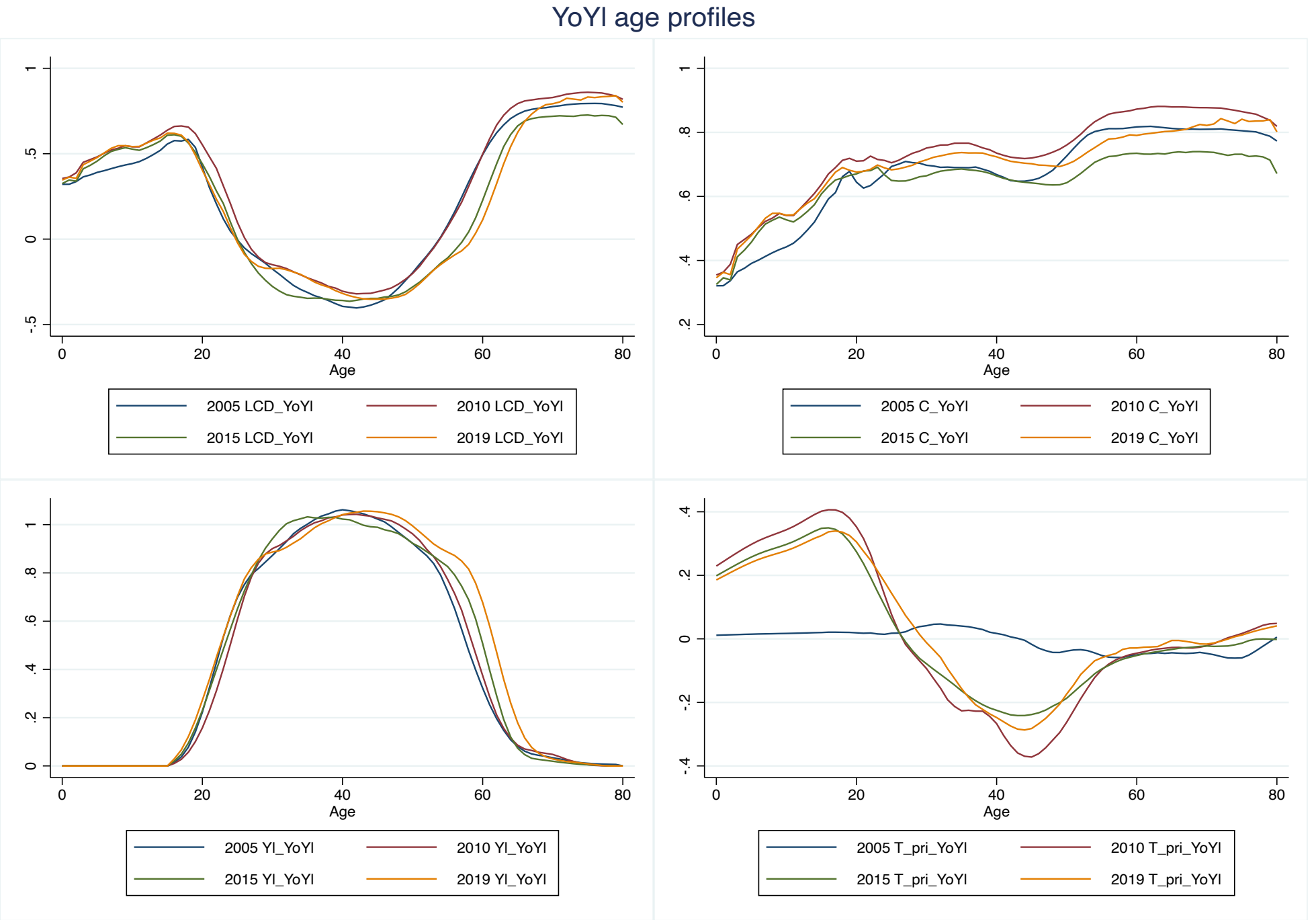
Methodology

- Transfer weighted public sector dependence ratio proposed by Barslund and von Werder (2017)

$$ptwDR = \frac{\sum_{x=0}^{D}(\tau_x^{+PUB} - \tau_x^{-PUB}) * P_x * I \begin{cases} 1 & for \quad (\tau_x^{+PUB} - \tau_x^{-PUB}) > 0 \\ 0 & for \quad otherwise \end{cases}}{\sum_{x=0}^{D}(\tau_x^{+PUB} - \tau_x^{-PUB}) * P_x * I \begin{cases} -1 & for \quad (\tau_x^{+PUB} - \tau_x^{-PUB}) \leq 0 \\ 0 & for \quad otherwise \end{cases}}$$

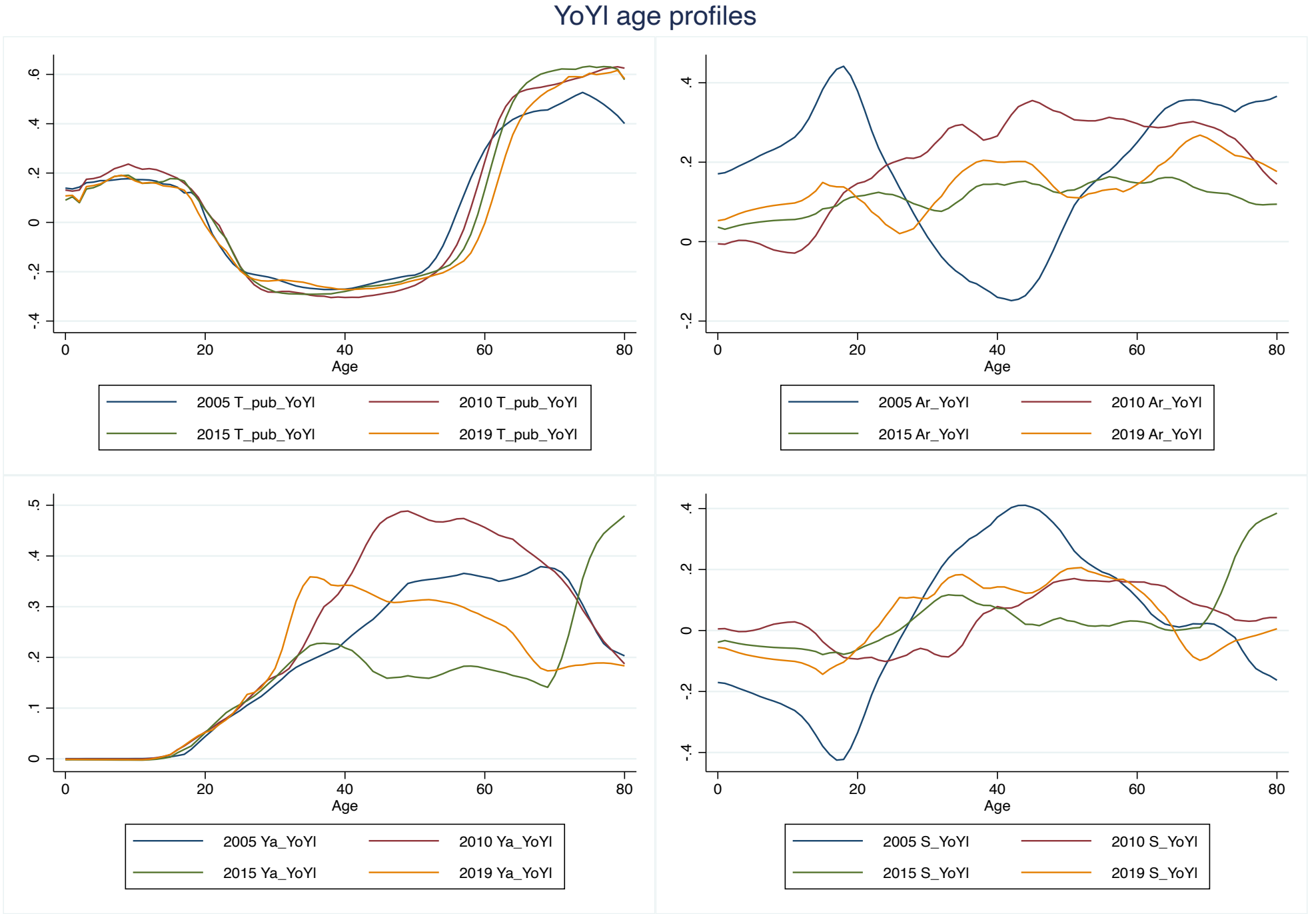
Results and discussion

- Increasing retirement age
- Increasing consumption of the elderly in 2019
- The problem in 2005 private transfers is caused by the age profile from: hy130g - Regular inter-household cash transfers, paid



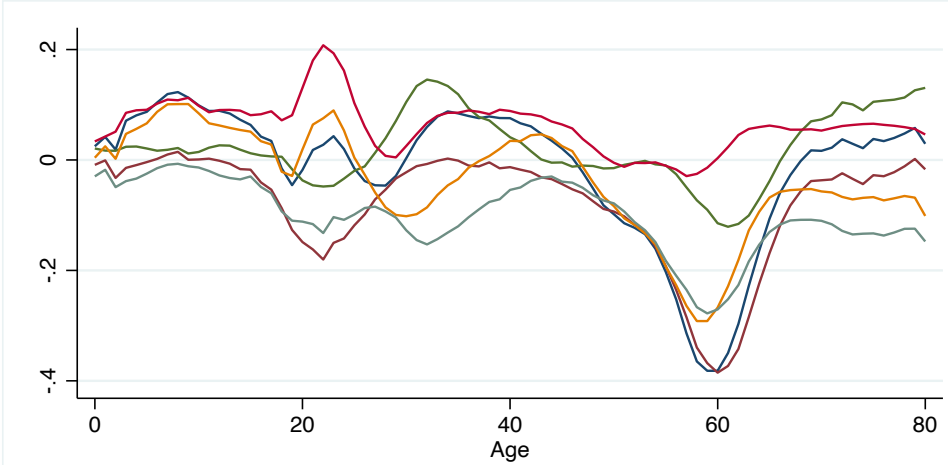
Results and discussion

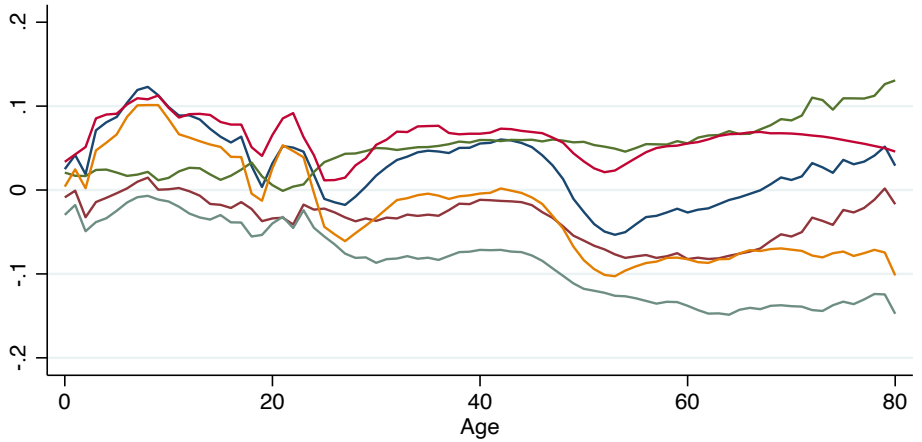
- Increasing retirement age
- hy090 - Interest, dividends, profit from capital investments in unincorporated business

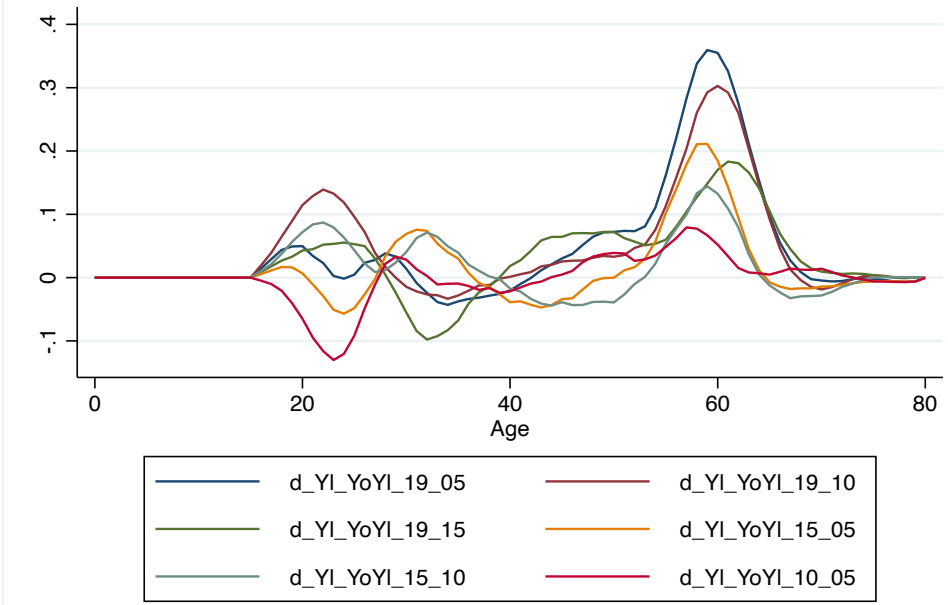


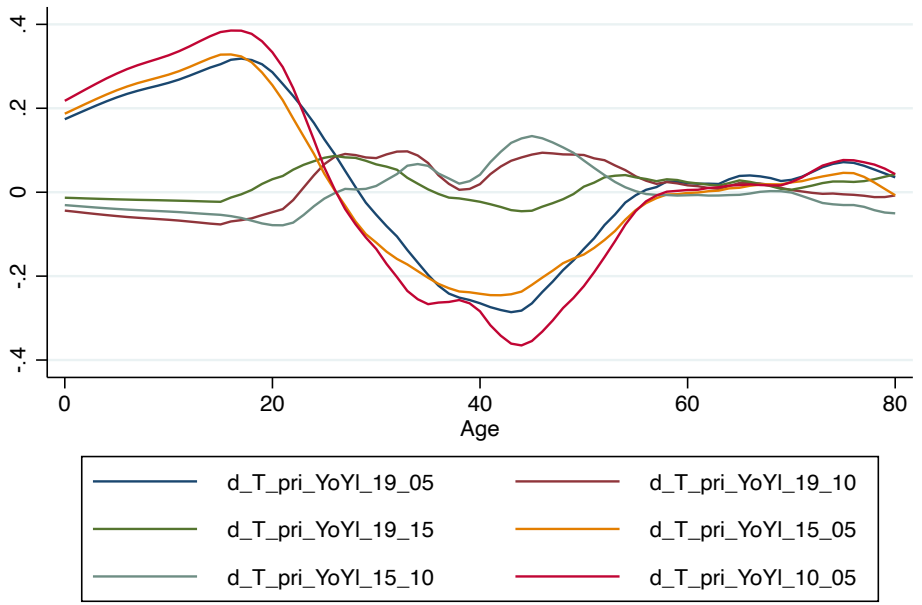
Results and discussion

Differences between the observed periods







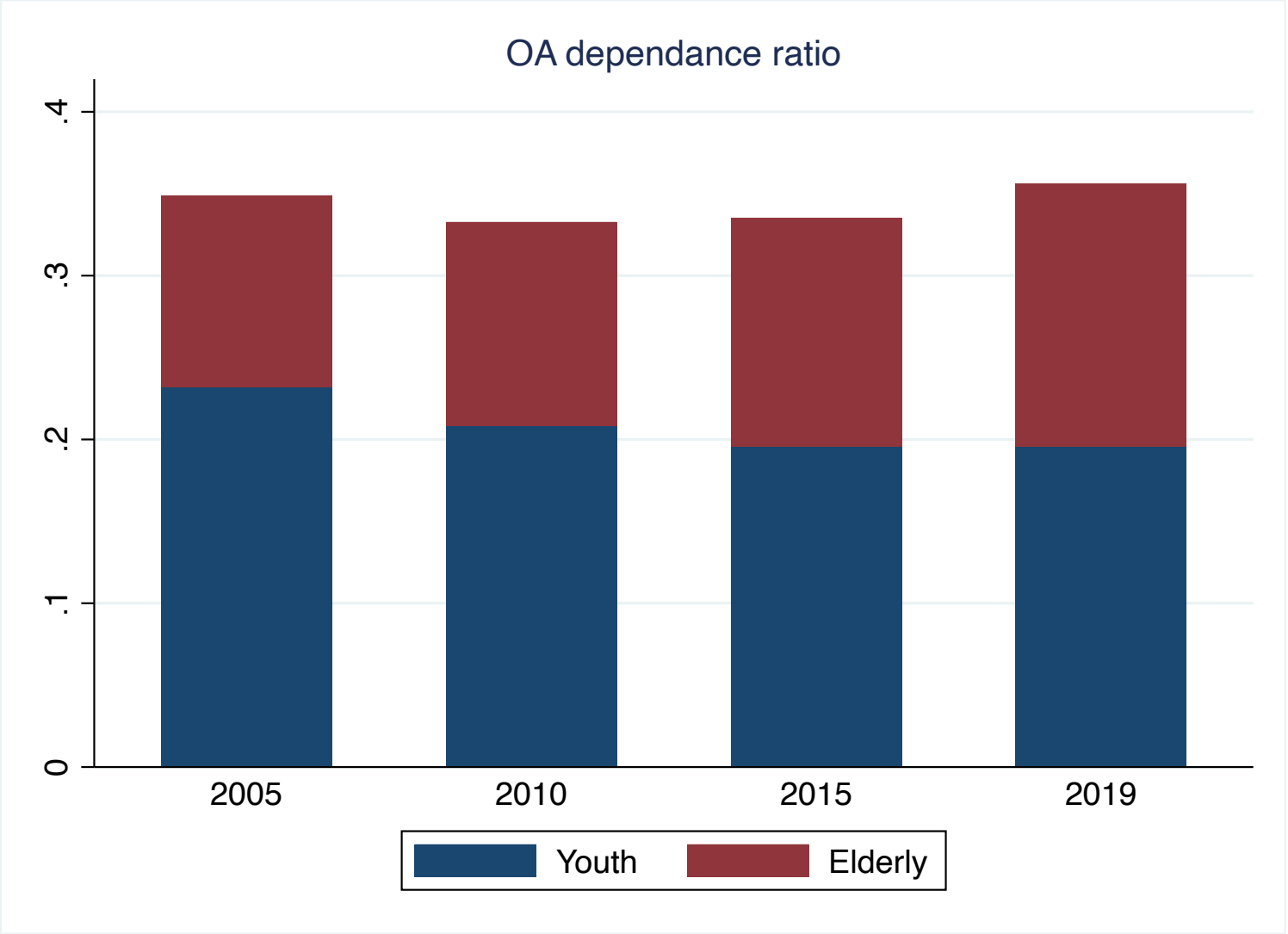


Results and discussion

	obs	Mean	St Err	t value	p value
d Yl YoYl 19 05	81	.044	0.011	4.285	0
d Yl YoYl 19 10	81	.045	0.009	5.011	0
d Yl YoYl 19 15	81	.03	0.007	4.641	0
d Yl YoYl 15 05	81	.015	0.007	2.37	.02
d Yl YoYl 15 10	81	.015	0.005	3.123	.003
d Yl YoYl 10 05	81	-.001	0.004	-.104	.917

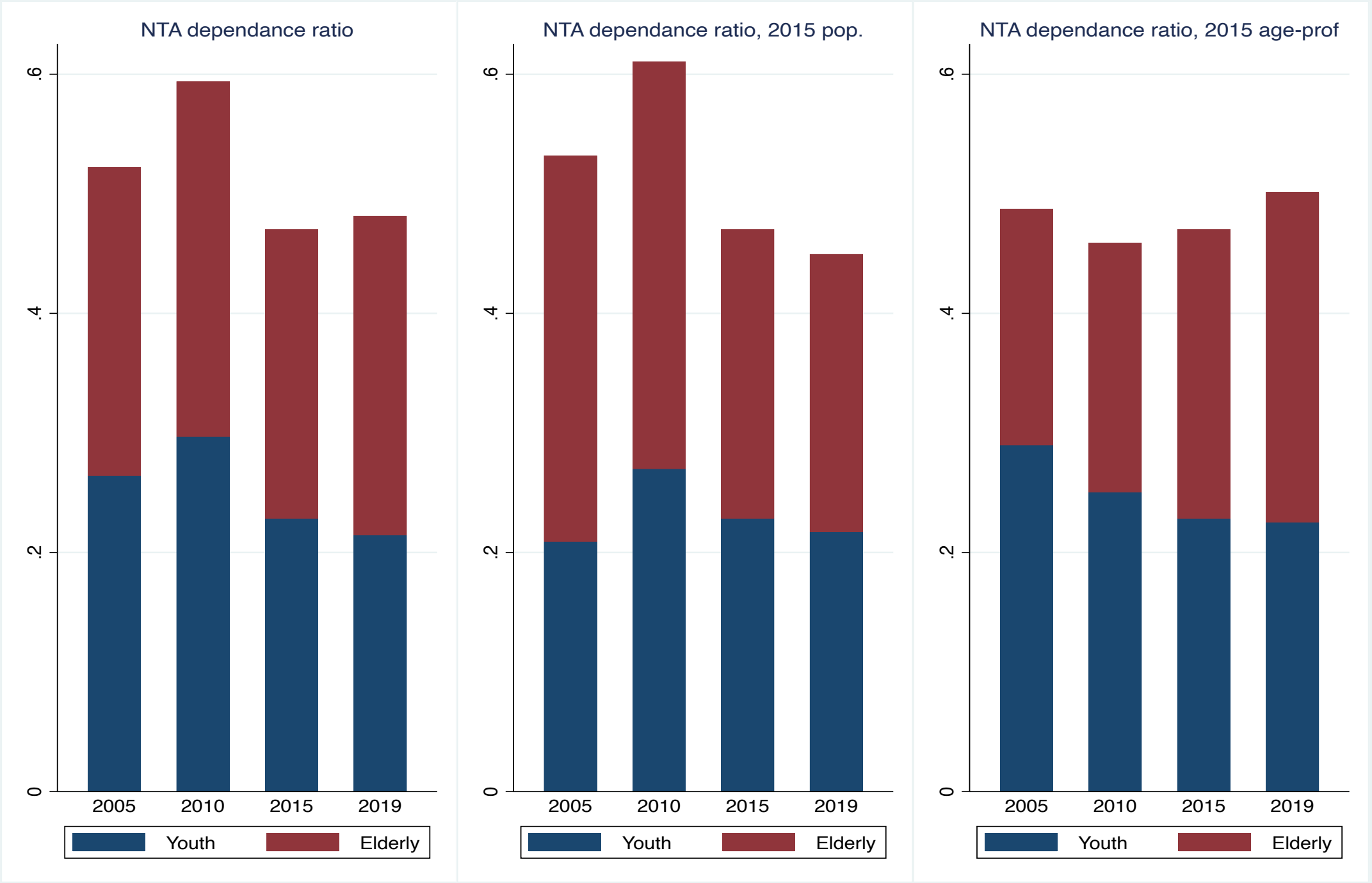
	obs	Mean	St Err	t value	p value
d C YoYl 19 05	81	.028	0.005	6.043	0
d C YoYl 19 10	81	-.035	0.003	-11.604	0
d C YoYl 19 15	81	.052	0.004	15.431	0
d C YoYl 15 05	81	-.024	0.007	-3.597	.001
d C YoYl 15 10	81	-.086	0.005	-17.111	0
d C YoYl 10 05	81	.062	0.003	25.628	0

Results and discussion - summary statistics

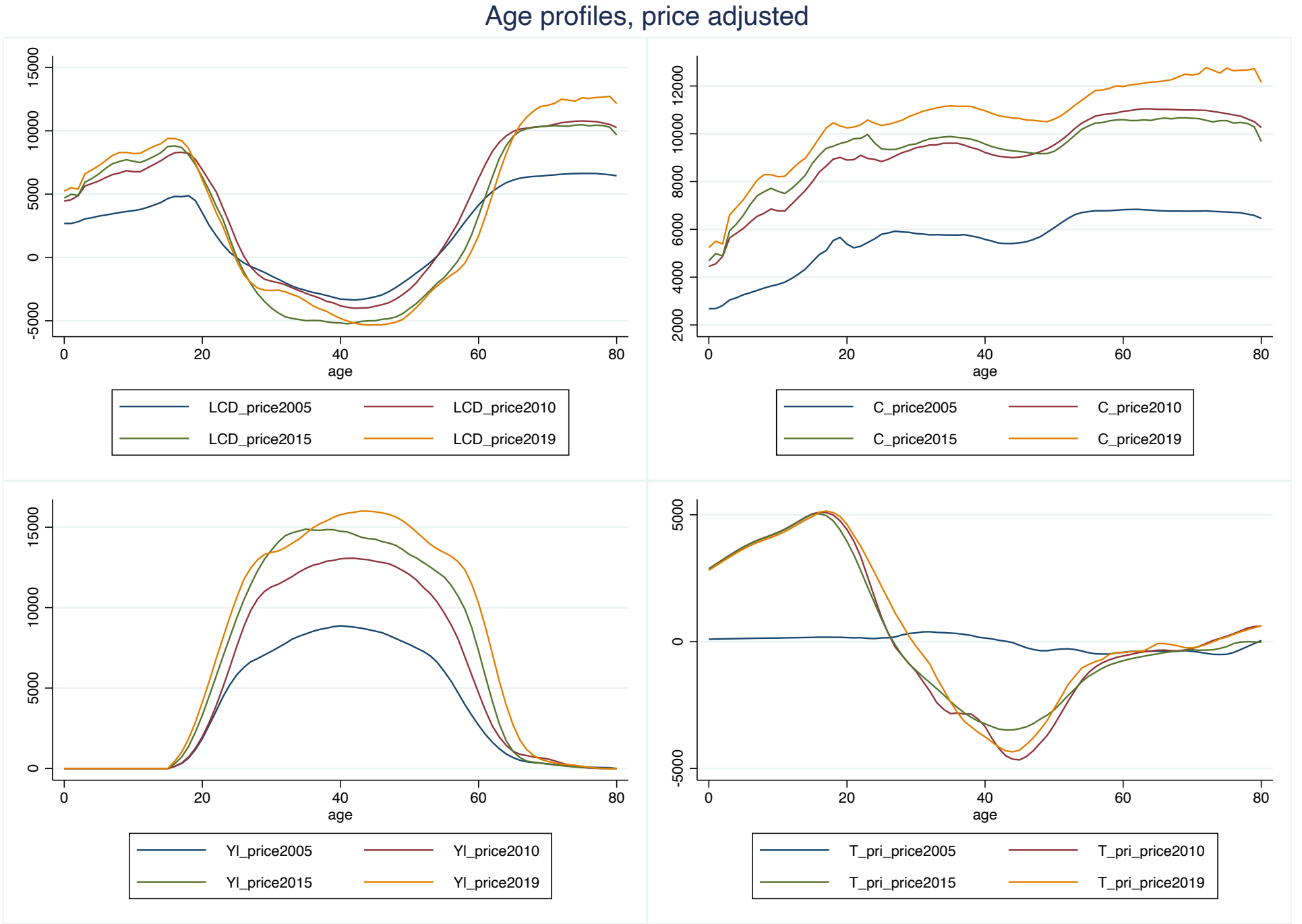


Results and discussion - summary statistics

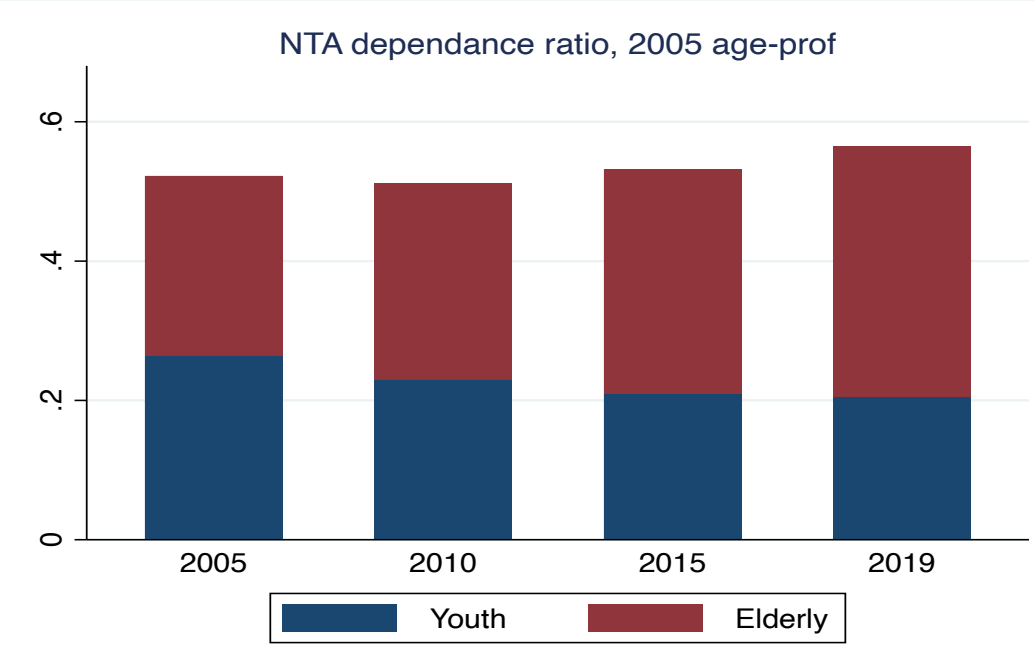
- Drop of consumption, however, labor income dropped more

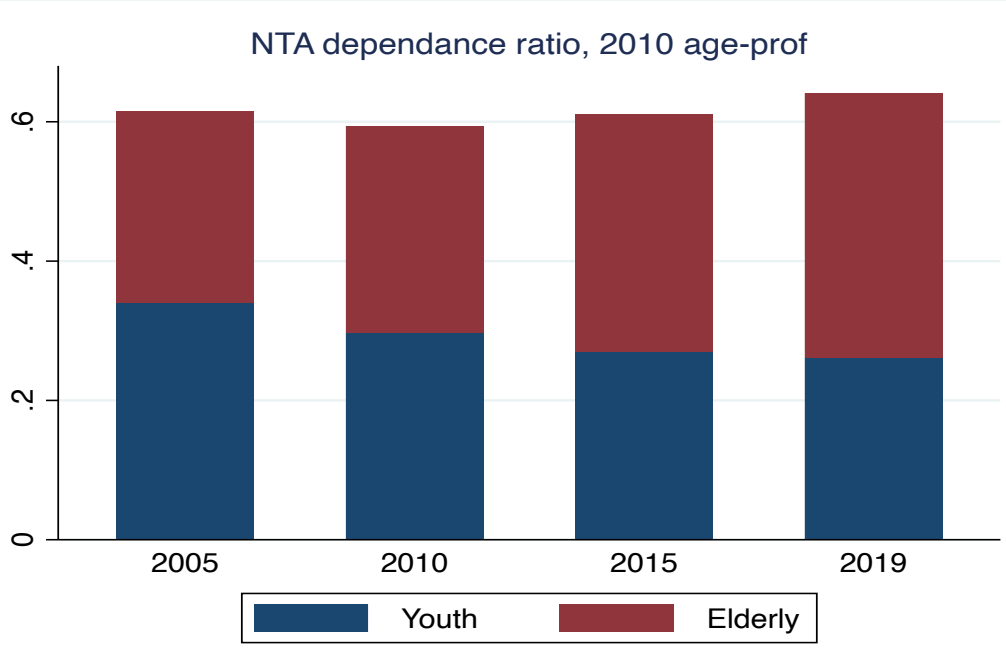


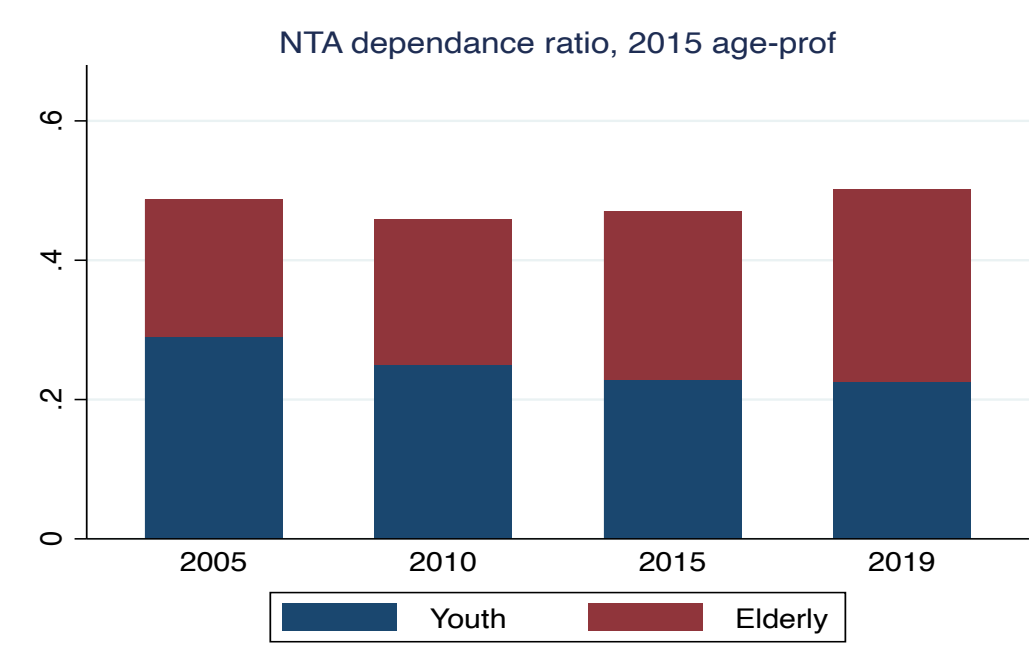
Results and discussion – price adjusted by HICP

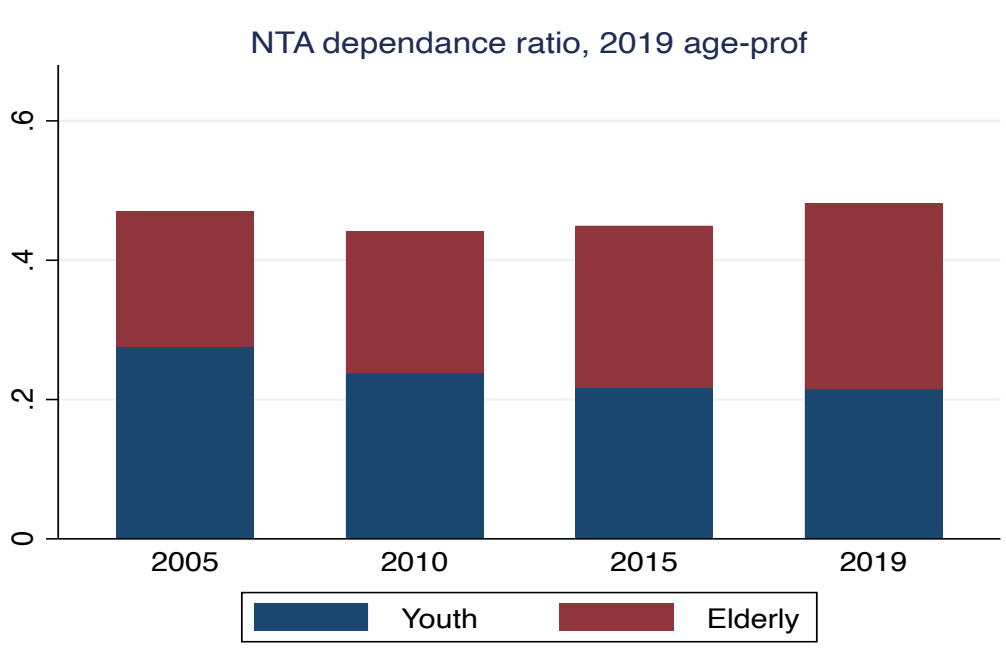


Results and discussion - summary statistics

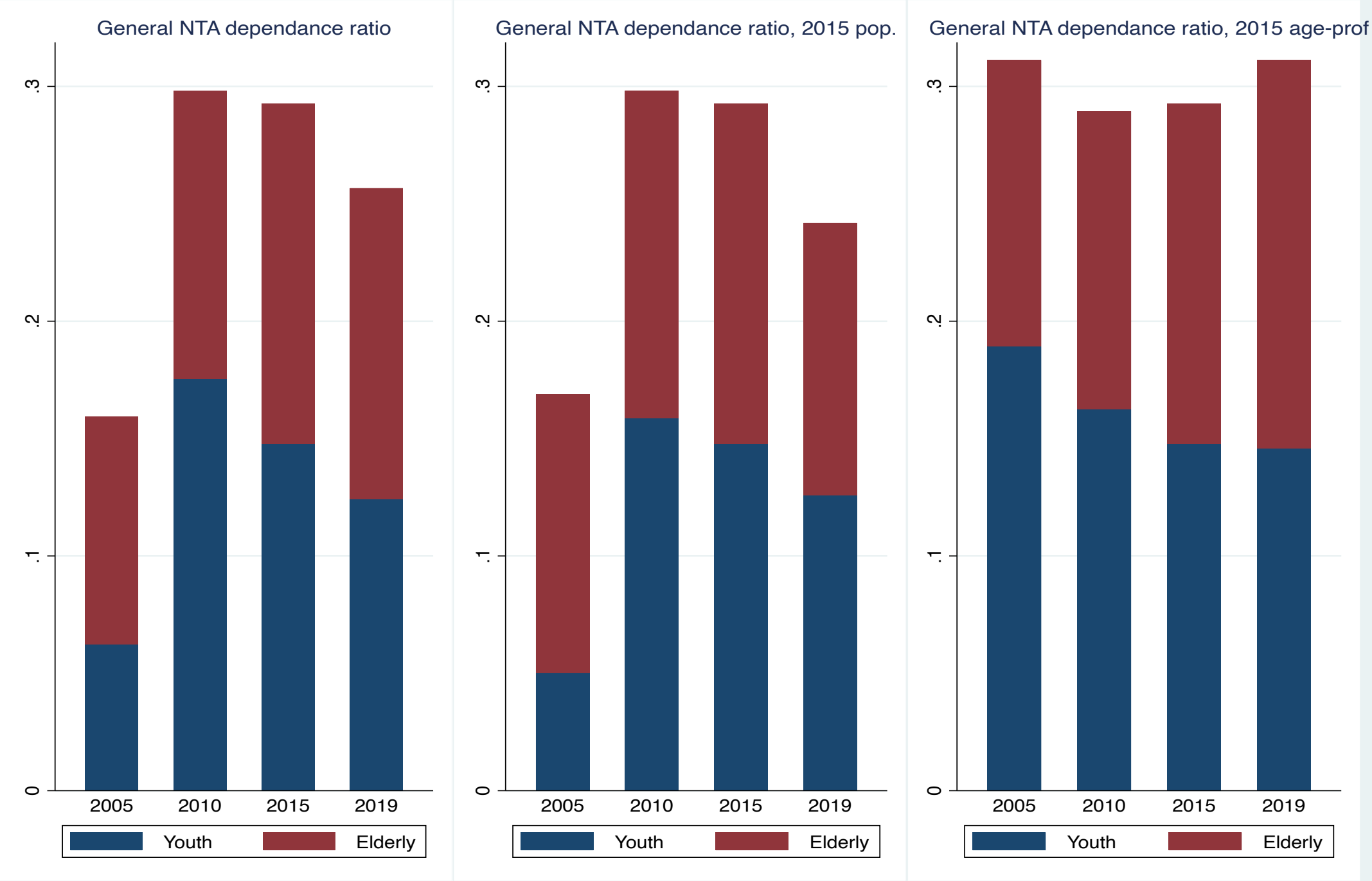




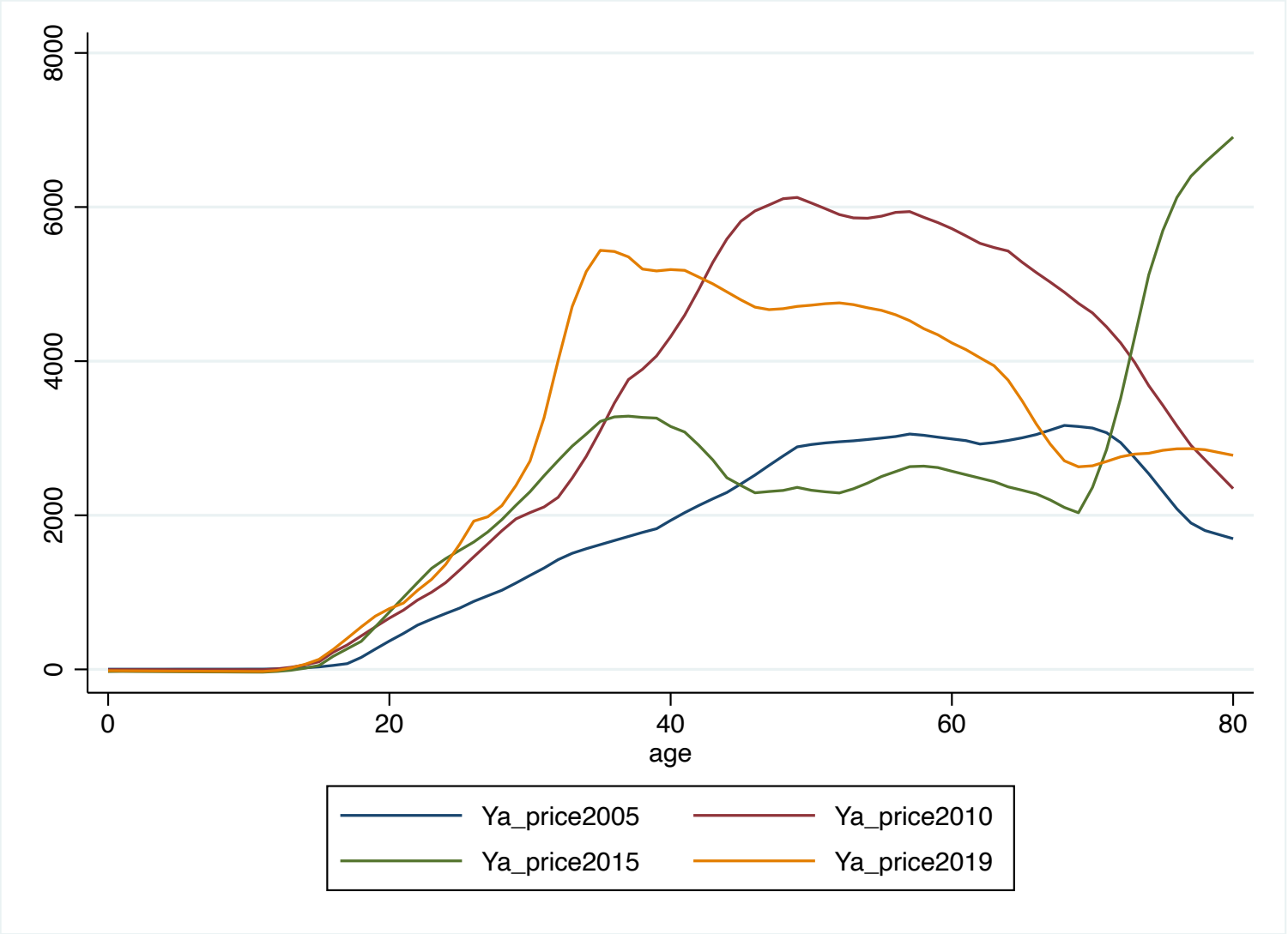




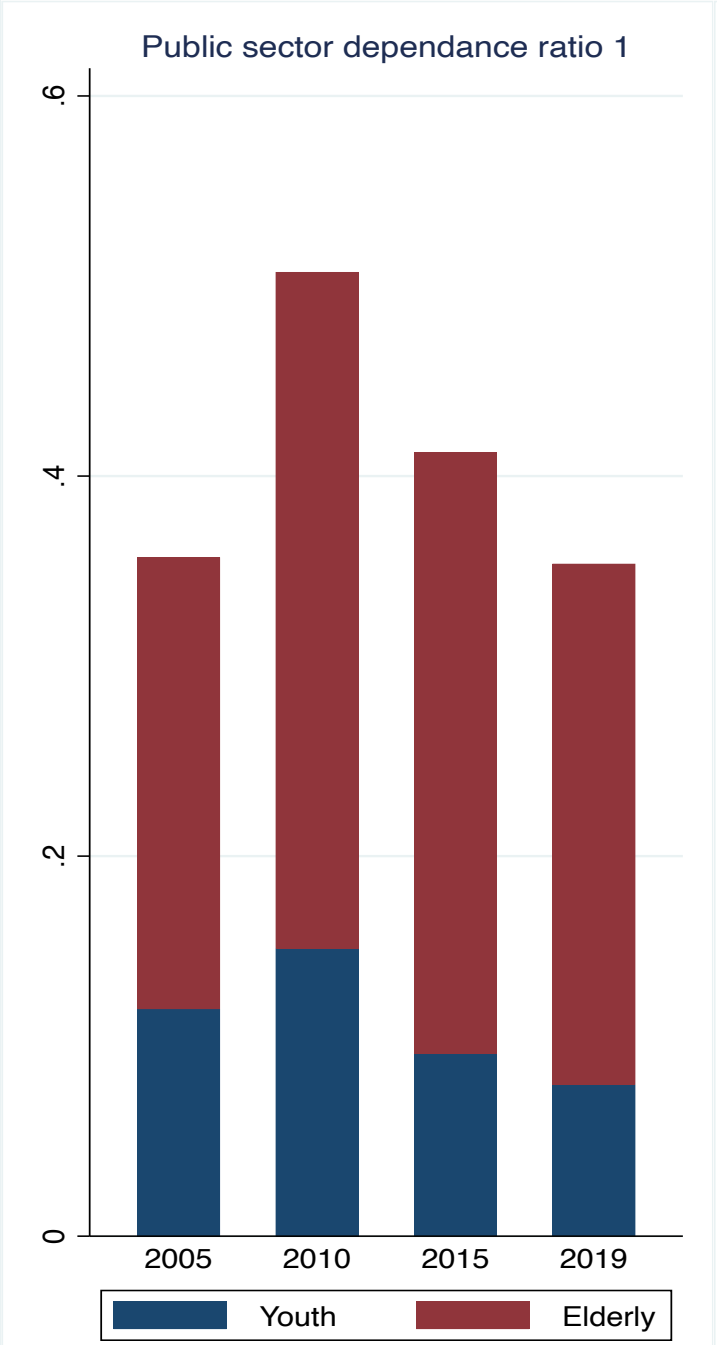
Results and discussion - summary statistics

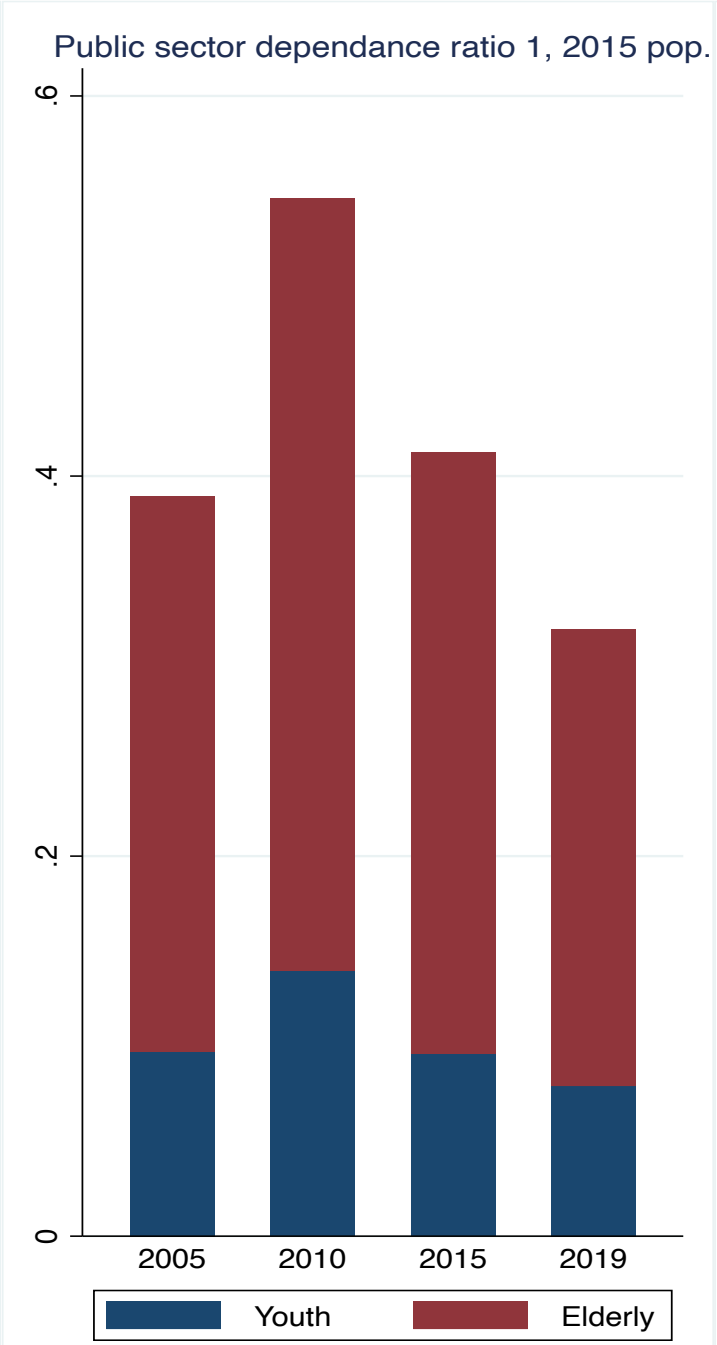


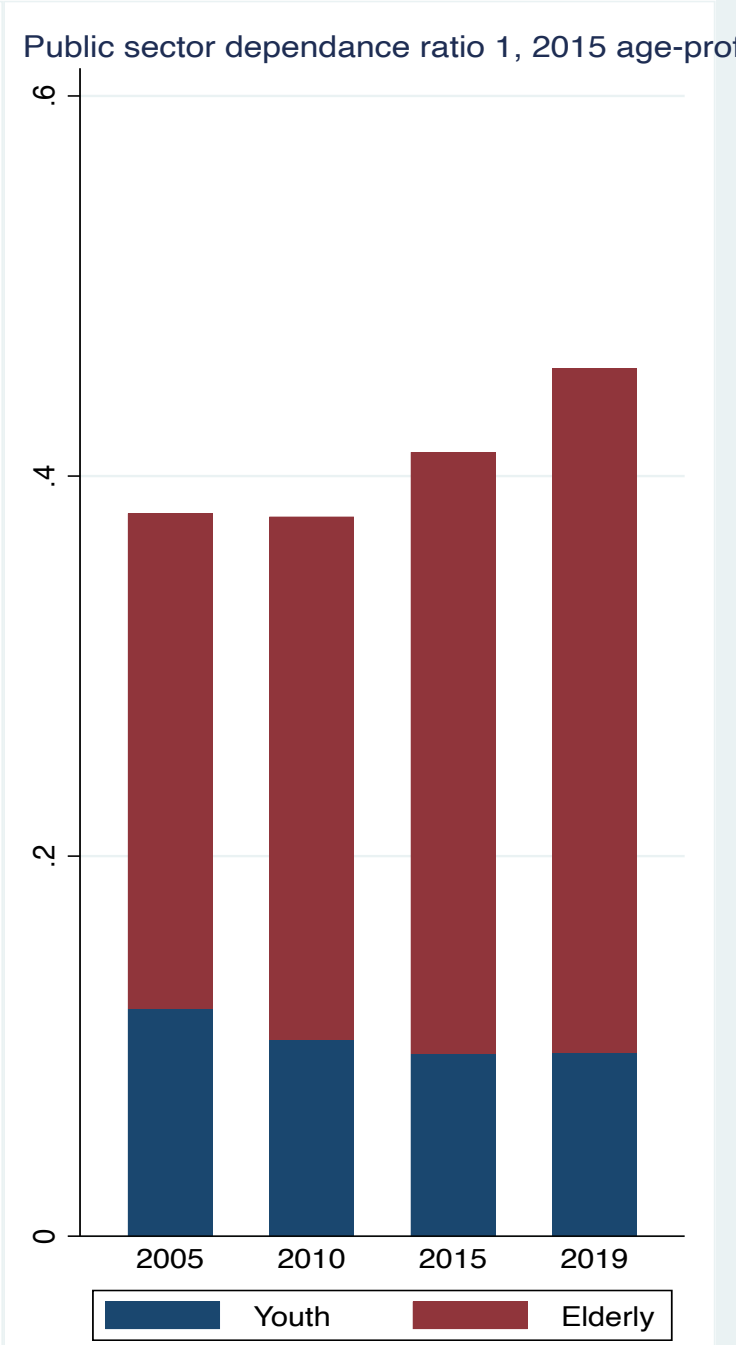
Results and discussion - summary statistics



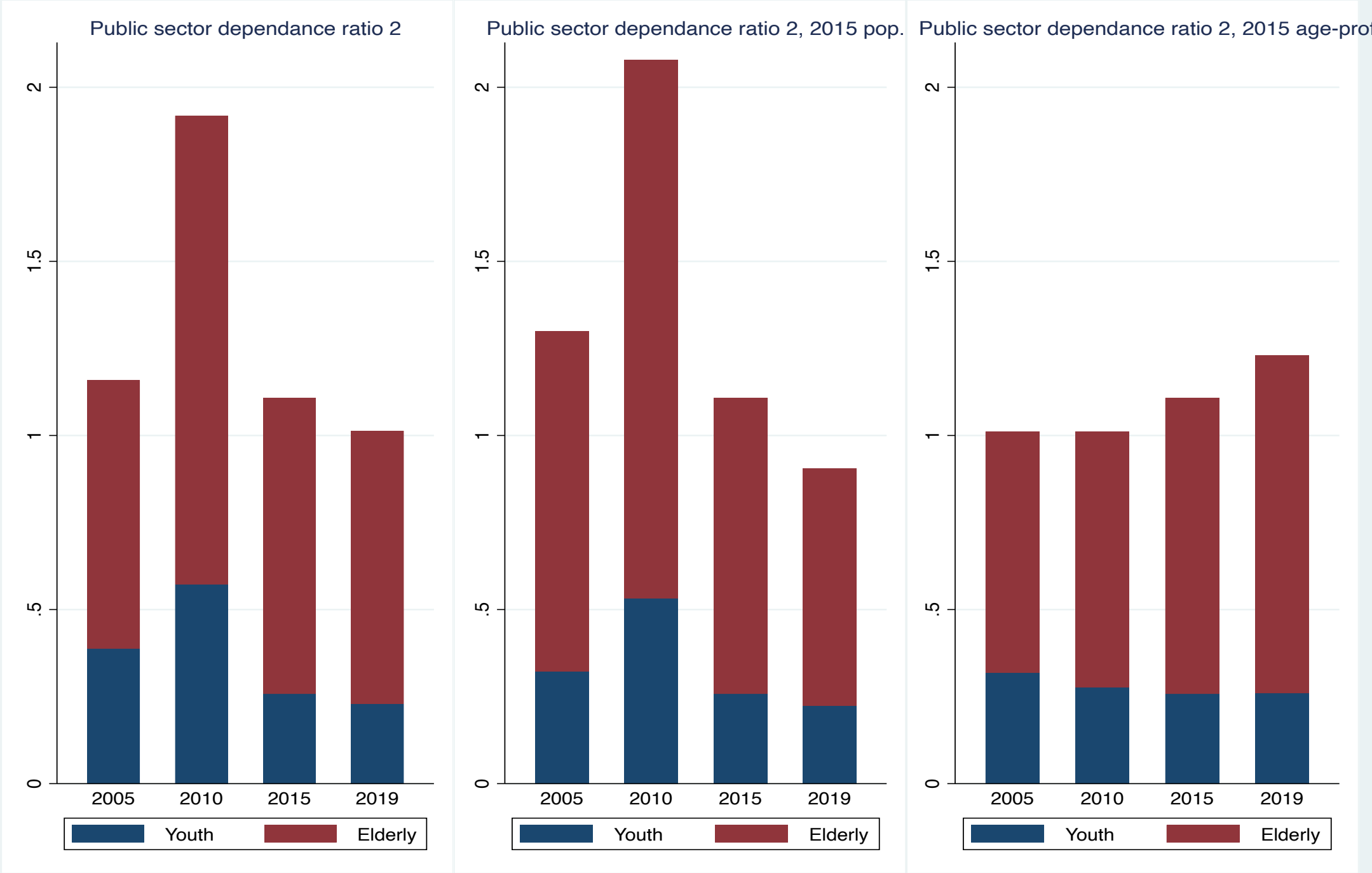
Results and discussion - summary statistics



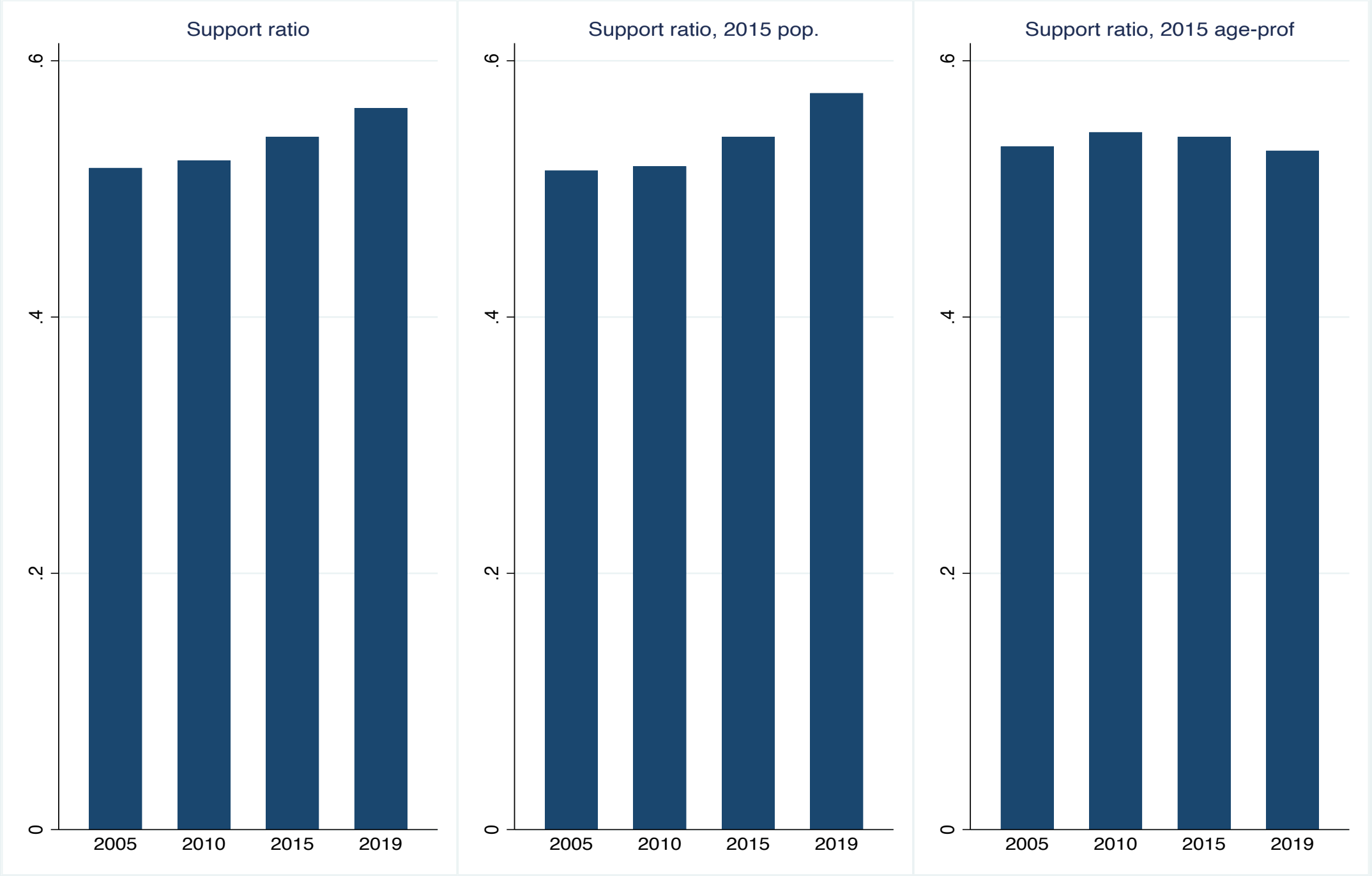




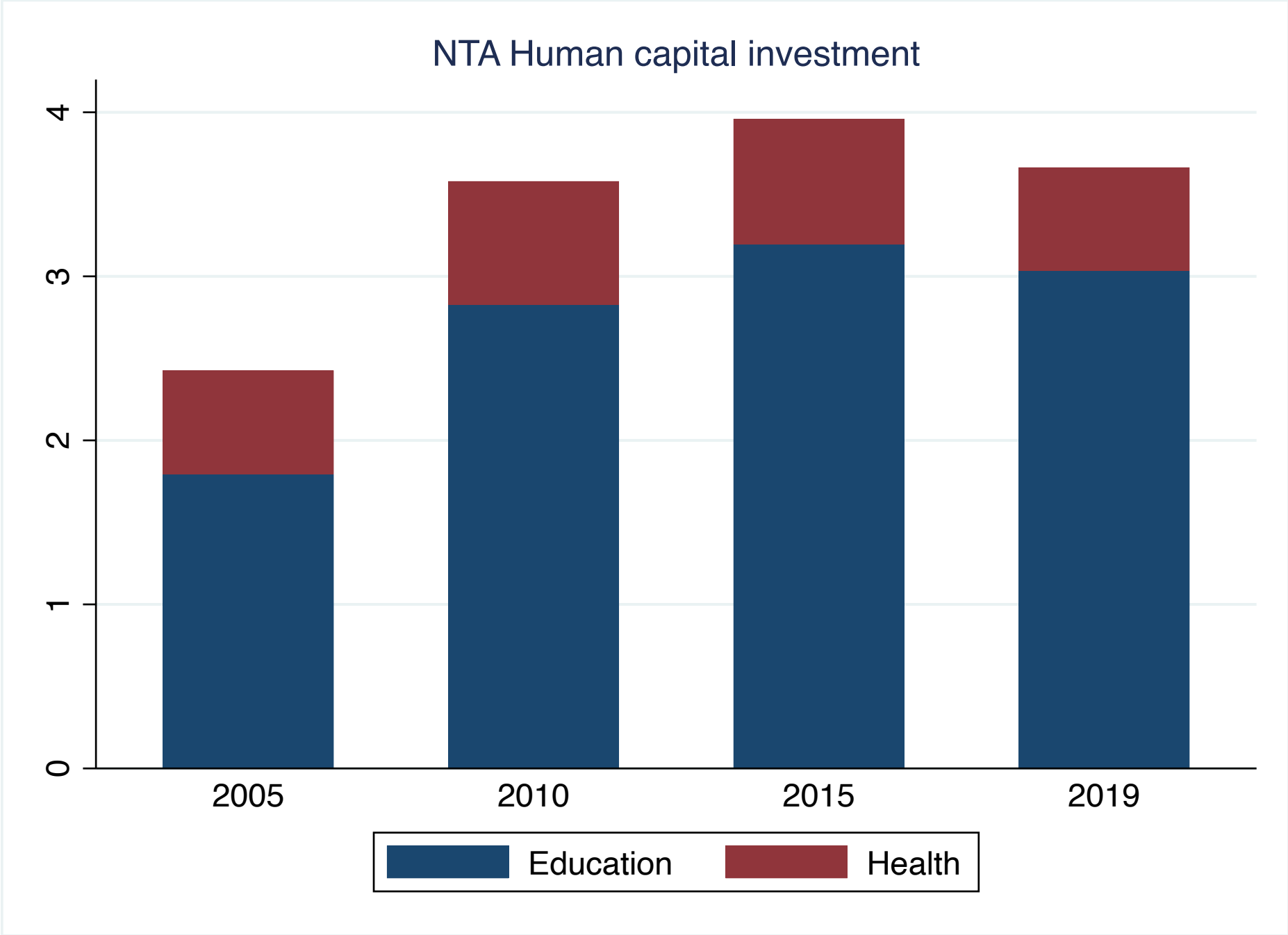
Results and discussion - summary statistics



Results and discussion



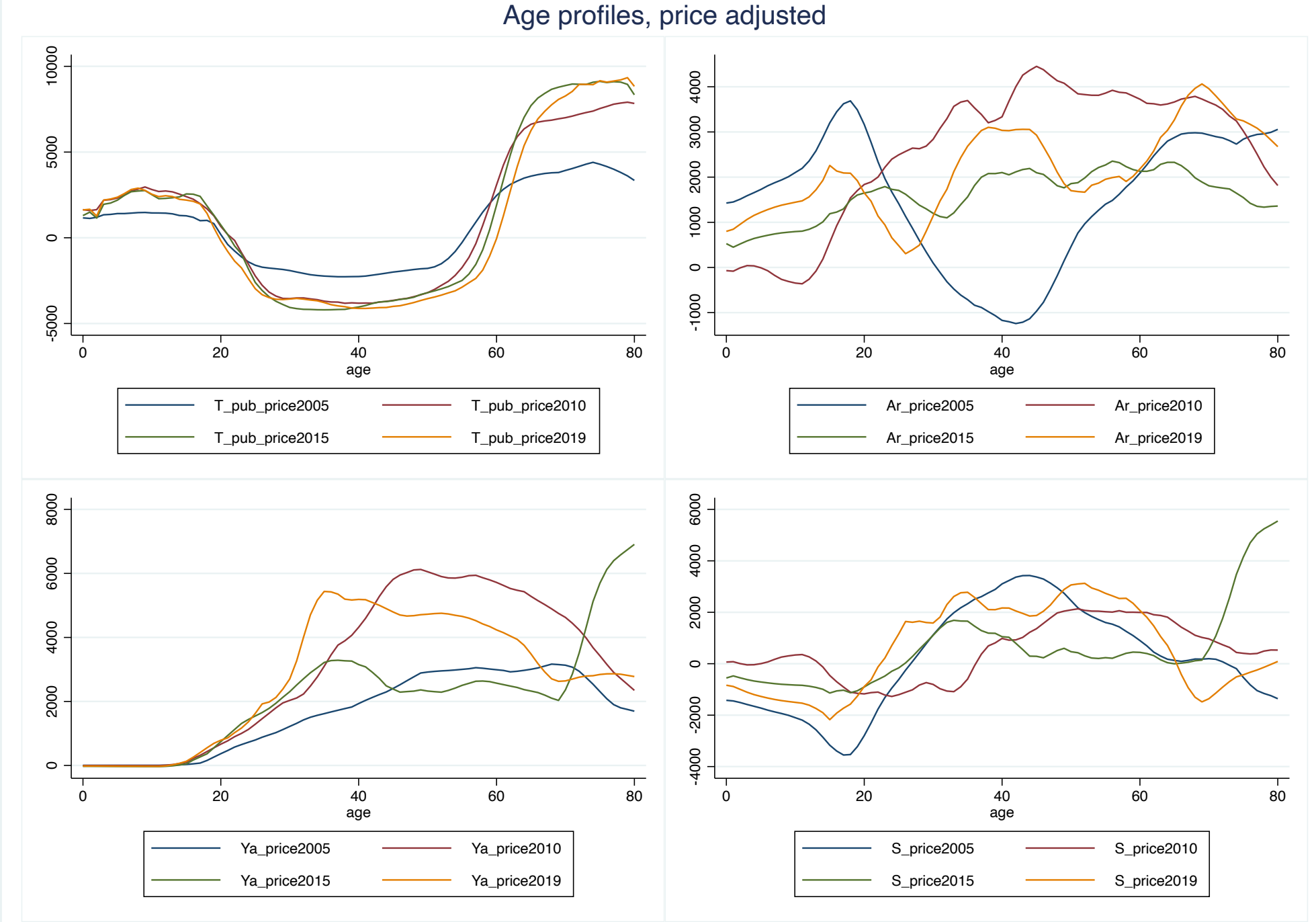
Results and discussion - summary statistics



Conclusions

- Age profiles of LCD, YL, C, T_pri and T_pub in YoYl seems not differ over the analysed period
- There are such as Ya or T_pri sensitive to EUSILC data
- NTA summary measures calculated by using normalization seems to be less prone to the base year selection
- NTA summary measures calculated by using not normalized age profiles, however, seems to be more sensitive to the base year selection

Results and discussion – price adjusted



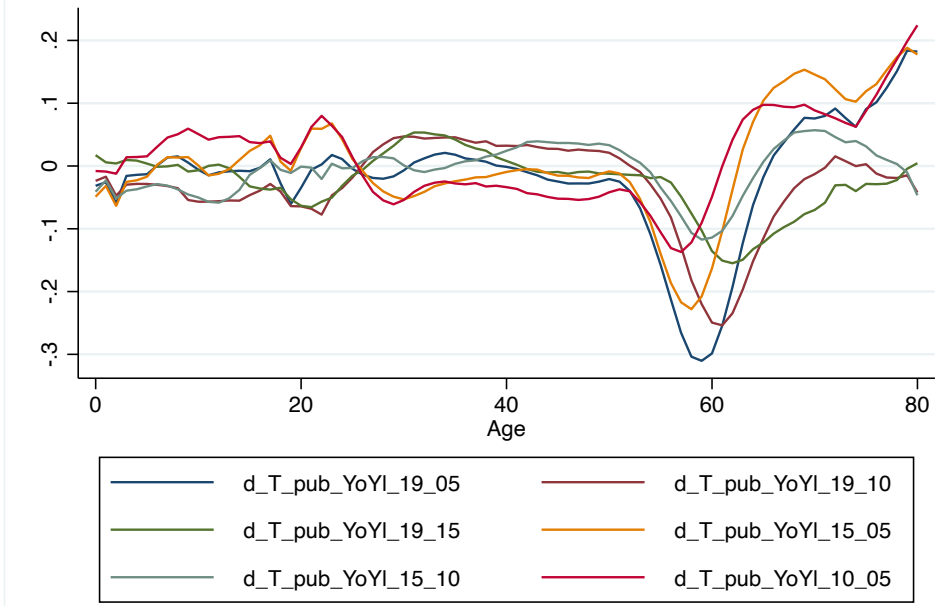
Results and discussion

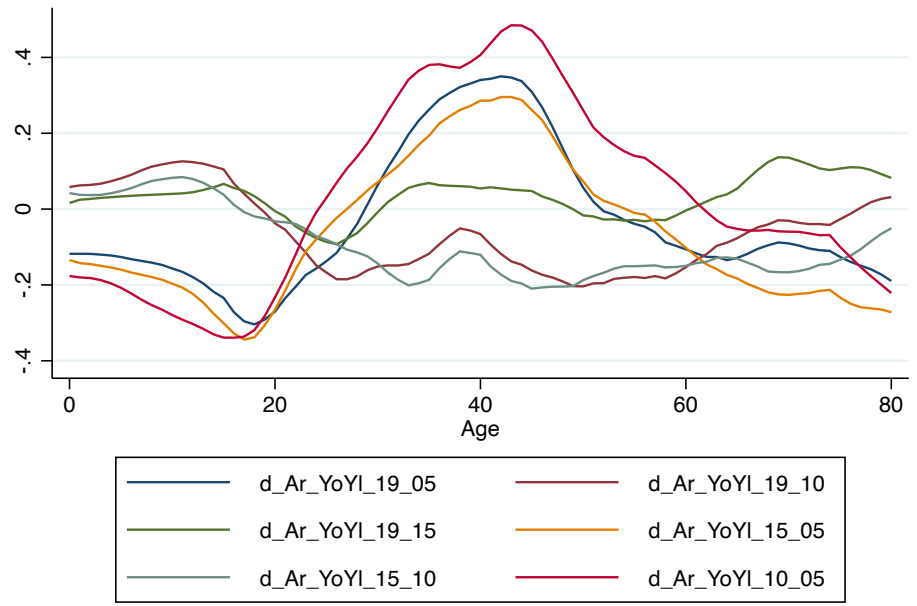
	obs	Mean	St Err	t value	p value
d LCD YoYl 19 05	81	-.017	0.013	-1.208	.231
d LCD YoYl 19 10	81	-.08	0.011	-7.164	0
d LCD YoYl 19 15	81	.022	0.007	3.079	.003
d LCD YoYl 15 05	81	-.038	0.011	-3.655	.001
d LCD YoYl 15 10	81	-.101	0.007	-14.178	0
d LCD YoYl 10 05	81	.063	0.005	12.289	0

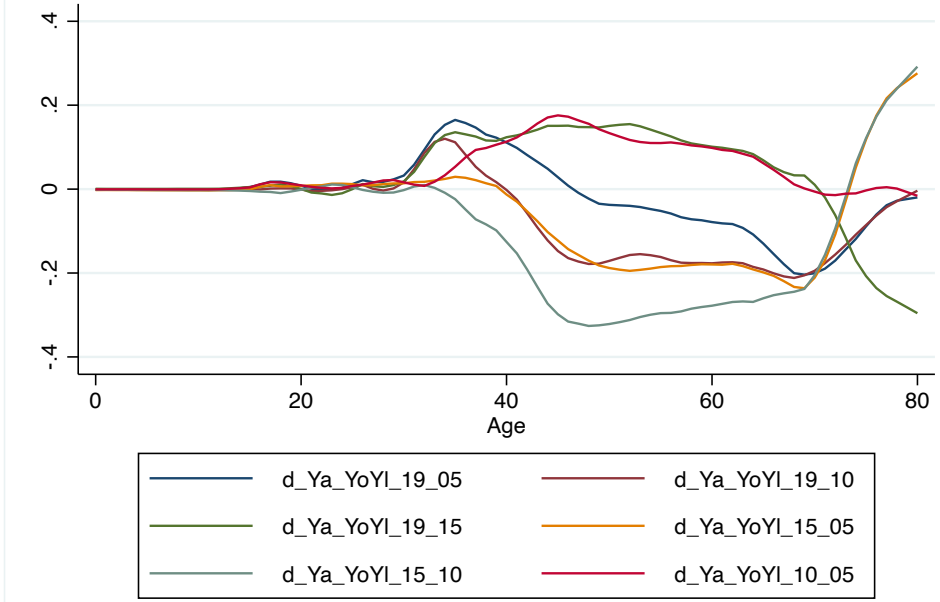
	obs	Mean	St Err	t value	p value
d T pri YoYl 19 05	81	.036	0.020	1.783	.079
d T pri YoYl 19 10	81	.013	0.006	2.125	.036
d T pri YoYl 19 15	81	.013	0.004	3.534	.001
d T pri YoYl 15 05	81	.023	0.020	1.139	.258
d T pri YoYl 15 10	81	0	0.006	.03	.976
d T pri YoYl 10 05	81	.022	0.026	.894	.374

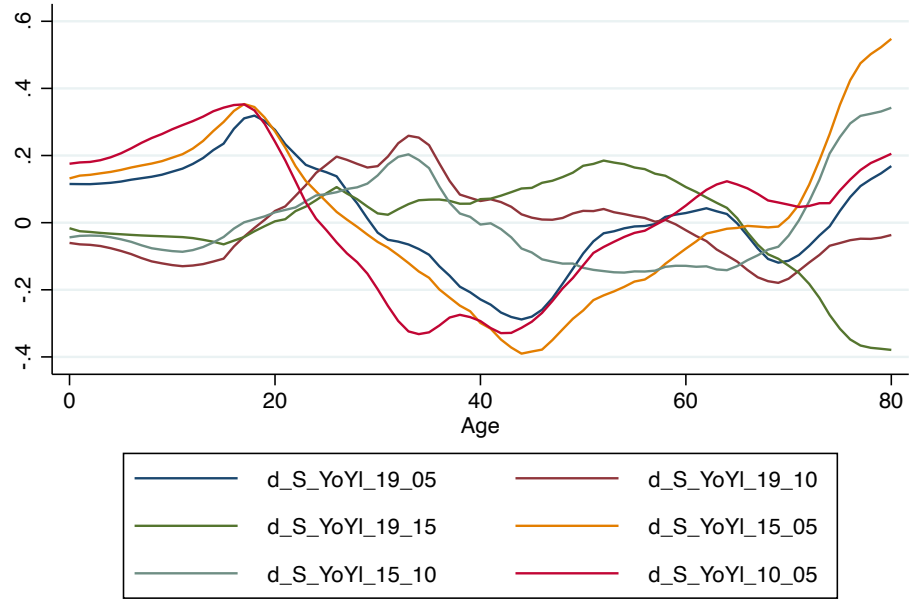
Results and discussion

Differences between the observed periods









Results and discussion

	obs	Mean	St Err	t value	p value
d T pub YoYl 19 05	81	-.018	0.011	-1.736	.087
d T pub YoYl 19 10	81	-.03	0.008	-3.954	0
d T pub YoYl 19 15	81	-.025	0.005	-4.551	0
d T pub YoYl 15 05	81	.006	0.009	.627	.532
d T pub YoYl 15 10	81	-.007	0.005	-1.395	.167
d T pub YoYl 10 05	81	.013	0.008	1.562	.122

	obs	Mean	St Err	t value	p value
d Ar YoYl 19 05	81	-.035	0.021	-1.714	.09
d Ar YoYl 19 10	81	-.063	0.011	-5.466	0
d Ar YoYl 19 15	81	.032	0.006	5.367	0
d Ar YoYl 15 05	81	-.067	0.021	-3.223	.002
d Ar YoYl 15 10	81	-.095	0.010	-9.423	0
d Ar YoYl 10 05	81	.028	0.028	1.002	.32

Results and discussion

	obs	Mean	St Err	t value	p value
d Ya YoYl 19 05	81	-.015	0.009	-1.613	.111
d Ya YoYl 19 10	81	-.062	0.011	-6.02	0
d Ya YoYl 19 15	81	.032	0.012	2.689	.009
d Ya YoYl 15 05	81	-.047	0.013	-3.605	.001
d Ya YoYl 15 10	81	-.095	0.018	-5.408	0
d Ya YoYl 10 05	81	.048	0.007	7.321	0

	obs	Mean	St Err	t value	p value
d S YoYl 19 05	81	.019	0.017	1.144	.256
d S YoYl 19 10	81	0	0.013	.017	.987
d S YoYl 19 15	81	-.001	0.015	-.02	.985
d S YoYl 15 05	81	.02	0.026	.752	.454
d S YoYl 15 10	81	.001	0.015	.035	.973
d S YoYl 10 05	81	.019	0.024	.833	.408