



Self-employment in Italy: the role of Social Security Wealth

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Motivation

- Small businesses are often supported by Governments, due to their role in sustaining economic growth and employment. One channel for public intervention is the public pension system (through payroll taxes and pension benefits).
- Question: does the public pension system influence the probability of being in self-employment?
- We use a sample of administrative Italian data, with information on various categories of employees and self-employed workers (craftsmen and shopkeepers).
- During the '90s a series of reforms first increased, then reduced the generosity of the benefits for various categories of workers covered by the public scheme, including the self-employed.
- Exploiting the exogenous variability induced by the reforms, we can identify the effect of Social Security wealth (SSW) on the probability to be self-employed (craftsmen or shopkeeper) rather than employee.

Related Literature

- Works studying how institutional factors may affect self-employment. Long (1982), Blau (1987), Scheutze (2000) consider the role of taxes.
- Using panel data, Bruce (2000) and Hansson (2012) study how the individual decision to transition from employment to self-employment depends on average and marginal tax rates.
- Zissimopoulos and Karoly (2007) study transitions at older ages in the US, and find SSW at age 62 is not a significant factor determining the transitions.
- Li, Mastrogiacomo, Hochguertel, Bloemenx (2015) find that an exogenous reduction in employee pension wealth significantly decreases the transition probability from wage-employment to self-employment.
- We study how the probability to be self-employed depends on the difference in SSW under alternative employment scenarios.

This paper

- We study how the probability to be self-employed or employee depends, among other things, on the difference in expected SSW that can be accrued in the two alternative employment scenarios.
- Participation in the public pension system is compulsory, the difference in expected SSW reflects the relative convenience of participating in either scheme. Other things being equal, a rational worker will choose the sector with the highest expected SSW.
- We use a large panel of administrative data recording employment spells for employees, craftsmen and shopkeepers
- We estimate the effect of SSW on probability to be self-employed, as well as on the probability to switch from self-employment to employment and vice-versa.
- We use a large panel data set to control for time invariant unobserved characteristics such as innate ability or attitude towards risk.

The evolution of the Italian Pension system

- The main Social Security institution is INPS (Istituto Nazionale della Previdenza Sociale) and covers most private sector workers, including employees and self-employed such as craftsmen, shopkeepers, and farmers.
- PAYGO system, with different rules, payroll taxes and benefits for different categories of workers
- Until 1990 a Contribution Based (CB) system applied to the self-employed; in 1990 a Defined Benefit (DB) system is introduced. SSW is increased for the self-employed, while it is unaffected for employees
- Financial sustainability prompted a series of reforms, especially in 1992, 1995 (introduction of NDC for all workers). Uneven effects for different categories of workers.

Empirical strategy

$$Self_{it+1} = \alpha \left(SSW_{it+1}^{SE}(y_{t+1}) - SSW_{it+1}^{WE}(y_{t+1}) \right) + \beta X_{it} + \varepsilon_{it+1} + \nu_{t+1} + \mu_i$$

- The expected SSW is equal to the present value of benefits expected by the worker minus the payroll tax which has to be paid from time $t+1$ onwards.
- The past income stream is taken as given, and may include both periods in wage-employment and periods in self-employment. Expected real income from time $t+2$ onwards is set equal to income at time $t+1$, and it is assumed to be the same both in case of self-employment and in case of wage employment
- We also compute the expected SSW at time $t+1$, using the rules in force in period $t+1$, and an income stream constructed on the knowledge of income up to time t , hence assuming real income from time $t+1$ onwards is constant and equal to time t income.

Empirical strategy (2)

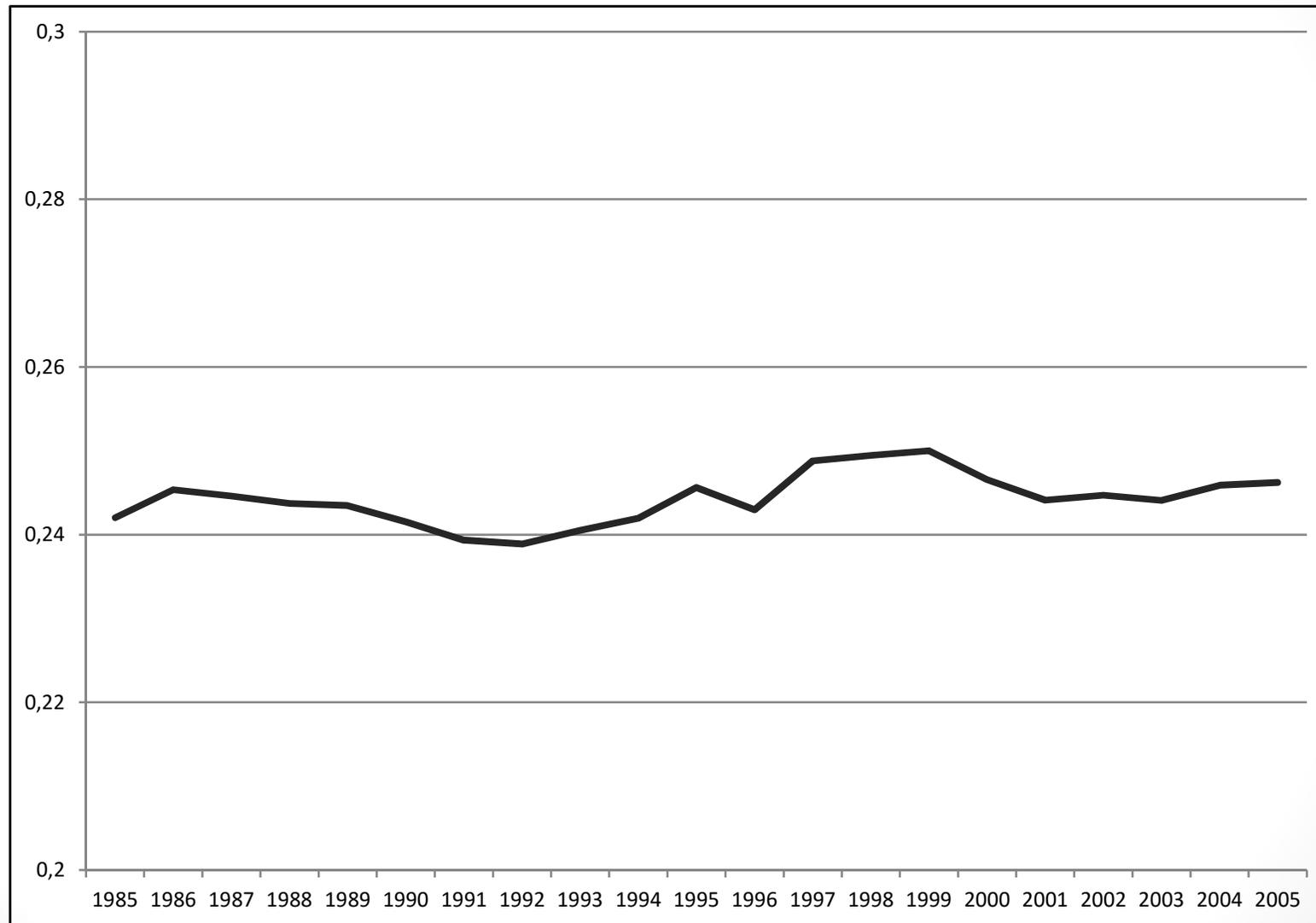
$$Self_{it+1} = \alpha \left(SSW_{it+1}^{SE}(y_{t+1}) - SSW_{it+1}^{WE}(y_{t+1}) \right) + \beta X_{it} + \varepsilon_{it+1} + \nu_{t+1} + \mu_i$$

- The X variables include *age dummies* and the *present value of real income*, which represents the present value, valued at time t , of income from work earned throughout the entire working life.
- *Total experience* is defined as the number of periods a worker has spent in the labour market since entering the labour force (working spells as well as sick or subsidized unemployment spells).
- *Out of work* is the fraction of time since entering the labour force for the first time spent outside the INPS archive, i.e. not working as a covered INPS worker, and not having sick or subsidized unemployment spells.
- *Sick or unemployed* is the fraction of time, since entering the labour force for the first time, spent on sick or subsidized unemployment leave.
- We also include a common time effect (ν_{t+1}), an individual-specific time-invariant effect (μ_i), and an idiosyncratic shock (ε_{it+1}).

Data

- We use a sample of administrative data drawn from the main Social Security scheme (National Institute of Social Security, *Istituto Nazionale di Previdenza Sociale*, INPS) archive.
- The INPS archive officially records the complete earnings and contribution histories of all participants, that is, employees in the private sector and some categories of self-employed (craftsmen, tradesmen, and farmers).
- The available sample is formed by all individuals born on the first and the ninth of each month of any year — so that the theoretical sample frequency is 24:365 — and reports employment spells until 2012.
- The archive contains very rich information about the earnings histories of the workers, recording spells of unemployment, sickness, as well as labour income earned each year. No info on marital status, education...
- Selected sample: males, born between 1940 and 1980, years 1985-2005, at least 4 years into the archive.

Self-employment rate



Transition probabilities between employees and self-employed

	Employee	Self-employed	Total
Employee	98.53	1.47	100
Self-employed	2.84	97.16	100
Total	75.13	24.87	100

Estimating SSW

- For each individual and in each period, we compute expected SSW under the two alternative hypotheses of a continuous career, from that point onwards, as an employee or as a self-employed, assuming the worker would retire at the legal old age requested in each regime.
- We assume the income stream is the same in both scenarios, of WE and SE. In this way, variation in SSW depends on the public pension rules and not on our hypotheses about the future evolution of income. In addition, we assume the income stream is given by its actual realization until time $t+1$, and it is projected to be constant in real terms from that point onwards.
- SSW is computed as the Present Value (PV) of pension benefits minus the PV of contributions paid from year $t+1$ onwards, valued in any particular year.

Estimating SSW (II)

To deal with mixed careers, we proceed as follows:

1- we compute the expected pension benefits and contributions paid over all the rest of the working life assuming alternatively that the individual has been an employee or a self-employed for all his working life, using the current (at time t+1) pension legislation.

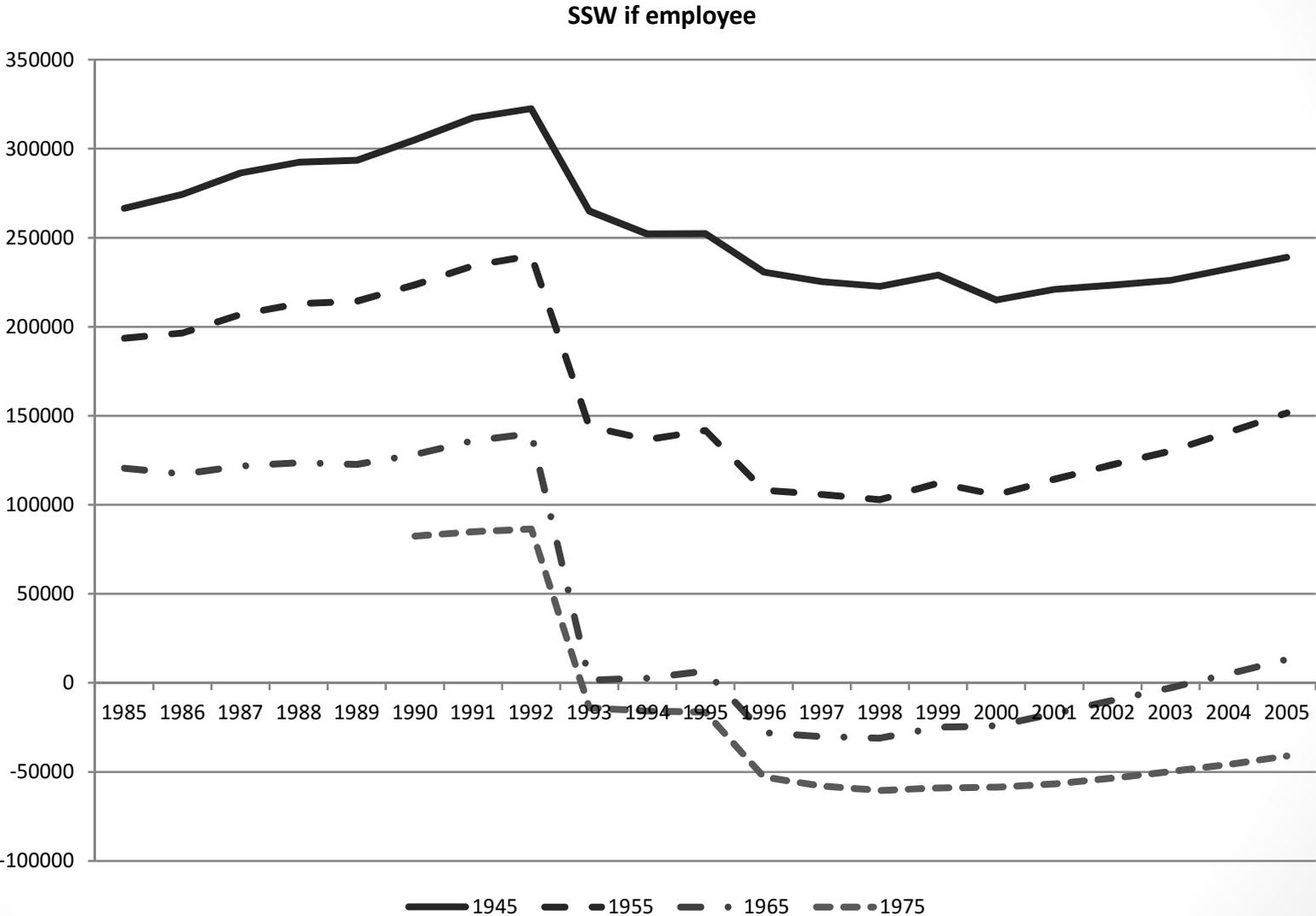
2- A worker can switch from WE to WE at no cost, as the amount of contributions paid was greater in the former case. SSW in case of continuously being a self-employed or of switching to self-employment is the same:

$$SSW_{t+1}^{SE} = SSW_{t+1}^{SE-c} = PV_{t+1}(P^{SE-c}) - PV_{t+1}(C^{SE})$$

3- Switching from SE to WE is approximated with weighted average:

$$SSW_{t+1}^{WE} = \frac{N_{we}}{N_{TOTwe}} PV_{t+1}(P^{WE-c}) + \frac{N_{se}}{N_{TOTwe}} PV_{t+1}(P^{SE-c}) - PV_{t+1}(C^{WE})$$

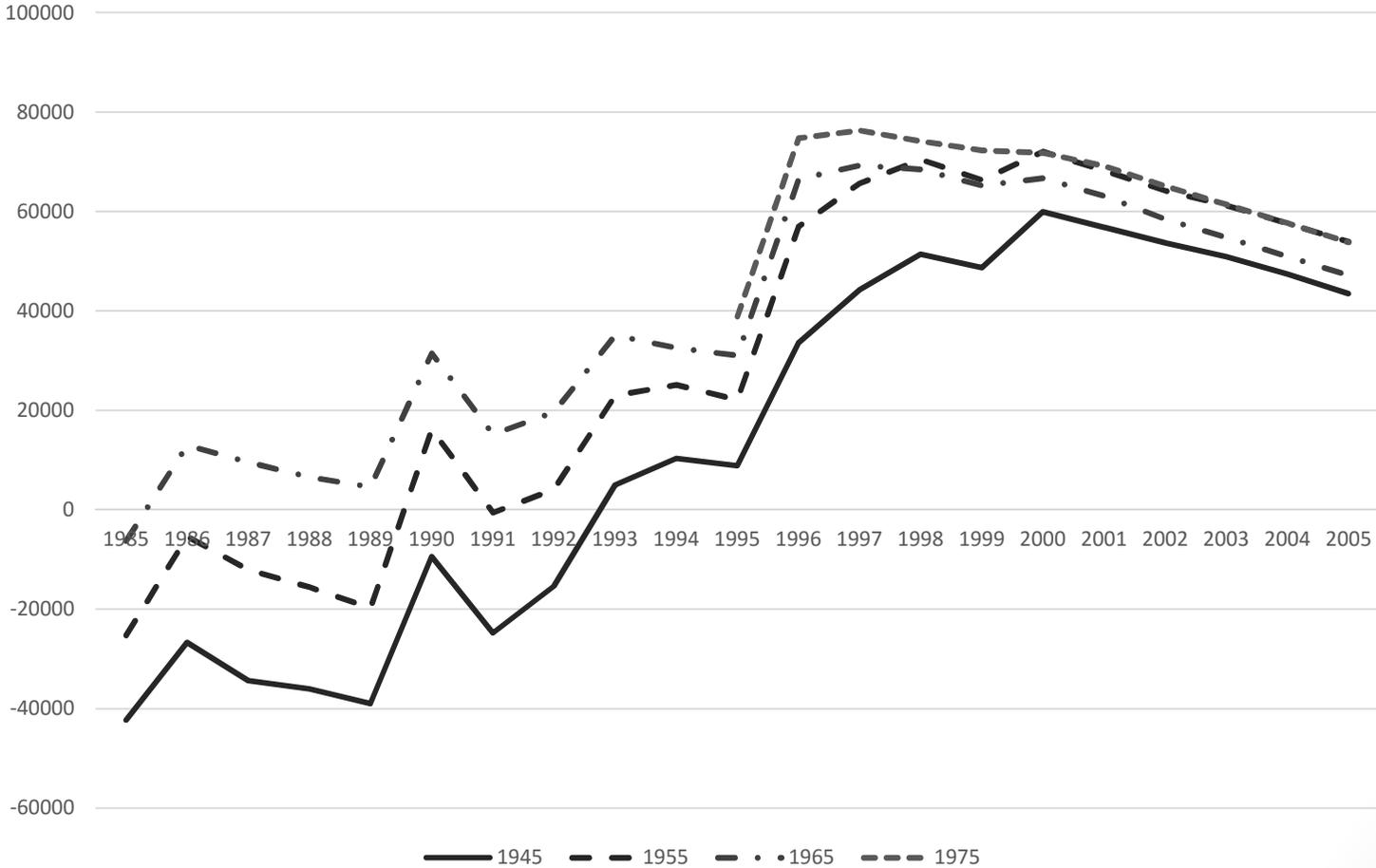
Average SSW for employees, by cohort



Average SSW for SE, by cohort



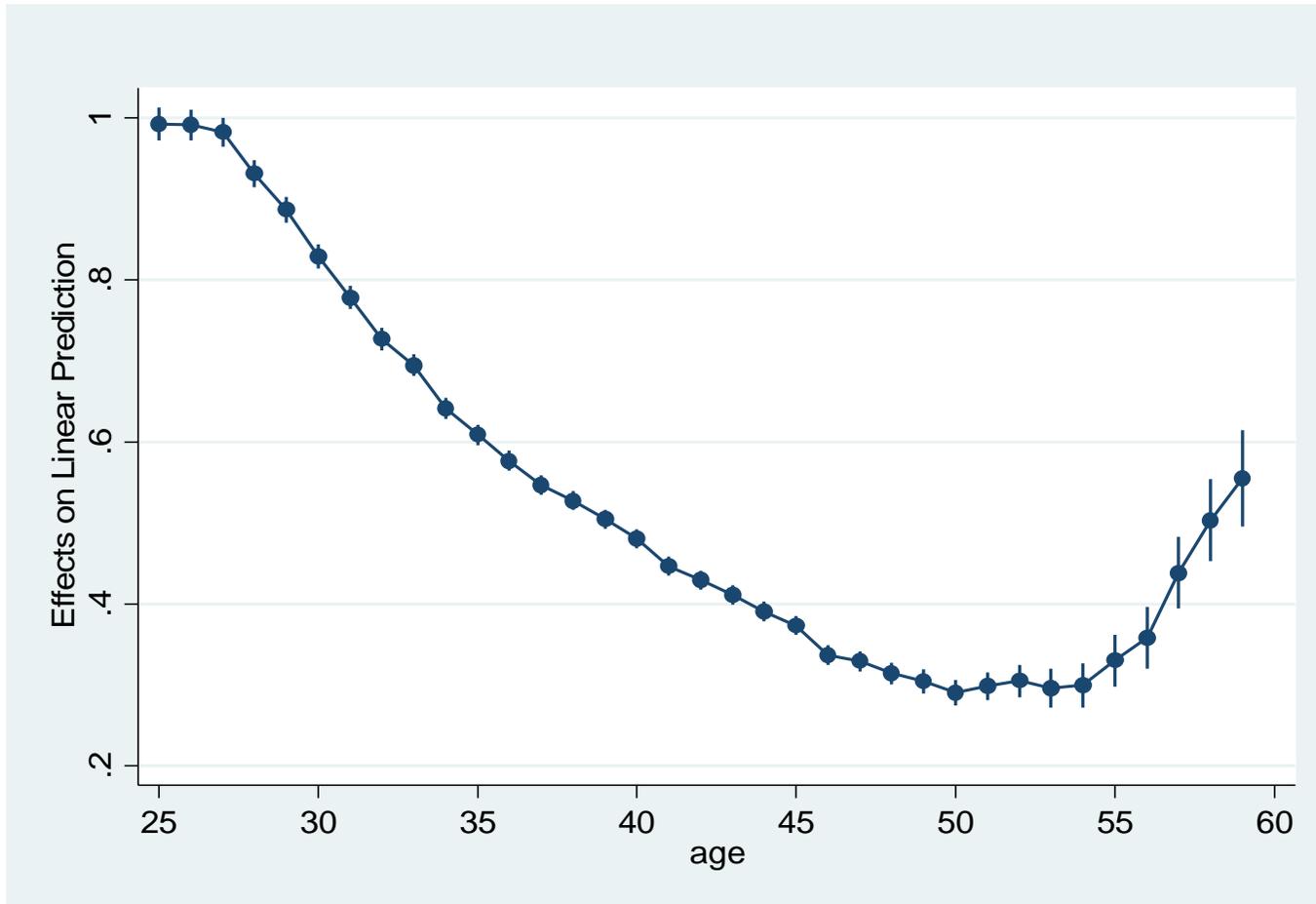
Average difference in SSW, by cohort



Results: self-employment rate

	FE	FE-2SLS	FE-RF
	b/se	b/se	b/se
$SSW_{it+1}^{SE}(y_{t+1}) - SSW_{it+1}^{WE}(y_{t+1})$	0.4181***	0.6953***	
	(0.0036)	(0.0026)	
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$			0.5119***
			(0.0041)
$PV(Y)_t$	-0.0991***	-0.1111***	-0.0969***
	(0.0009)	(0.0004)	(0.0009)
Experience	0.0068***	0.0052***	0.0067***
	(0.0004)	(0.0001)	(0.0004)
Out of work	0.0077**	0.0166***	0.0190***
	(0.0038)	(0.0014)	(0.0038)
Sick or unemployed	-0.1549***	-0.1524***	-0.1557***
	(0.0028)	(0.0016)	(0.0028)
Constant	0.2268***	0.2545***	0.2241***
	(0.0027)	(0.0009)	(0.0027)
First stage:			
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$		0.7192***	
		(0.0003)	
Number of observations	9,288,651	9,288,651	9,288,651
R-squared within	0.025	0.022	0.026

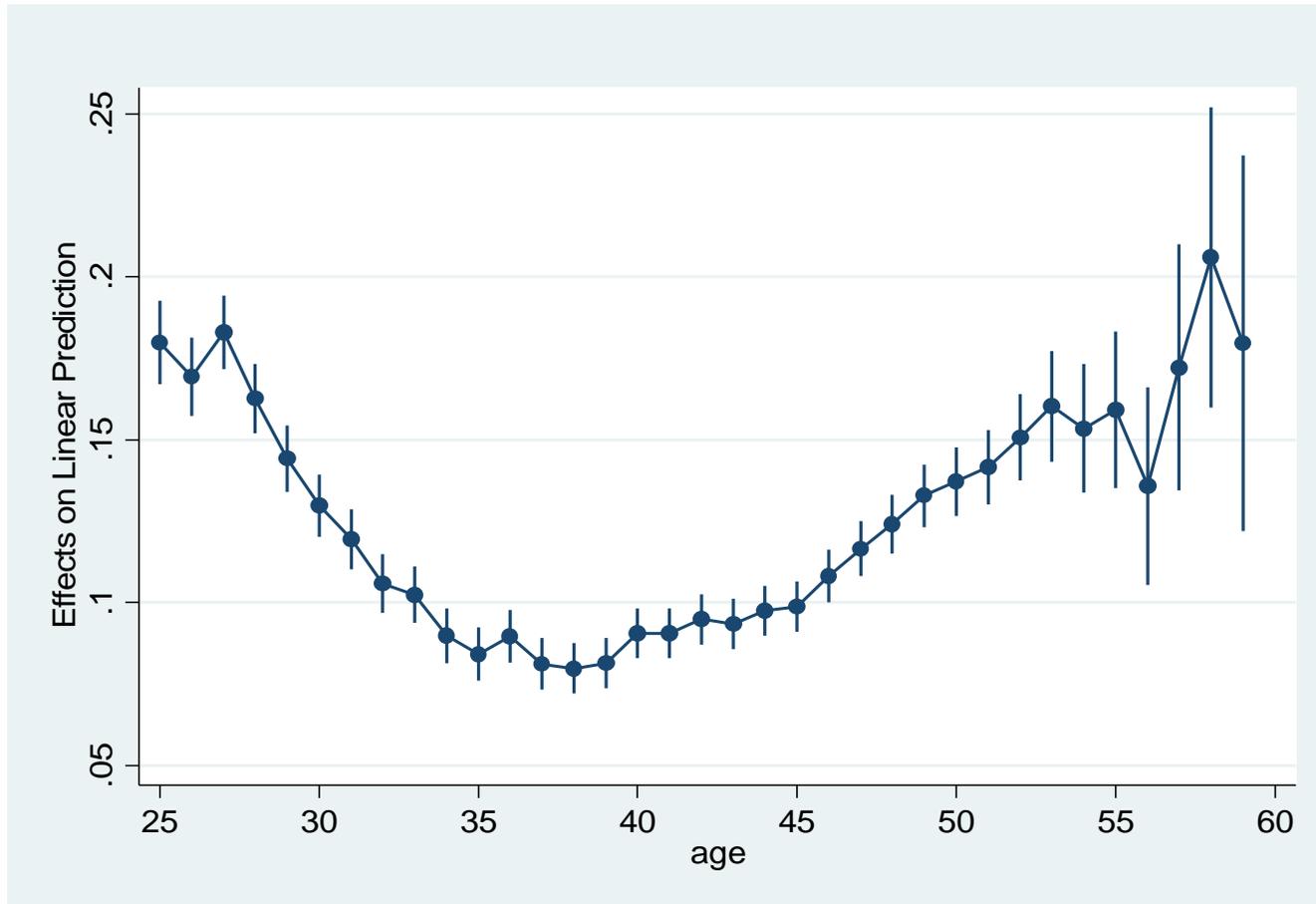
Average marginal effect of the difference in SSW, by age, on the self-employment rate



Results: transitions to SE

	FE	2SLS-FE	RF-FE
	b/se	b/se	b/se
$SSW_{it+1}^{SE}(y_{t+1}) - SSW_{it+1}^{WE}(y_{t+1})$	0.1465***	0.1460***	
	(0.0020)	(0.0021)	
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$			0.0961***
			(0.0020)
PV(Y)_t	-0.0600***	-0.0600***	-0.0563***
	(0.0006)	(0.0003)	(0.0006)
Experience	-0.0107***	-0.0107***	-0.0102***
	(0.0002)	(0.0001)	(0.0002)
Out of work	0.0251***	0.0252***	0.0349***
	(0.0016)	(0.0009)	(0.0016)
Sick or unemployed	-0.0217***	-0.0217***	-0.0241***
	(0.0009)	(0.0009)	(0.0009)
Constant	0.0640***	0.0640***	0.0544***
	(0.0014)	(0.0007)	(0.0014)
First stage:			
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$		0.6582***	
		(0.0004)	
Number of observations	6,617,088	6,617,088	6617088
R-squared	0.036	0.036	0.034

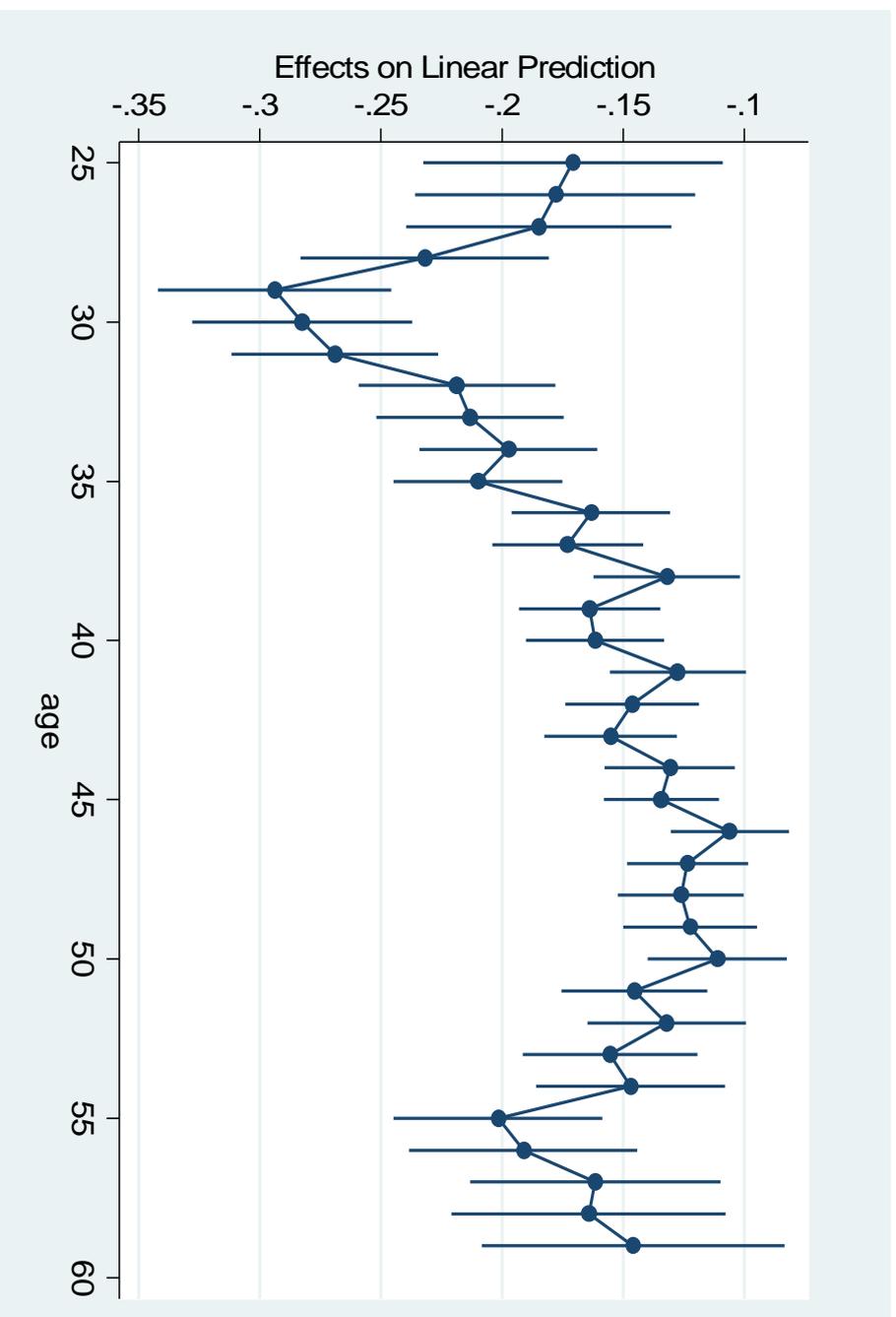
Marginal effects, by age



Results: transitions to WE

	FE	2SLS-FE	RF-FE
	b/se	b/se	b/se
$SSW_{it+1}^{SE}(y_{t+1}) - SSW_{it+1}^{WE}(y_{t+1})$	-0.0935***	-0.1984***	
	(0.0037)	(0.0050)	
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$			-0.1353***
			(0.0041)
PV(Y) _t	-0.0389***	-0.0333***	-0.0387***
	(0.0009)	(0.0006)	(0.0009)
Experience	-0.0334***	-0.0335***	-0.0334***
	(0.0006)	(0.0002)	(0.0006)
Out of work	0.0874***	0.0916***	0.0849***
	(0.0046)	(0.0025)	(0.0046)
Sick or unemployed	0.2639***	0.2593***	0.2637***
	(0.0170)	(0.0092)	(0.0170)
Constant	0.0777***	0.0794***	0.0797***
	(0.0034)	(0.0015)	(0.0034)
First stage:			
$SSW_{it+1}^{SE}(y_t) - SSW_{it+1}^{WE}(y_t)$		0.6820***	
		(0.0007)	
Number of observations	1,782,640	1,782,640	1,782,640
R-squared	0.071	0.070	0.071

Marginal effects, by age



Conclusions

- We studied the effect of Social Security Wealth in explaining the individual probability to be in self-employment rather than in employment as well as the probability to switch from self-employment to employment and vice-versa.
- When looking at the self-employment rate, we find that a 10,000 euro increase in the difference in expected SSW from SE and WE increases the probability of being in self-employment by 0.4-0.7 percentage points, depending on the specification.
- We also estimate the probability of switching to self-employment from employment and vice-versa.
- The results indicate that an increase in the difference in expected SSW under the scenarios of self-employment and employment increases the probability of switching into self-employment from employment, while it reduces the probability of switching into employment from self-employment.