Personal Old-Age Provision and Private Homeownership: Life Cycle Patterns

– Research Paper, Workstream 2.2 –

Martina Eckardt, Stefan Okruch

Andrassy University Budapest

2017

Do not cite or quote without permission from the authors!

Acknowledgements

This research paper presents results of the research project "Promoting the contribution of private savings to pension adequacy: Integrating residential property with private pensions in the EU" led by iff, institute for financial services, Hamburg. Financial support by the European Commission, DG Employment, Social Affairs and Inclusion is gratefully acknowledged.

This paper is based on data from Eurostat, European European Union Statistics on Income and Living Conditions (EU SILC), 2014. The responsibility for all conclusions drawn from the data lies entirely with the authors.

The content of this publication has received funding from the European Union's EaSi Grant Programme under grant agreement No VS/2015/0218. This publication reflects only the authors' view and the Commission is not responsible for any use that may be made of the information it contains.

Co-funded by the European Union

Table of Contents

List of figures

List of tables

1. Introduction

Investing in private old-age provision and in private homeownership are two of the main investment decisions of households over their life cycle.[1] In this paper we present findings from an explorative analysis based on data from the EU Statistics on Income and living Conditions (EU-SILC). We seek to provide insights on how personal income, pensions, homeownership as well as different fiscal incentives are distributed over the life cycle for the EU-28 countries. To this end, we take into account government subsidies and transfers as well as taxes and contributions to social security systems.

The underlying analytical framework is as follows: Resulting from the *initial distribution of human capital as well as real and financial capital*, individuals employ their capital on the markets. This results in the *primary income distribution*, according to which earnings are mainly a result of market forces. Via taxes and transfers, including social security contributions, the *secondary income distribution* results. With their spending and investment decisions, households and individuals change their accumulated human, financial and real capital. In addition, through regulations, taxes, subsidies and transfers governments influence both the original distribution of factor endowments and the (primary and secondary) income distribution.

In the following we show how different income components change over the life cycle. To this end we use the latest available EU SILC microdata for the EU-28, which cover the year 2013. They allow us to present the life cycle patterns of a number of income components in a cross-sectional fashion. The results of our life-cycle analysis may provide insights about Equity Release Schemes' (ERS) market potential for different age groups in different countries, as the market potential of ERS is measured e.g. by the share of elderly homeowners with high home equity values, debt-free homeowenrship, low income and no children (see Final Report Chapter 4).

The major source of old-age income results from compulsory statutory pension schemes, which in turn are (albeit to different degrees) related to one's personal earnings over the life cycle. They are supplemented with income resulting from personal old-age provisions and through the housing services resulting from private homeownership, *inter alia*. To get a more comprehensive picture of the impact of fiscal incentives, we include a discussion on taxes and social security contributions as well as on transfers and other social benefits.

The research report is structured as follows. Section 2 provides an overview of the EU SILC database and the methodology applied. Section 3 presents the life cycle patterns of old-age benefits from social security and related systems, including survivor's benefits. In addition, the main components determining these benefits (gross personal earnings, taxes on income and social security contributions, employer's social security contributions and taxes on wealth) are discussed. Section 4 looks at life cycle patterns of private pensions and of contributions to such plans which supplement the main statutory pension schemes. Section 5 turns to private homeownership, which is an important asset for supplementing old-age income. Life cycle patterns of homeownership rates and imputed rent as well as spending for acquiring private homeownership (mortgage principal repayment and interest repayment) are analysed. Section 6 focuses on

[1] Investing in education and children are the other most important investment decisions.

additional transfers which improve one's disposable income, like unemployment benefits, children and family related allowances, education related allowances and housing related allowances. Following this, section 7 summarizes the findings for Germany, Hungary, Ireland, Italy, the Netherlands and the United Kingdom. For these countries detailed case studies on fiscal incentives and other public policy options have been prepared in Workstream 2.1. Section 8 concludes.

2. The data

1. EU-SILC database and methodology

EU-SILC database

The EU-SILC database provides microdata for individuals and households on a yearly basis for the EU-28. Included are persons aged 16 or over. The main topics covered are income, poverty, social exclusion, housing, labour and education (Eurostat n.d.) Data are collected annually by the national statistical offices of the participating countries following a uniform scheme.

In the following we use the latest available cross-sectional data for the EU-28, which are from 2014. All variables relate to the previous year, that is 2013. For the 2014 survey, the minimum effective sample size for these data was set at around 135.000 households in the EU (for more details on the sample size of single countries regarding households and persons interviewed, see Eurostat 2014a, Table 2, p.29f.).

Methodology

We first use a hierarchical cluster analysis for grouping the EU-28 Member States based on the median disposable equivalised household income [medHX090] (see below for a more detailed discussion).[2]

Based on the clusters thus found, we provide cross-sectional life cycle patterns. To obtain these, we first calculate the median, mean or conditional median values of the weighted variables for each age group (16 to 80 +) for each EU-28 member state. As a default option, we calculate the median of the respective income, tax or transfer variables. However, there are a number of income components with a median value of 0, indicating that at least 50% of an age group do not receive any income from this source, resp. do not have to pay taxes or get transfers from this source. In these cases, we calculate the mean of the respective variables for each age group to get a more precise picture. We also calculated the conditional median as the 50^{th} percentile for all observations with positive values, while all other observations are excluded. However, for most age groups in most countries the unweighted observations for the conditional median are below 20. Thus, following the publication rules for EU-SILC data we refrain from using this measure (Eurostat 2016).

On these aggregated data, we apply nonparametric regression by local polynomial smoothing to get the cross-sectional life cycle patterns. This methodology follows Alessie/Lusardi/Aldershof

[2] Note that in the following the respective EU-SILC variables are included in square brackets, with "m" indicating mean value, "med" median value and "kmed" conditional median value.

(1997, pp.9ff.). For estimating Kernel weighted local polynomial smoothing, we use the Epanechnikov Kernel function which is the default option in STATA 15.

The objective of this procedure is to get an informed overview of the income components and their use for private pension investment and for acquiring private homeownership for explorative reasons. By identifying life cycle patterns over the age groups in each EU-28 member state, a first important step in analysing the market potential for Equity Release Schemes is made.

An important strength of using this non-parametric approach is that it is easy to carry out and poses no conditions on the data when estimating the polynomial function. In addition, it allows to visually inspect the similarities and differences between and within clusters, thus providing a minimum of generalization of the findings for the EU-28. However, the estimated life cycle patterns should be treated cautiously since there might be more variation at the lower and upper ends of the life cycle leading to less reliable estimations.[3]

For calculating the life cycle patterns of the different income components, taxes and transfers, we use individual data. Since we are interested in individual, not household data, we used the cross sectional personal weight variable [PB040].

For some income, tax and transfers components, data are only available at the household level. In these cases we matched the household data to the individual level data. Accordingly, if there are several household members, then the respective household data are recorded for each age group to which each household member belongs.

All in all, the following life cycle patterns are a first explorative step in analysing the market potential for Equity Release Schemes. They show the variation of different income components according to age group within a country and between countries as well as the incidence of taxes and transfers over the life cycle.

2. Cluster analysis

The EU-SILC database comprises a broad variety of income components for individuals and households. The variable *equivalised disposable household income* [HX090] provides the most comprehensive summary of both income elements from market activity (earnings and non-earnings income, e.g.), social security benefits (unemployment benefits as well as old-age benefits, inter alia) and income related transfers as well as taxes. Furthermore, this income variable is equivalised to account for differences in household size, following the standard OECD methodology. Therefore, it allows tentative comparisons of disposable household income independent of household size.

Variable definition: HY020: Total disposable household income

> **"Total disposable household income (HY020)** can be computed as:
> The sum for all household members of gross personal income components
> - Gross employee cash or near cash income (PY010G),4

[3] To allow for readability we do not include scatterplots of the underlying data points from which the displayed graphs are estimated.

[4] Note regarding variable names that "P" stands for individual level data, "H" for household level data, "G" for "gross".

- Company car (PY021G)
- Gross cash benefits or losses from self-employment (including royalties) (PY050G),
- Pensions received from individual private plans (other than those covered under ESSPROS) (PY080G),
- Unemployment benefits (PY090G),
- Old-age benefits (PY100G),
- Survivor' benefits (PY110G),
- Sickness benefits (PY120G),
- Disability benefits (PY130G
- Education-related allowances (PY140G);

Plus gross income components at household level

- Income from rental of a property or land (HY040G),
- Family/children related allowances (HY050G),
- Social exclusion not elsewhere classified (HY060G),
- Housing allowances (HY070G),
- Regular inter-household cash transfers received (HY080G),
- Interests, dividends, profit from capital investments in unincorporated business (HY090G),
- Income received by people aged under 16 (HY110G));

Minus

- Regular taxes on wealth (HY120G),
- Regular inter-household cash transfer paid (HY130G),
- Tax on income and social insurance contributions (HY140G)

The variable HY140G includes the income taxes paid during the income reference period, the tax adjustments-repayment/receipt received or paid during the income reference period and the social insurance contributions paid during the income reference period." (Eurostat 2014a, p.209f.)

Variable definition: HX090: Equivalised disposable household income

HX090 = HY020 divided by *equivalised household size* (Eurostat 2014b, p.15)

To determine clusters of countries with similar median values of the equivalised disposable household income (in Euro) [medHX090], an agglomerative hierarchical clustering method is employed. This method starts with considering each observation as a separate cluster and then proceeds to combine them until all observations belong to one cluster. That means, if there are N observations, the cluster analysis starts out with N different clusters each of size 1. In a next step, the closest two clusters are combined (N – 1 clusters, one of size 2 and the rest of size 1). This process continues until all observations belong to the same cluster. Likewise, a hierarchy of clusters is generated. To calculate the closeness of the clusters, an average linkage algorithm is used. With that method, the closest two clusters are determined by the average (dis)similarity between the observations of the groups. This methods is chosen as it has been proved to work well in many situation and to be quite robust (Kaufman/ Rousseeuw 1990).

From this, we derive six clusters which differ according to how the median of the equivalised disposable household income is distributed across the age cohorts from 16 to 80 as measured by the mean, standard deviation, skewness and kurtosis of this cross sectional distribution. These statistics are shown in Table 1 below, the dendrogramm is depicted in Figure 1.

To simplify the following analysis, we combine Luxemburg, Denmark and Sweden in *Cluster 1*. Table 1 shows that the defining moment for grouping countries in a common cluster is the mean of their median equivalised disposable household income over the lifecycle. With AT, BE, DE, FI, FR, IE, NL and the UK *Cluster 2* comprises eight of the "old" EU member states from Western and Northern Europe, while Cluster 3 consists of the Southern EU member states CY, ES, IT , MT and SI. With EL and PT on the one side and CZ, SK and EE on the other side, Cluster 4 includes EU

member states from both southern Europe as well as from the "new" Eastern European member states. With EL and PT it contains the weakest economies of the old EU-15, while CZ, SK and EE are the three most successfully catching-up transition economies. The remaining transition economies BG, HR, HU, LT, LV, PL and RO constitute Cluster 5.

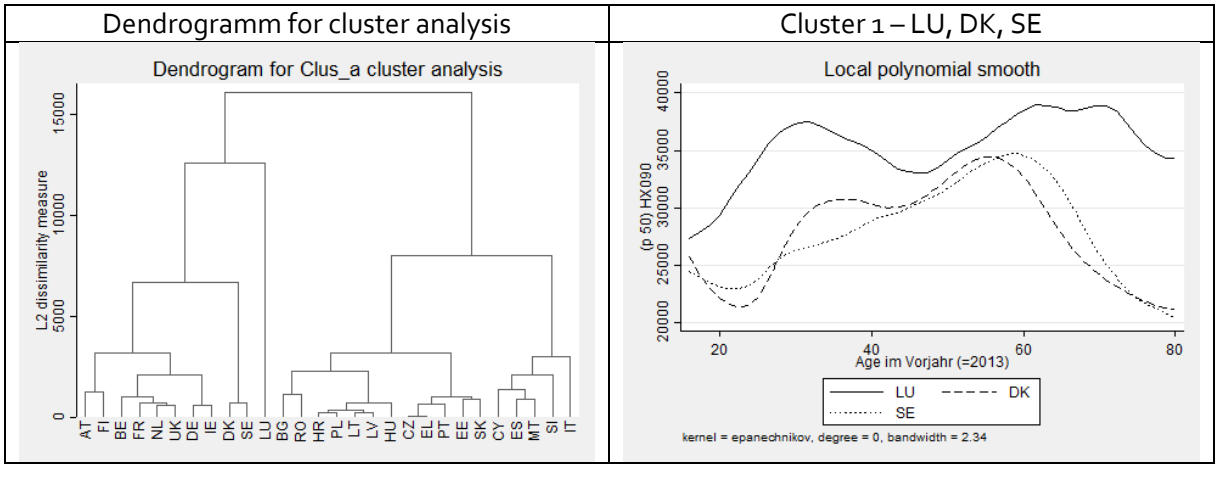
Table 1: Summary statistics of the clusters

Cluster	Composition	Mean	Sd	Kurtosis	Skewness
1a	LU	35,354	3,870.59	3.06	-0.58
1b	DK, SE	27,792	5,013.79	2.40	-0.26
2	AT, BE, DE, FI, FR, IE, NL, UK	21,641	2,435.14	2.47	-0.19
3	CY, ES, IT, MT, SI	13,758	1,512.19	2.58	-0.21
4	CZ, EE, EL, PT, SK	7,631	996.53	2.34	-0.14
5	BG, HR, HU, LT , LV, PL, RO	4,468	558.16	3.14	-0.41
Total		14,367	1,779.64	2.65	-0.26

Source: Own Calculation based on EU SILC 2014 [medHX090].

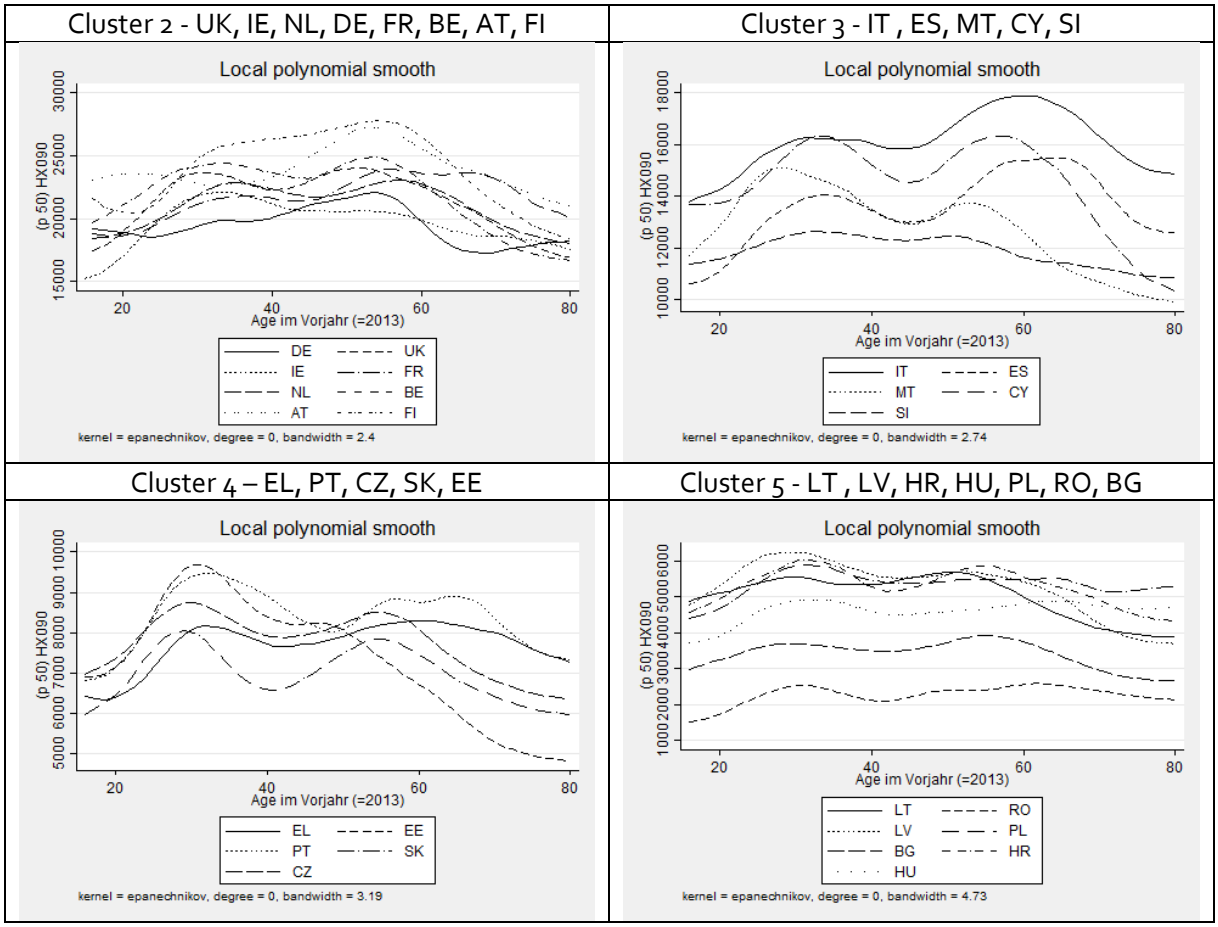
While these five clusters differ clearly in regard to the mean of their median income, they are remarkable similar with respect to their overall shape over the life cycle as Figure 1 shows. This holds also within each cluster. Both the young (younger than 20) and the very old (75 and above) live in households with a below average median equivalised disposable household income. While equivalised disposable household income rises with age, there are two peaks, one around the age of 35 and the other at 55 and above, with a more or less pronounced valley between. The decline in income at the mid-30s might well show that persons now live in larger households due to family size, so that the equivalised disposable household income is smaller. As expected, when reaching the end of active employment, disposable income decreases, too. However, in a number of countries the decrease in disposable household income due to age is less pronounced than in others. This holds in particular for the Eastern EU member states in Cluster 6, but also for example for Greece in Cluster 5.

Figure 1: Dendrogramm and lifecycle patterns based on the median of the equivalised disposable household income [medHX090][5]



[5] Note that for LU the unweighted cell size in the age groups 76 to 79 is between 20 and 49 olbservations in this and all the following estimations reported.

Figure 1: Cont.



Source: Own calculation according to EU SILC 2014.

3. Earnings related pensions as the main source for old-age income

The main source of one's income is earnings related. For the economically active population from the age of 18 to 65 income from labour market participation - or derived thereof – is the key source determining one's living conditions. People past retirement age usually derive pensions from statutory pension schemes which are more or less directly related to their former earnings.

This holds also given the traditional division of labour among spouses, where the husband earns the family's living in the labour market, while the wife takes care of child rearing and the household. In this case, there are obligations in the family law determining the legal obligation of how to share the income among wife and the children who are non-active in the labour market. For spouses who have not acquired rights to old-age benefits through their own participation in the labour market, survivor benefits apply.

In the following sections we show the life cycle patterns for the six clusters based on EU-SILC data. We start with (1) personal gross employee cash or near cash income, followed by (2) old-age benefits and (3) survivor benefits. An analysis of the variation of (4) taxes and social security contributions over the life cycle completes the picture.

1. Personal gross employee cash or near cash income

Income from labour is the main source of income for most people aged 16 to 65. Personal gross employee income as defined below indicates the labour income available before taxes and social security contributions are paid and transfers or other social benefits are received. Thus, the following life cycle patterns give a first impression of the primary labour income distribution over the life cycle before there are any fiscal or public policy interventions in the income distribution.

Variable definition: PY010G: Employee cash or near cash income

"***Gross employee cash or near cash income (PY010G):*** This refers to the monetary component of the compensation of employees in cash payable by an employer to an employee. It includes the value of any social contributions and income taxes payable by an employee or by the employer on behalf of the employee to social insurance schemes or tax authorities.

Gross employee cash or near cash income includes the followings items:

- Wages and salaries paid in cash for time worked or work done in main and any secondary or casual job(s);
- Remuneration for time not worked (e.g. holiday payments);
- Enhanced rates of pay for overtime
- Fees paid to directors of incorporated enterprises
- Piece rate payments
- Payments for fostering children
- Commissions, tips and gratuities
- Supplementary payments (e.g. thirteenth month payment)
- Profit sharing and bonuses paid in cash
- Additional payments based on productivity
- Allowances paid for working in remote locations (regarded as part of the conditions of the job);
- Allowances for transport to or from work
- Additional payments made by employers to their employees or former employees and other eligible persons to supplement the sick, disability, maternity leave or survivor's pay entitlement from social insurance schemes, where such payments cannot be separately and clearly identified as social benefits (in case these payment can be identified they should be included in appropriate benefits variables instead);
- Payments made by employers to an employee in lieu of wages and salaries through a social insurance scheme when unable to work through sickness, disability or maternity leave where such payment cannot be separately and clearly identified as social benefits.

It excludes:

- Reimbursements made by an employer for work-related expenses (e.g. business travel);
- Severance and termination pay to compensate employees for employment ending before the employee has reached the normal retirement age for that job and redundancy payments (they are included under 'unemployment benefits' (PY090G));
- Allowances for purely work-related expenses such as those for travel and subsistence or for protective clothes;
- Lump sum payments at the normal retirement date (included under 'old age benefits' (PY100G));
- Union strike pay

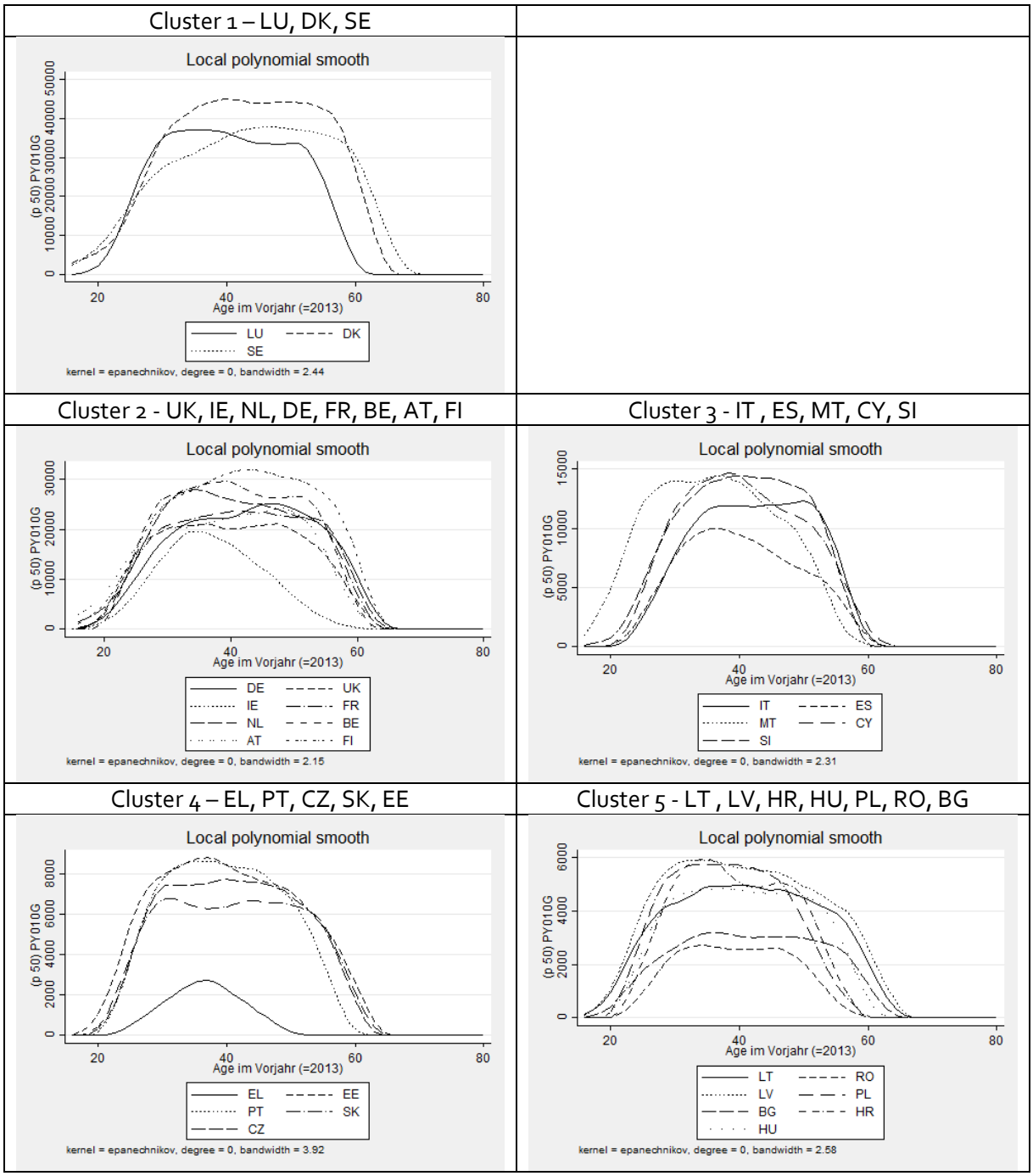
(…) Employers' social insurance contributions are excluded." (Eurostat 2014a, p.310f.)

Figure 2 shows for most countries in the five Clusters the typical age-related earnings profiles over the life cycle. There is a steep increase at the start of one's employment biography in younger age and a steep decline at around the age of 60, when people stop actively participating in the labour market. Consequently the median value of personal gross employee income is zero in each EU-28 Member State for those aged 70 and over.

In addition we find that the age-earnings' profiles within each cluster are rather similar and close together, although there is some variation within clusters, too. In Cluster 2, Ireland shows a rather a-typical decline in median personal earnings at a very low age. This results, *inter alia*, from a low labour market participation rate of married women. In Cluster 4, EL differs substantially from the

other countries with a much lower maximum personal employee income and – like IE – an early and rather quick decline. Since Figure 1 shows that median disposable household income in EL is much higher and comparable to its peers, other income components must make up for the lower personal labour market income. BU and RO in Cluster 5 both show a much lower maximum median income than the other countries in this cluster. However, they differ substantially in at what age the median labour income starts to decline. This is much later in BU than in RO. Obviously, there are other incentives at work in these two countries.

Figure 2: Median of the personal gross employee cash or near cash income [medPY010G]



Source: Own calculation according to EU SILC 2014.

2. Old-age benefits

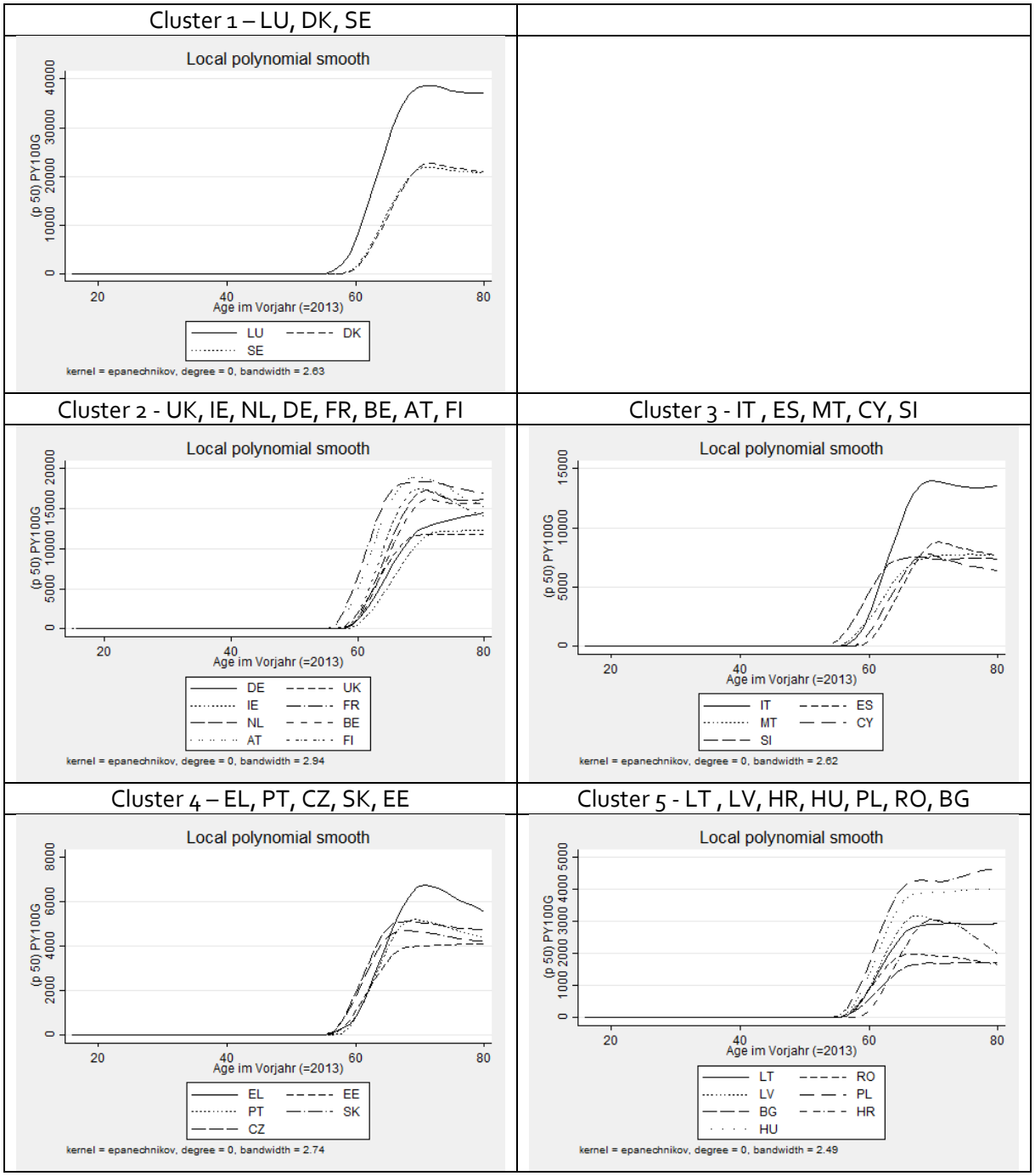
Since for most people participating in the labour market is the main source of income, retirement from the labour market requires a replacement. Different countries solved this differently. Besides tax financed public pensions, social security pension schemes are earnings related and financed by social contributions (see section 4 below). In addition, there are other public policy schemes, which account for partial or full income replacement in old age.

Variable definition: PY100G: Old age benefits

> **"Old age benefits (PY100G):** The Old Age function refers to the provision of social protection against the risk linked to old age, loss of income, inadequate income, lack of independence in carrying out daily tasks, reduced participation in social life, and so on.
> Old age benefits cover benefits that provide a replacement income when the person retires from the labour market or which guarantee a certain income when a person has reached a prescribed age.
> These include:
>
> - **Old age pensions:** periodic payments intended to maintain the income of the beneficiary after retirement from gainful employment at the standard age, or to supplement the income of old persons;
> - **Anticipated old age pensions:** periodic payments intended to maintain the income of beneficiaries who retire before the standard age as defined in the relevant scheme or in the scheme of reference. This may occur with or without a reduction of the normal pension;
> - **Partial retirement pensions:** periodic payments of a portion of the full retirement pension to older workers who continue to work but who reduce their working hours or for whom the income from a professional activity is below a defined ceiling;
> - **Care allowances:** benefits paid to old people who need frequent or constant assistance to help them meet the additional costs of obtaining care that is required to assist them in old age (other than medical care) when the benefit is not a reimbursement of certified expenditure;
> - Disability cash benefits paid after the standard retirement age
> - Lump-sum payments at the normal retirement date;
> - **Other cash benefits:** other periodic and lump-sum benefits paid upon retirement or on account of old age, such as capital sums paid to people who do not fully meet the requirements for a periodic retirement pension, or who were members of a scheme designed to provide only capital sums at retirement.
>
> These exclude:
>
> - Family allowances for dependent children (which are included under 'family/children
> - related allowances' (HY050G));
> - Early retirement benefits paid for labour market reasons or in the case of reduced capacity to work (they are included respectively under 'unemployment benefits' (PY090G) or under 'disability benefits' (PY130G));
>
> Benefits paid to old people who need frequent or constant assistance to help them meet the additional costs of additional costs of care associated with old age when the benefits are reimbursed against a certified expenditure" (Eurostat 2014, 329f.).

Figure 3 shows that the life cycle pattern of old-age benefits is quite uniform across all five Clusters. The media old-age income is zero until around the age of 55, followed by a steep increase over the age groups of the next 10 years or so, while remaining more or less stable thereafter. Again, there is some variation within Clusters. In Cluster 3 IT stands out, showing much more similarity with the old-age income of the countries in Cluster 2. In Cluster 4, the old-age income pattern for EL is much higher than for the other countries in this Cluster. Taken into account the findings from the previous section on EL, this shows that median income from labour market participation is particularly lower in EL than benefits related to old-age.

Figure 3: Median of old-age benefits [medPY100G]



Source: Own calculation according to EU SILC 2014

3. Survivor's benefits

The loss of one's spouse, partner or next-of-kin may be a catastrophic event if the deceased used to make an important contribution to the common living. Survivors' benefits are therefore an important part of public policy measures that may help individuals and households to smooth the life-cycle pattern of income.

Variable definition: PY110G: Survivor's benefits

> **"Survivor's benefits (PY110G):** Survivors' benefits refer to benefits that provide a temporary or permanent income to people below the retirement age who have suffered from the loss of their spouse, partner or next-of-kin, usually when the latter represented the main breadwinner for the beneficiary.
> Survivors eligible for benefit may be the spouse or ex-spouse of the deceased person, his or her children, grandchildren, parents or other relatives. In some cases, the benefit may also be paid to someone outside the family.
> A survivor's benefit is normally granted on the basis of a derived right, that is, a right originally belonging to another person whose death is a condition for granting the benefit.
> It includes:
>
> - **Survivor's pension:** periodic payments to people whose entitlement derives from their relationship with a deceased person protected by a scheme (widows, widowers, orphans and similar) (even after the standard retirement age);
> - **Death grant:** a single payment to someone whose entitlement derives from their relationship with a deceased person (widows, widowers, orphans and similar);
> - **Other cash benefits:** other periodic or lump-sum payments made by virtue of a derived right of a survivor.
>
> It excludes:
>
> - Family allowances for dependent children (These benefits are included under Family/children related allowance (HY050G));
> - Funeral expenses ;
> - Additional payments made by employers to other eligible persons to supplement the survivors' benefits pay entitlement from a social insurance scheme, where such payments cannot be separately and clearly identified as social benefits (those payments are included under 'gross employee cash or near cash income' (PY010G));
>
> *Note*: periodic payments to people whose entitlement derives from their relationship with a deceased person during a war are included in PY110. Survivor's benefits paid after the standard retirement age are included under 'old age benefits. "(Eurostat 2014a, 330)

The following Figure 4 shows the diverse patterns within the five clusters. The figures do not only depict a difference between the clusters, but also – and more surprisingly – substantial differences between the countries within a cluster. The data suggest the lack of any significant survivors' benefits in some countries. While in most countries the curves indicate an increase for old age, in a few countries survivor's benefits decrease sharply after a certain age.

Figure 4: Mean of survivor's benefits [mPY110G]

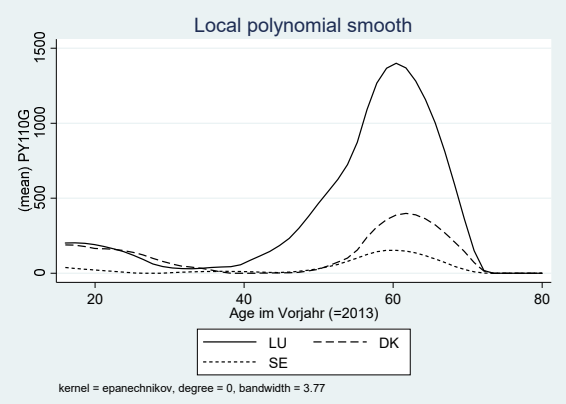
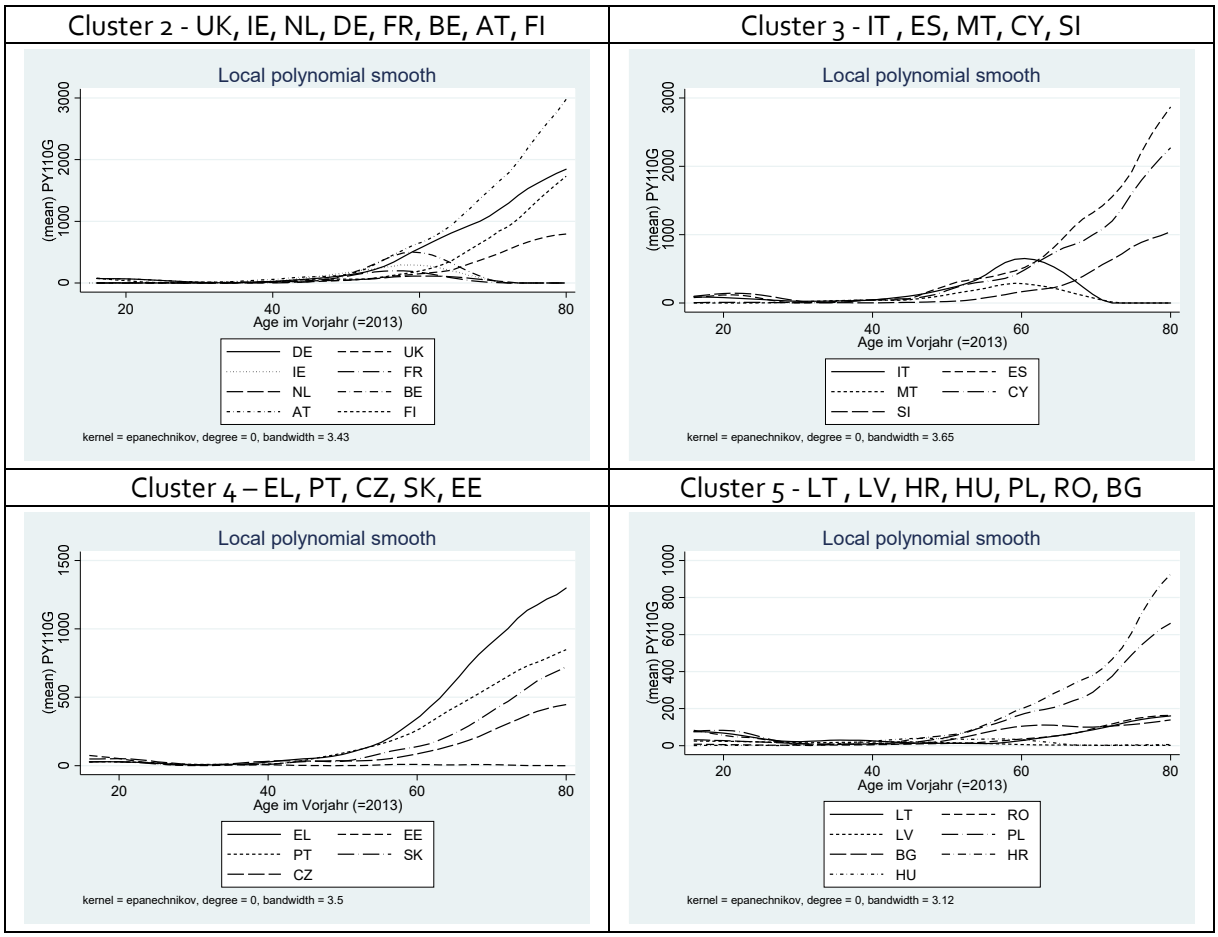
Cluster 1 – LU, DK, SE	
	

Figure 4: Cont.



Source: Own calculation according to EU SILC 2014.

4. Taxes on income and wealth and social security contributions

Taxes on income and social security contributions (if applicable) represent the most significant wedge between gross and net income. The internal composition of the two components clearly depends on the prevailing system in a specific country, with "Bismarck"- and "Beveridge"-systems as polar ideal types.[6]

(1) Taxes on income and social contributions

Variable definition: HY140G: Taxes on income and social contributions

> **"Tax on income** refers to taxes on income, profits and capital gains. They are assessed on the actual or presumed income of individuals, households or the tax-unit. They include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. Taxes related to pensions received from individual private plans (other than those covered under ESSPROS) should also be taken into account.
> Taxes on income include:
>
> - Taxes on individual, household or tax-unit income (income from employment, property, entrepreneurship, pensions, etc.), including taxes deducted by employers (pay-as-you earn taxes),

[6] The Bismarck-type of social security systems is characterized by separate social insurances for healthcare, pensions, unemployment etc., with earnings-related contributions. Beveridge systems are tax-funded and characterized by universal coverage. For more on this see Conde-Ruiz/ González (2016).

other taxes at source and taxes on the income of owners of unincorporated enterprises paid during the income reference period;

- By way of exception, Member States using data from registers and other Member States, for which this is the most suitable way, can report taxes on 'income received' in the income reference year, if it only marginally affects comparability;
- Tax reimbursement received during the income reference period related to tax paid for the income received during the income reference period or for income received in previous years. This value will be taken into account as a reduction of taxes paid; and
- Any interest charged on arrears of taxes due and any fines imposed by taxation authorities.

(…)

Social insurance contributions refer to contributions by employees', the self-employed and if applicable, the unemployed, retired paid during the income reference period to either mandatory government or employer-based social insurance schemes (pension, health, etc.)." (Eurostat 2014a, 232)

The following Figure 5 depicts the combined burden over the life-cycle and reveals some interesting results for the early years of the cycle in some countries, where further research may be a promising endeavour. The decline of payments after retirement is to be expected, but the data clearly show the differences in the taxation (incl. social contribution) of the elderly within the European Union.

Figure 5: Median of taxes on income and social contributions [medHY140G]

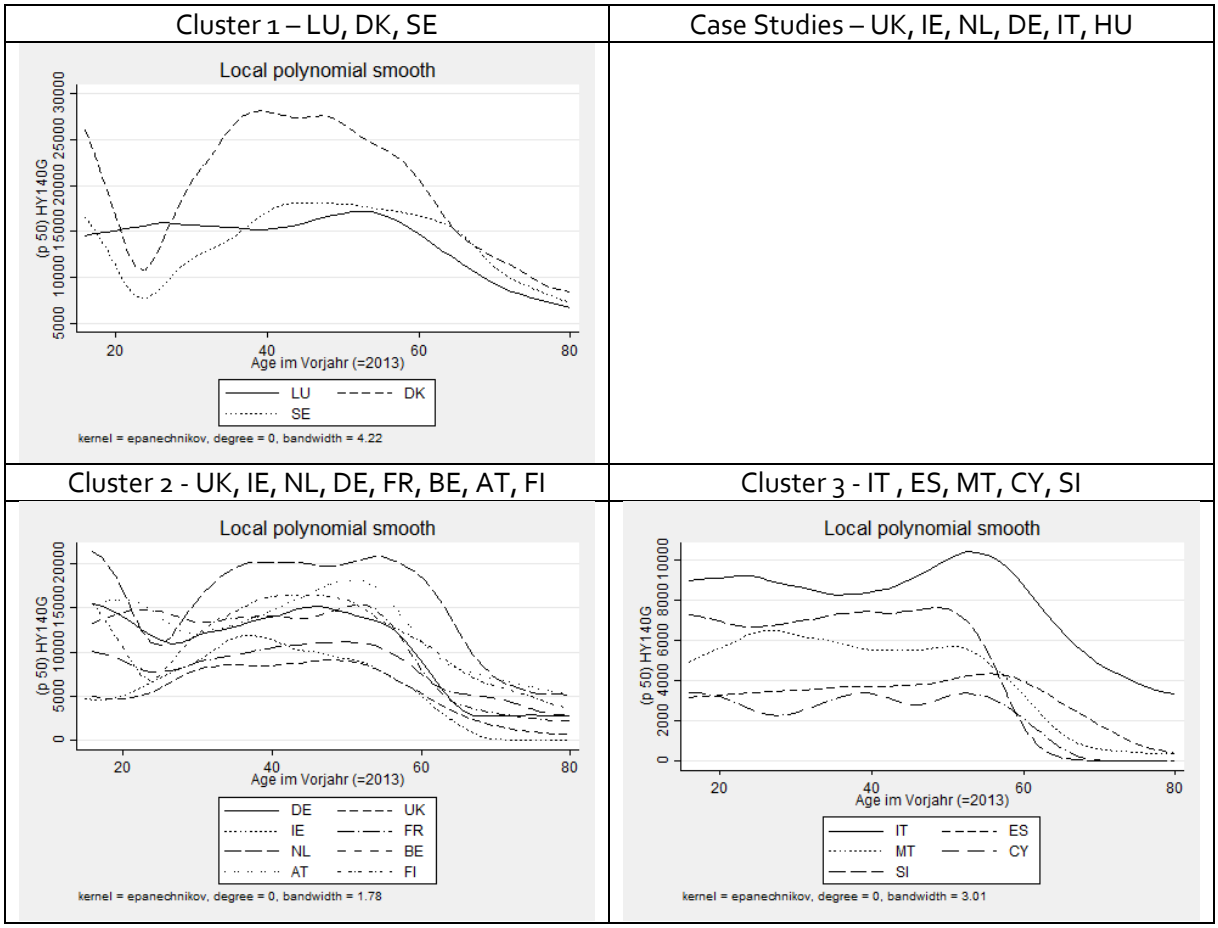
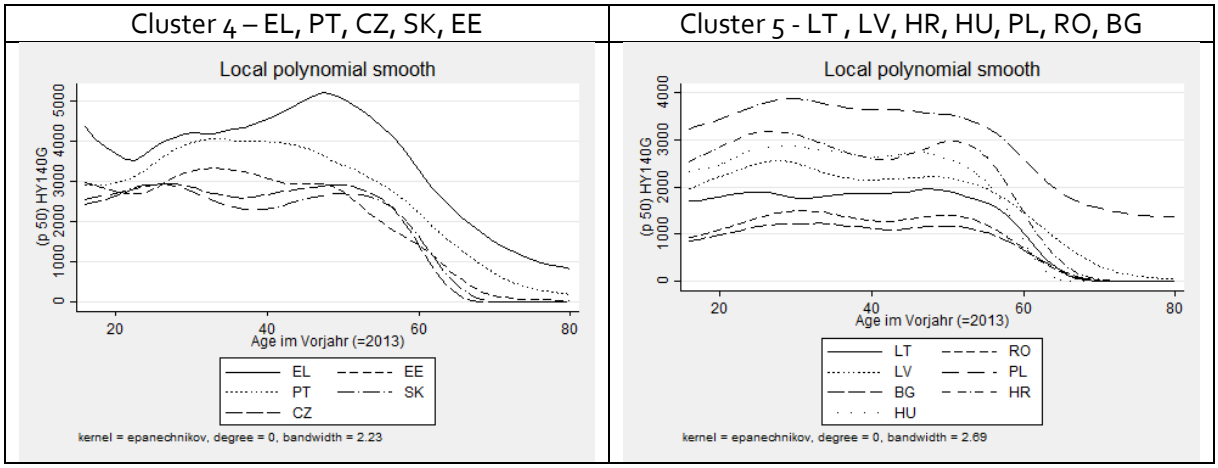


Figure 5: Cont.



Source: Own calculation according to EU SILC 2014.

(2) Employers' social insurance contributions

Variable definition: PY030G: Employers' social insurance contributions

"***Employers' social insurance contributions (PY030G):*** Employers' contributions are defined as payments made, during the income reference period, by employers for the benefits of their employees to insurers (social security funds and private funded schemes) covering statutory, conventional or contractual contributions in respect of insurance against social risks.

- Employers' contributions to private retirement (pension) plans;
- Employers' contributions to private health insurance;
- Employers' contributions to life insurance;
- Employers' contributions to other employer insurance schemes (e.g. disability);
- Employers' contributions to government insurance (social security) schemes(including payroll taxes levied for social insurance purposes).
- It is required that this distinguishes between two types of employers' social insurance contribution:
- Legal/mandatory contributions covering traditionally legal old age pension schemes, legal health insurance, unemployment ... These contributions are common to most employed persons and can be deduced from wages received according to published rules;
- Optional contributions made by employers on the basis of contractual or specific sectoral arrangements. These are more heterogeneous, limited to some employees and depending on the sector and the size of businesses. Typical examples are contributions to private pension plans, additional health insurance and term life insurance. This type of contribution seems to remain limited in importance in most countries, sometimes non-existent, but this type of contribution is likely to grow rapidly in the future with the reform of social protection systems.

From 2007 onwards, 'Employers' social insurance contributions' (PY030G) are included in the list of primary target variables of the EU-SILC instrument. In the situation where it represents at least 90% of the total amount of the social contributions of employers (compulsory + optional), variable PY030G should collect only the compulsory (legal) contributions of the employers.

In the situation where a country is due to collect an optional (non-compulsory) contribution, variable PY030G will gather the total contributions (mandatory + optional) and a new variable PY031G will collect the optional part so that flexibility is allowed when carrying out comparative analysis on the datasets.

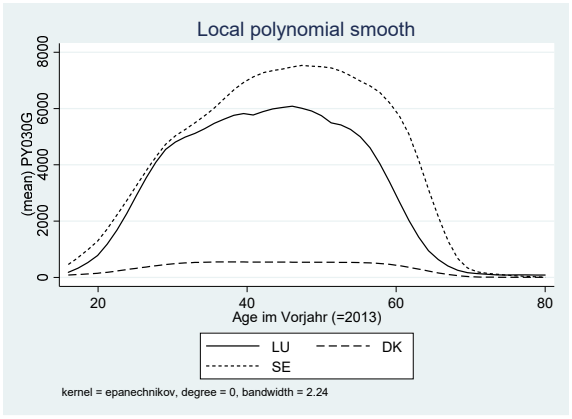
The documentation of coverage of the components collected should be an integral part of the final quality reports where the relative part of the optional contribution should be monitored. External sources for this purpose are likely to be national accounts and/or labour cost surveys.

The need and the feasibility to impute fictitious employer's social contribution for categories of persons for which no real contribution is paid (civil servant, unemployed ...) must be assessed." (Eurostat 2014, 315f.)

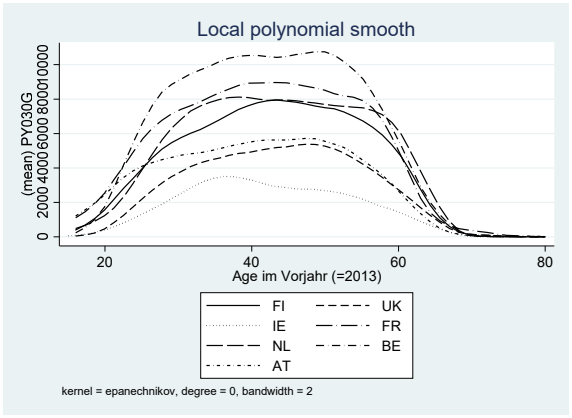
The different patterns the following Figure 6 shows reflect once again the different social security systems, although moderated by additional (conventional or contractual) contributions to private funded schemes.

Figure 6: Mean of employers' social insurance contributions [mPY030G]

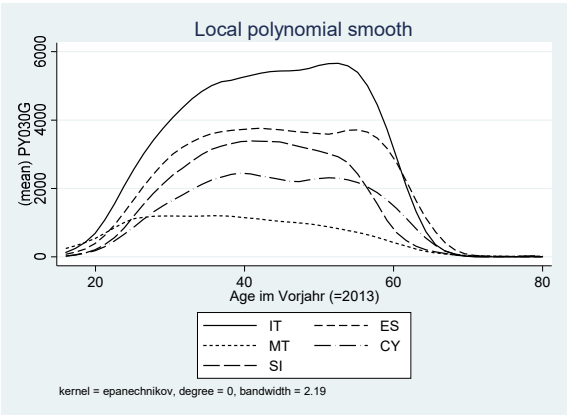
Cluster 1 – LU, DK, SE



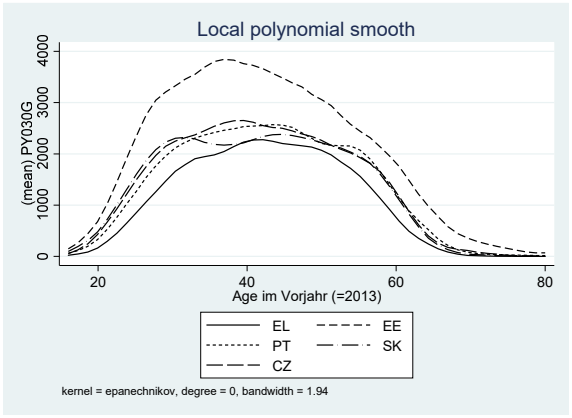
Cluster 2 - UK, IE, NL, FR, BE, AT, FI (DE no data)



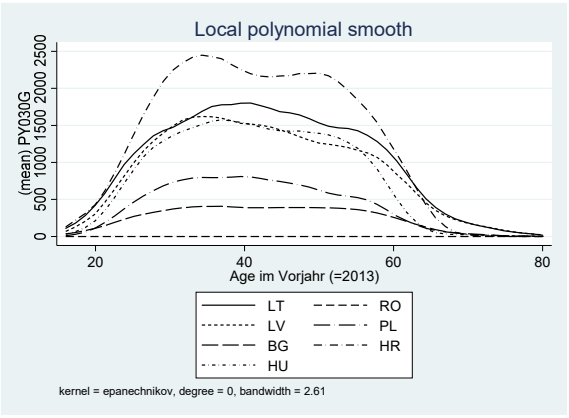
Cluster 3 - IT , ES, MT, CY, SI



Cluster 4 – EL, PT, CZ, SK, EE



Cluster 5 - LT , LV, HR, HU, PL, RO, BG



Source: Own calculation according to EU SILC 2014.

(3) Taxes on wealth

Variable definition: PY050G: Regular taxes on wealth

> **"Regular taxes on wealth** refers to taxes that are payable periodically on the ownership or use of land or buildings by owners, and current taxes on net wealth and on other assets (jewellery, other external signs of wealth). The regular taxes on wealth provided will be those paid during the income reference period.

It includes any interest charged on arrears of taxes due and any fines imposed by taxation authorities, paid during the income reference period and property taxes paid directly to the taxation authority by tenants during the income reference period.
It excludes:

- Intermittent taxes such as inheritance taxes, death duties or taxes on gifts inter vivo.
- Taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners (these taxes are included under 'Tax on income and social insurance contributions' (HY140G)).
- Taxes on land, buildings or other assets owned or rented by enterprises and used by them for production (these taxes are considered as taxes on production and they are deducted from the market output of self-employment income to build the component 'Gross cash benefits or losses from self-employment' (including royalties) (PY050G.)" (Eurostat 2014, 228)

The influence of taxes on wealth is highly diverse, as the following Figure 7 reveals. In each of the clusters there are countries with no or extremely low taxes on wealth, whereas the burden in all cluster5-countries is generally low. Within the individual clusters, some countries stand out with comparably high tax payments on wealth (cf. EL, UK). Generally, the smooth pathway of the graphs in many countries is an interesting finding in itself, as are the ever-increasing tax burden over the life cycle in IT or the high payments for younger persons in some countries. A decline of tax on wealth payments in older age may result either from tax benefits or from disinvestment. Therefore a thorough combined analysis of tax on wealth and life-cycle patterns is an interesting topic for future research.

Figure 7: Mean of taxes on wealth [mHY120G]

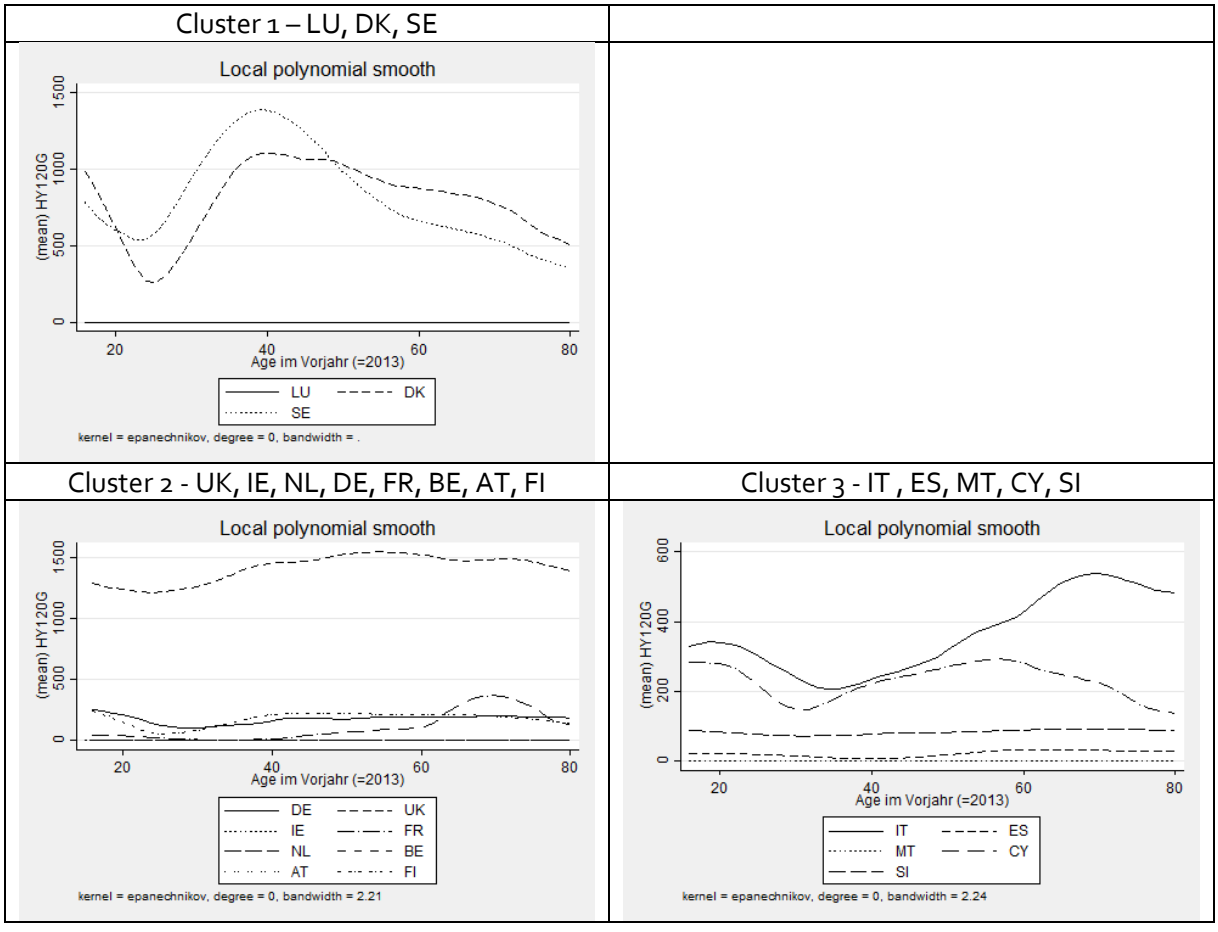
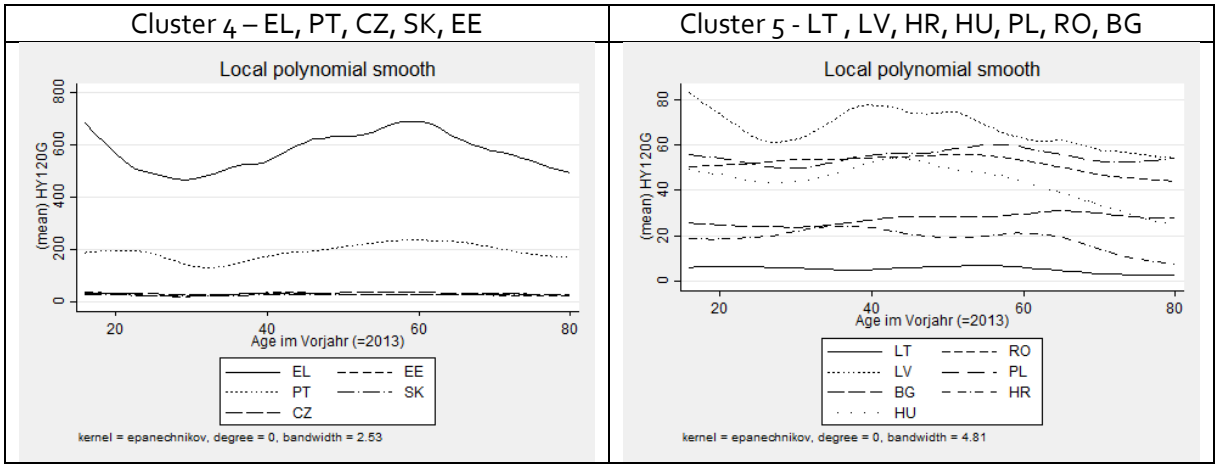


Figure 7: Cont.



Source: Own calculation according to EU SILC 2014.

4. Private pensions as a supplementary asset of old-age income

According to the individual investment decisions (cf. supra), old-age income from private pension schemes may have an important influence on the overall income. Since some European governments started to incentivize private pension schemes, it is promising to take stock of the relevance of this source(s) of old-age income.

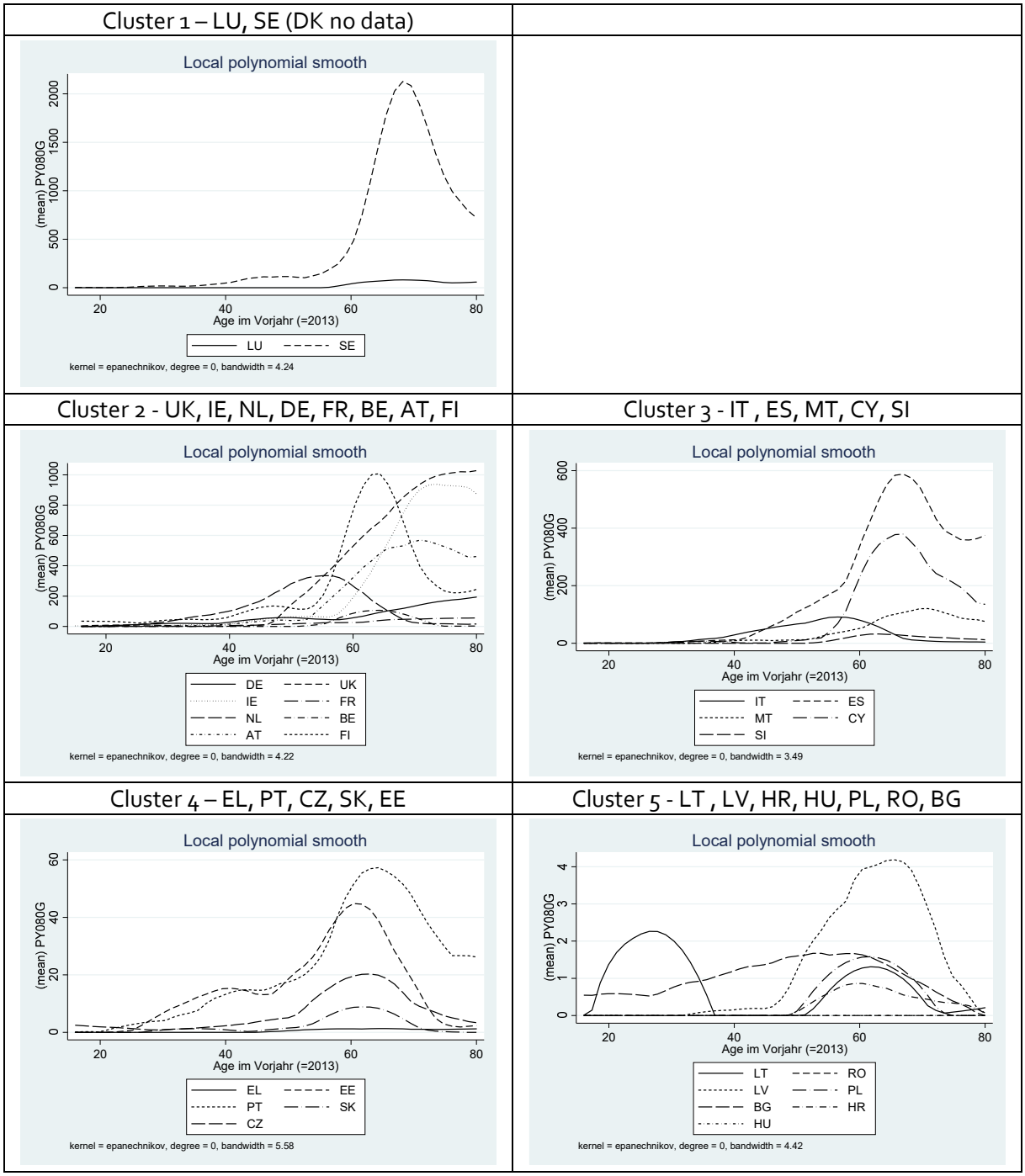
1. Pensions from individual private plans

Variable definition: PY080G: Regular pensions from individual private plans

> **"Gross Regular pensions from individual private plans (other than those covered under ESSPROS) (PY080G):** Regular pensions from private plans (other than those covered under ESSPROS) refer to pensions and annuities received, during the income reference period, in the form of interest or dividend income from individual private insurance plans, i.e. fully organised schemes where contributions are at the discretion of the contributor independently of their employers or government.
> It includes:
> - Old age, survivors, sickness, disability and unemployment pensions received as interest or dividends from individual insurance private plans.
> - It excludes:
> - Pensions from mandatory government schemes
> - Pensions from mandatory employer-based schemes." (Eurostat 2014, 324)

The graphs in Figure 8 may indicate differences in the specific private pension schemes. While in many countries there is a peak between the age of 60 and 70, some countries show increasing income also for beneficiaries 70+ (IE, NL, DE). A more disaggregated analysis would be advisable since this category also encompasses sickness, disability and unemployment pensions, which explains the rather high values for younger age groups in some countries.

Figure 8: Mean of pensions from individual private plans [mPY080G]



Source: Own calculation according to EU SILC 2014.

2. Contributions to individual private pension plans

Variable definition: PY035G: Contributions to individual private plans

> **"Contributions made, during the income reference period, to individual private pension plans:** This refers to the pensions policies taken out by individual households on their own initiative and for their own benefit, independently of their employers or government and outside any social insurance scheme.
> These contributions represent the counterpart to regular pensions from individual private plans (other than those covered under ESSPROS) (PY080G) related to old age, survivors, sickness, disability and unemployment.
> The schemes that need to be taken into account in variable PY035 are 'other insurance '(with the exception of life insurance schemes). Other insurance provides individual institutional units exposed to certain risks with financial protection against the consequences of the occurrence of specified events. It is also a form of financial intermediation in which funds are collected from policyholders and invested in financial and other assets which are held as technical reserves to meet future claims arising from the occurrence of the events specified in the insurance policies.
> Other insurance policies held by households may cover the same risks or needs as those covered by social insurance schemes. However, other insurance policies held by households are distinguished from social insurance policies by the fact that they are taken out on the individual households' own initiative and for their own benefit, independently of their employers or government.
> **Difference from the EU-SILC Regulations**: Contributions to individual pension plans (PY035G)/ (PY035N) should not be deducted from the total household disposable income.
> Pensions received from individual private plans (other than those covered under ESSPROS) (PY080G)/(PY080N) are treated as a component of property income, and should be included in the total household gross income (HY010) and in the total disposable household income (HY020)1. Inclusion of PY080 in HY020, HY022 and HY023 should be implemented by countries from the 2011 operation onwards." (Eurostat 2014a, 317f.)

It is equally important to analyse the 'reverse side' of the payed private pensions, i.e. the contributions to such schemes. In some countries there may be the opportunity to contribute a lump sum shortly before retirement, what may explain the peaks at the age of retirement (or even later) in some countries (see Figure 9).

Figure 9: Mean of contributions to individual private pension plans [mPY035G]

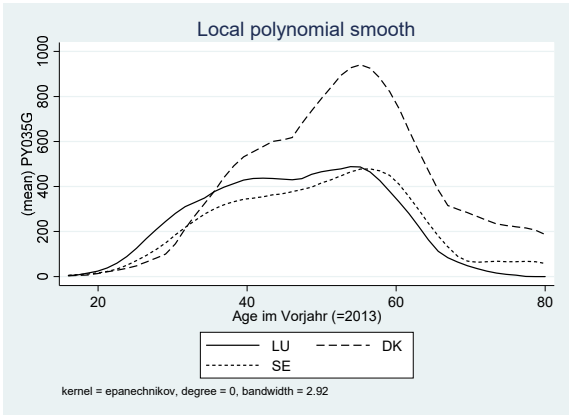
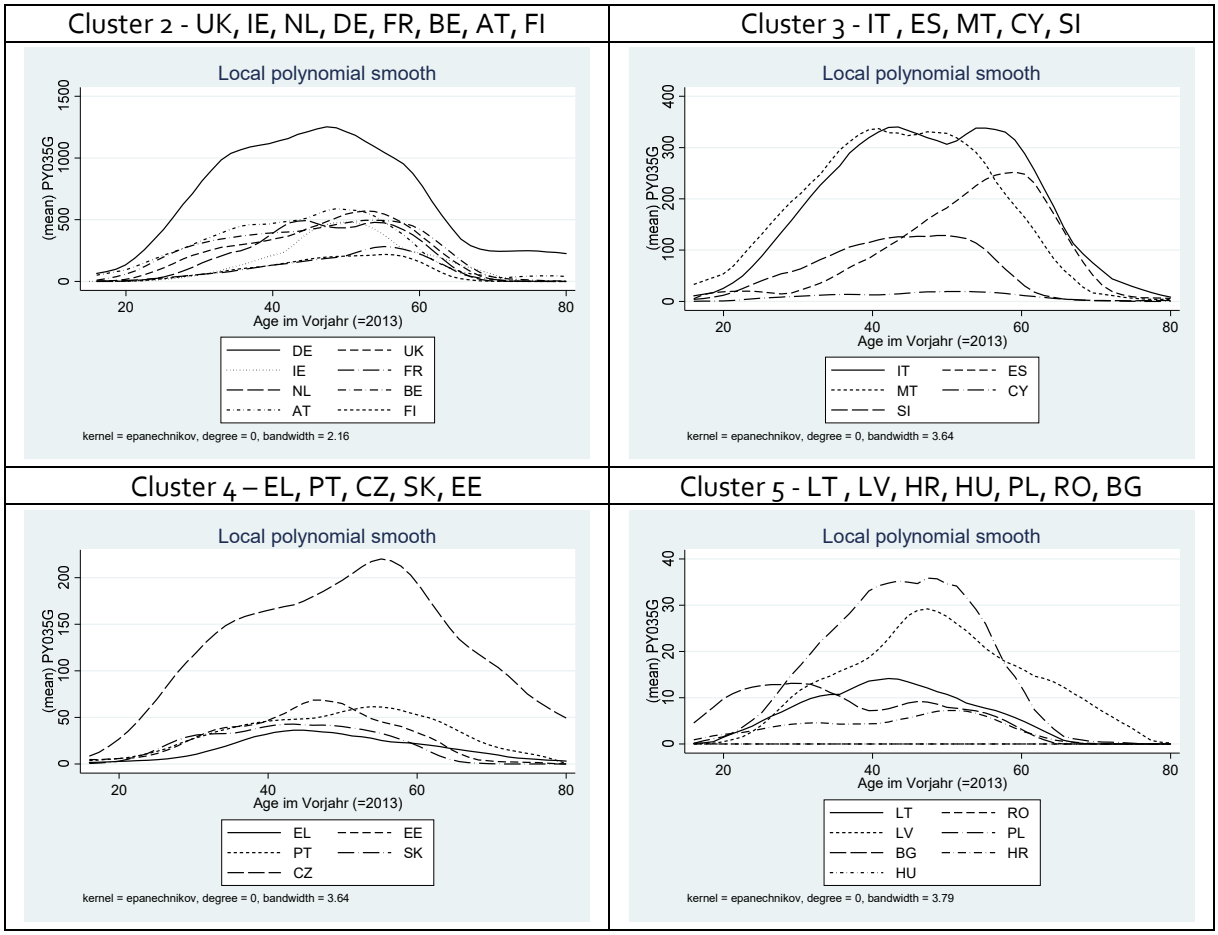
Cluster 1 – LU, DK, SE	
	

Figure 9: Cont.



Source: Own calculation according to EU SILC 2014.

5. Private homeownership as a supplementary asset for old-age income

Private homeownership is usually the alternative investment option for individuals and households in order to enjoy a smooth flow of income over the life cycle. The possession of one's home, however, does not reflect the relevant flows of income in older age or the interest and repayments in earlier years. The following analyses disaggregate 'homeownership' into these relevant flows.

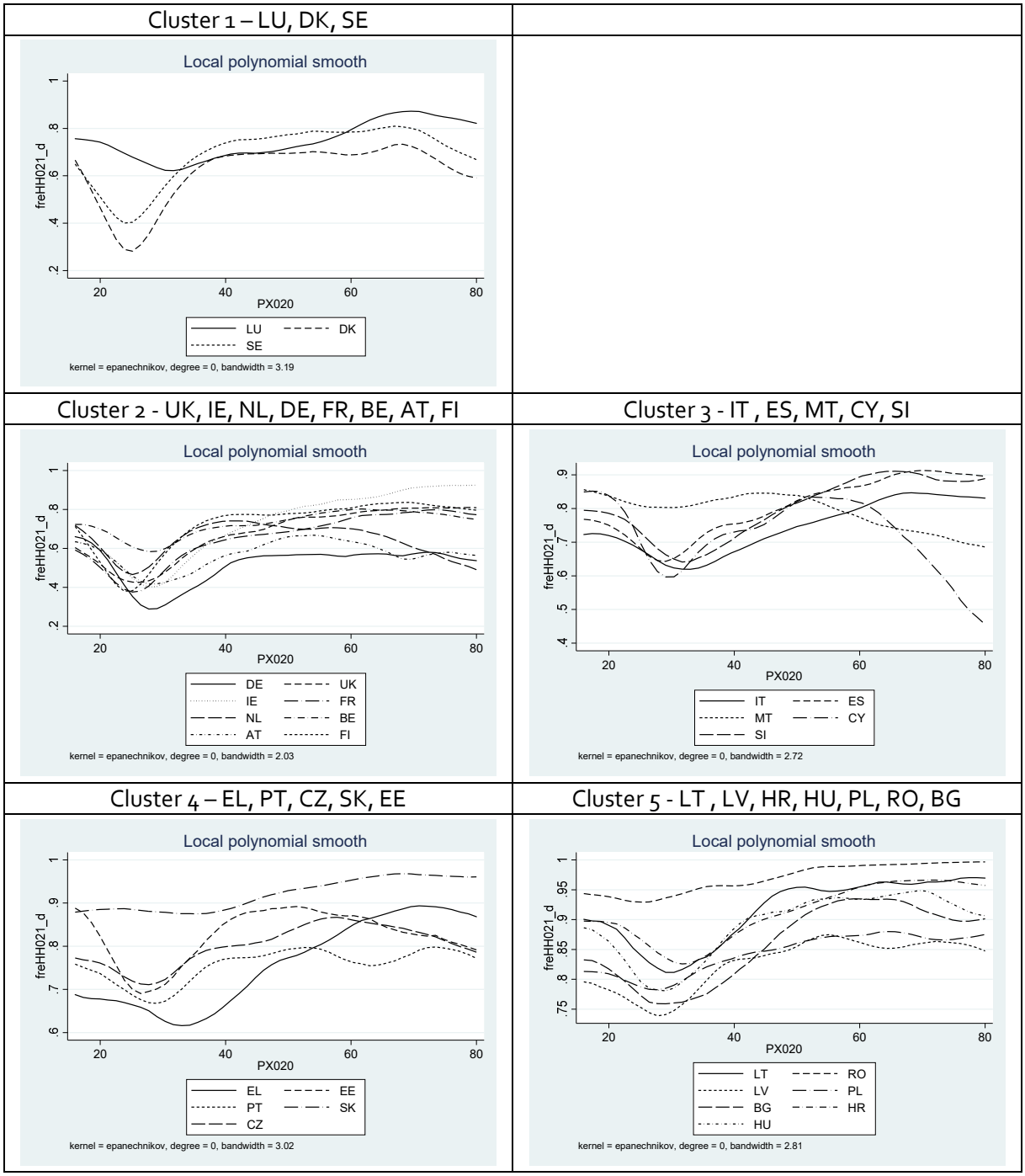
1. Private homeownership rate

Variable definition: HH021_d: Private homeownership

> **"Ownership:** The owner of the accommodation should be a member of the household. If for instance the accommodation is provided by a relative (such as by parents to their children) who is not a member of the household, then one of the other categories should be ticked, depending on whether or not rent is paid by this household. A person is an owner if he/she possesses a title deed independently of whether the house is fully paid or not. A reversionary owner should be considered as the owner." (Eurostat 2014a, 174)

Our analysis in Figure 10 reproduces the well-known differences in homeownership rates across Europe. Yet the consideration of the distribution over the life-cycle gives valuable additional insights.

Figure 10: Private homeownership rate (percentage) [freHH021_d]



Source: Own calculation according to EU SILC 2014.

2. Imputed rent from homeownership

Variable definition: HY030G: Imputed rent from homeownership

"The imputed rent refers to the value that shall be imputed for all households that do not report themselves as paying full rent, either because they are owner-occupiers or they live in accommodation rented at a lower price than the market price, or because the accommodation is provided rent-free.

> The imputed rent shall be estimated only for those dwellings (and any associated buildings such a garage) that are used as a main residence by the households.
> The value to impute shall be the equivalent market rent that shall be paid for a similar dwelling as that occupied, less any rent actually paid (in the case where the accommodation is rented at a lower price than the market price), less any minor repair or refurbishment expenditure which the owner-occupier households make on the property of the type that would normally be carried out by landlords. Costs for heating, water electricity, etc. are excluded. Repair leading to improvements or fixing major problems of the dwelling are also excluded.
> Depreciation (consumption of fixed capital) shall not be taken into account because it is likely to be offset or superseded by variation of the market value of the dwelling. These latter are not covered in EU-SILC.
> The market rent is the rent due for the right to use an unfurnished dwelling on the private market, excluding charges for heating, water, electricity, etc. By extension, private market also includes the market that is regulated by government regulations." (Eurostat 2014a, 212f.)

The imputed rents reflect the investments in homeownership over the life-cycle (including, presumably, the inheritance of or endowment with real estate in a younger age in some countries). The decrease in old-age may indicate disinvestment or depreciation (see Figure 11).

Figure 11: Median of imputed rent from homeownership [medHY030G]

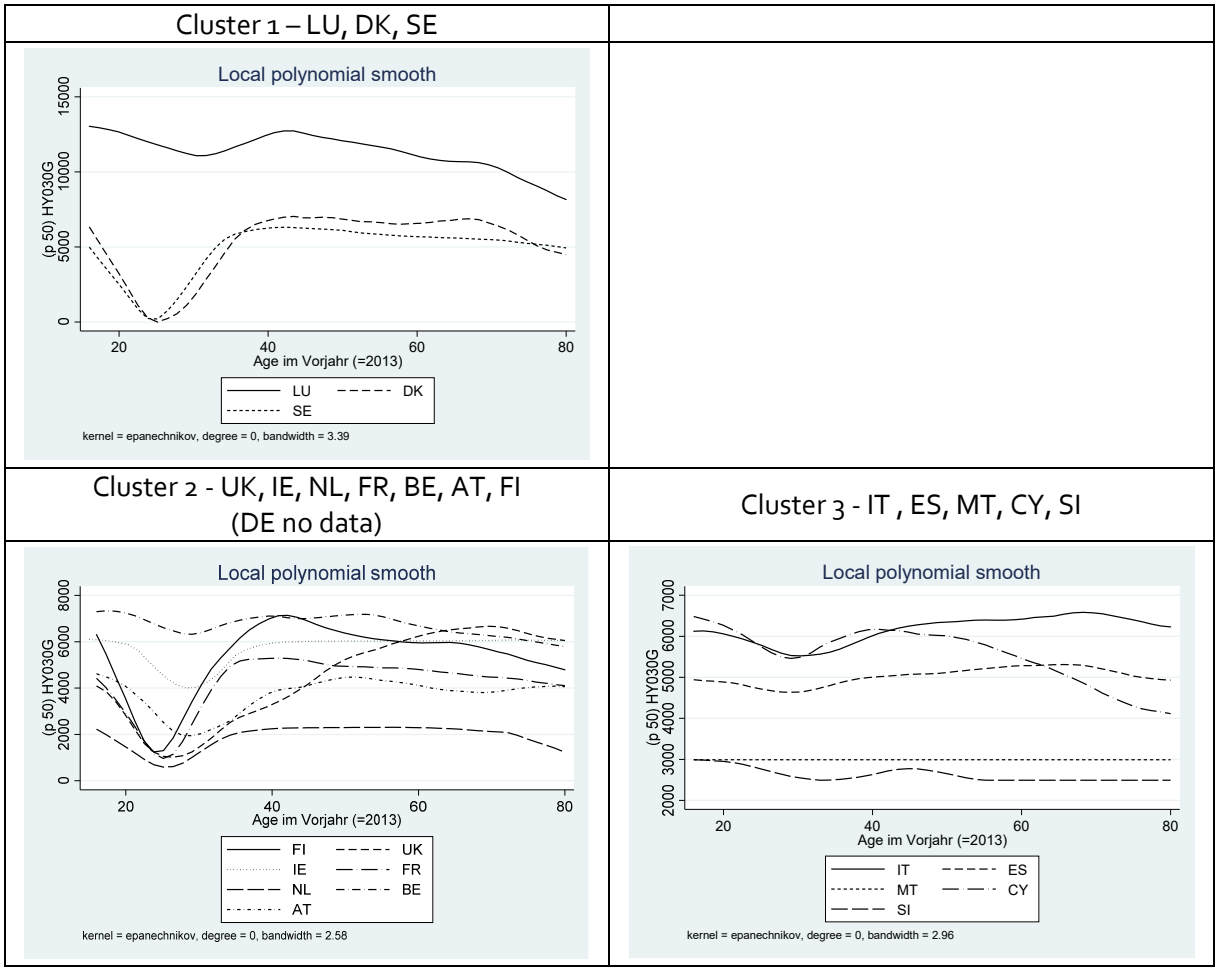
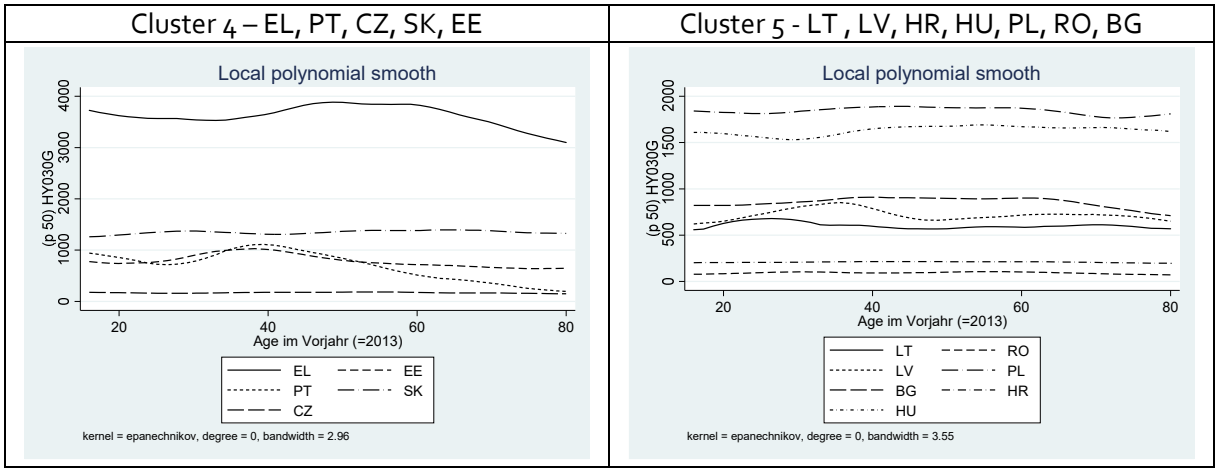


Figure 11: Cont.



Source: Own calculation according to EU SILC 2014.

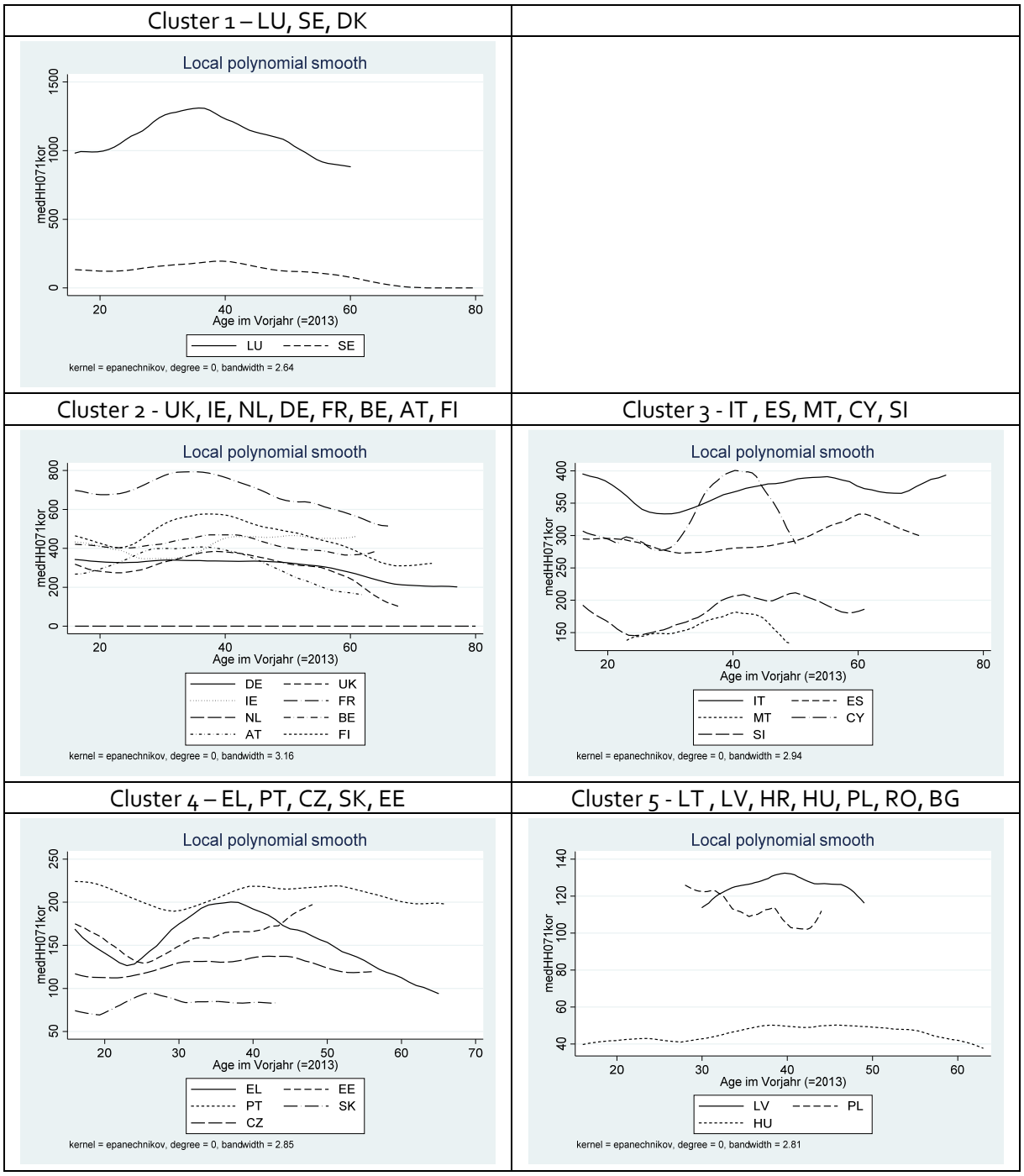
3. Mortgage principal repayment

Variable definition: HH071: Mortgage principal repayment

> "The term mortgage principal repayment (net of any tax relief) refers to monthly payments connected with the households' total housing cost.
> The same definition applies for inclusion or not of the mortgage as for variable HH070. The repayments will be included only in the case of a mortgage taken for the purpose of buying the main dwelling. Mortgages for the main dwelling taken to obtain money for other purposes should be excluded. Mortgages taken for the purpose of buying a second dwelling should also be excluded.
> Mortgage interest payments and other mortgage payments, such as mortgage protection insurance, should be excluded.
> Only those amounts that are actually paid have to be taken into account." (Eurostat 2014a, 185)

The following Figure 12 depicts the diverse patterns of mortgage principal repayments across Europe. Striking are those countries with a relatively low and stable principal repayment pattern over the entire life-cycle, what may signal intergenerational arrangements for the management of debts. In order to be able to understand these phenomena a joint analysis of principal and interest repayments is necessary (cf. infra) as well as a profound analysis of the peculiarities of the mortgage markets in the EU-28.

Figure 12: Median of mortgage principal repayment [medHH071kor] (only for age cohorts with 20 and more observations)



Source: Own calculation according to EU SILC 2014.

4. Interest repayment on mortgage

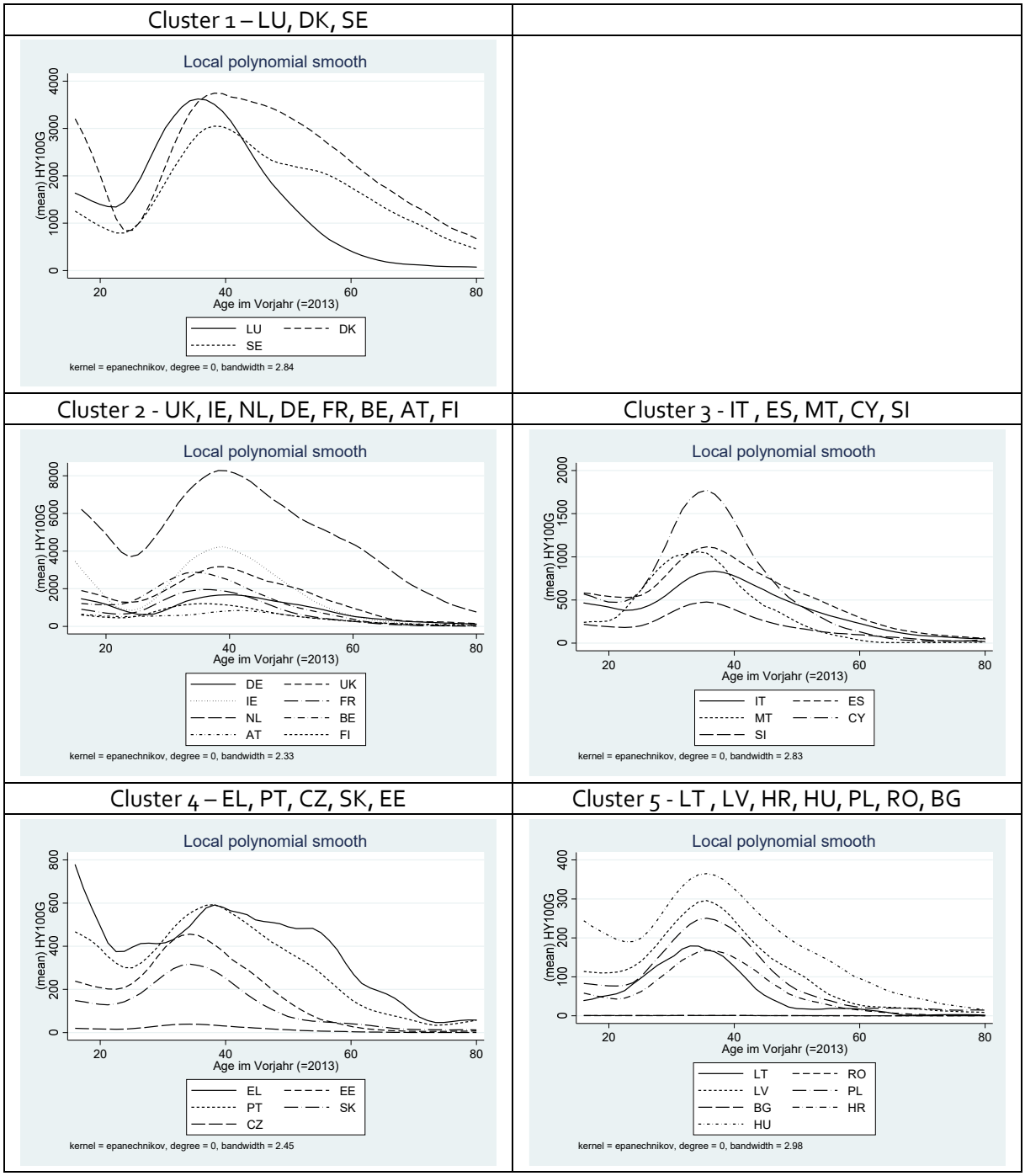
Variable definition: HY100G: Interest paid on mortgage

"**Interest paid on mortgage** refers to the total gross amount, before deducting any tax credit or tax allowance, of mortgage interest on the main residence of the household during the income reference period.
It excludes:

- Any other mortgage payments, either interest or principal, made at the same time, such as mortgage protection insurance or home and contents insurance;
- Payments on mortgages to obtain money for housing purposes (e.g. repairs, renovations, maintenance etc.) or for non-housing purposes.
- Repayments of the principal or capital sum." (Eurostat 2014a, 226)

In congruence with our hypotheses of a dichotomy of relevant investment options in the early life-cycle, the highest means of interest repayments can be found around the age of 35 to 40 (see Figure 13). The analysis yields the expected patterns over the life-cycle, albeit with significant differences within and among clusters.

Figure 13: Mean of interest repayment on mortgage [mHY100G]



Source: Own calculation according to EU SILC 2014

6. Other transfers increasing disposable income over one's lifecycle

Benefits and transfers are received by individuals for a number of reasons. Besides replacement of labour market income due to unemployment, children and family related transfers, education related transfers and housing related transfers are covered in the following.

1. Unemployment benefits

Unemployment benefits tackle the risk of loss of income due to unemployment although a person wants to actively participate in the labour market to earn his or her income. Often unemployment benefits are also paid for those entering the labour market after schooling or training or when retiring.

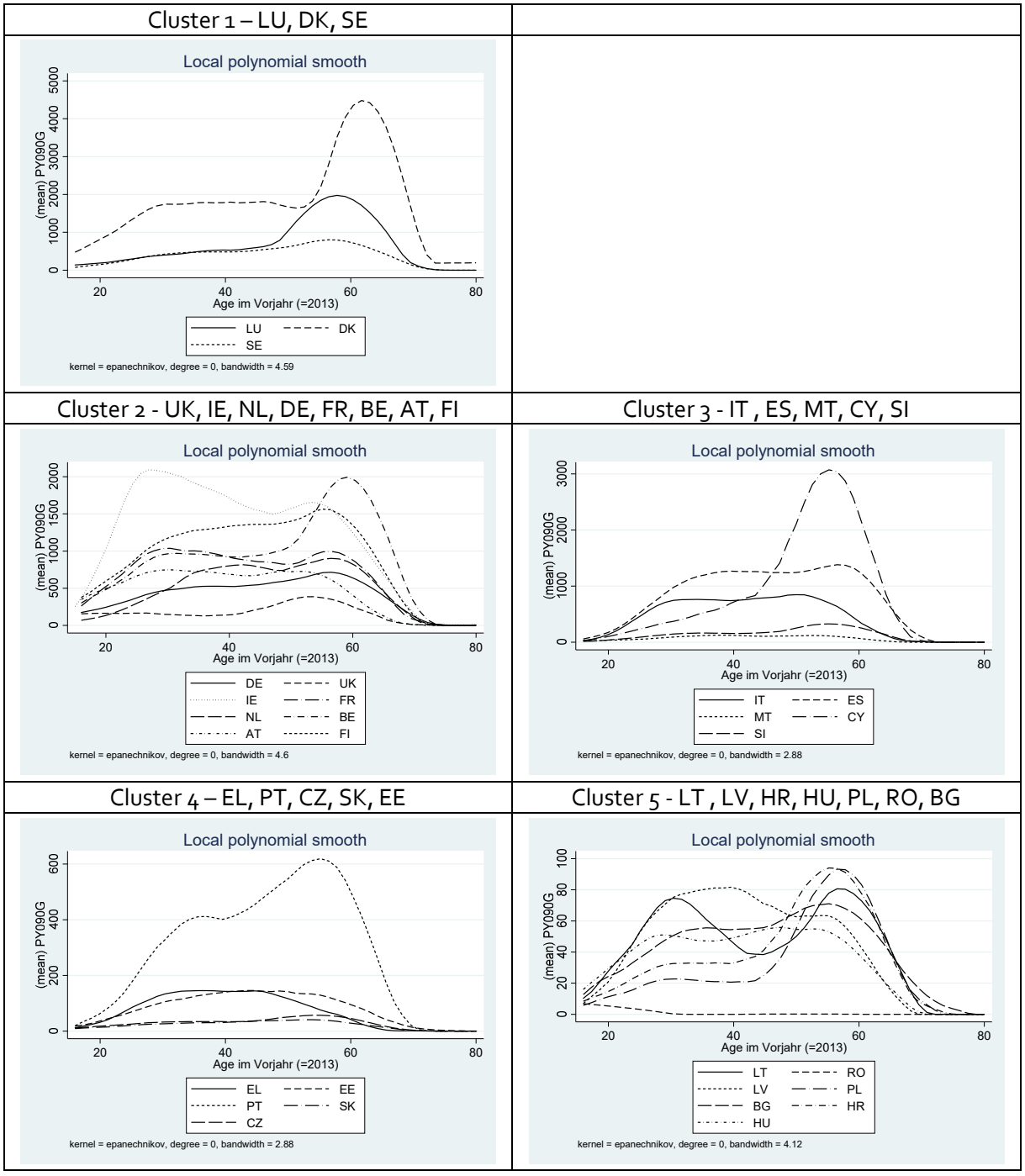
Variable definition: PY090G: Unemployment benefits

"**Unemployment benefits (PY090G):** Unemployment benefits refer to benefits that:

- Replace, in whole or in part, income lost by a worker due to the loss of gainful employment;
- Provide a subsistence (or better) income to persons entering or re-entering the labour market;
- Compensate for the loss of earnings due to partial unemployment
- Replace, in whole or in part, income lost by an older worker who retires from gainful employment before the legal retirement age because of job cuts made by their employer for economic reasons;
- Contribute to the cost of training or re-training people looking for employment; or
- Help unemployed persons meet the cost of travelling or relocating to obtain employment.
- These include:
- **Full unemployment benefits:** benefits compensating for loss of earnings where a person is capable of working and available for work but is unable to find suitable employment, including persons who had not previously been employed;
- **Partial unemployment benefits:** benefits compensating for the loss of wages or salary due to formal short-time working arrangements, and/or intermittent work schedules, irrespective of their cause (business recession or slow-down, breakdown of equipment, climatic conditions, accidents and so on), and where the employer/employee relationship continues;
- **Early retirement for labour market reasons:** periodic payments to older workers who retire before reaching standard retirement age due to unemployment or to job reductions caused by economic measures such as the restructuring of an industrial sector or of a business enterprise. These payments normally cease when the beneficiary becomes entitled to an old age pension.
- **Vocational training allowance:** payments by social security funds or public agencies to targeted groups of persons in the labour force who take part in training schemes intended to develop their employability;
- **Mobility and resettlement benefits:** payments by social security funds or public agencies to unemployed persons to encourage them to move to another locality or change their occupation in order to seek or to obtain work;
- **Severance and termination payments**: benefits compensating employees for employment that ends before the employee has reached the normal retirement age for that job;
- **Redundancy compensation:** capital sums paid to employees who have been dismissed through no fault of their own by an enterprise that is ceasing to operate or cutting down its activities.
  Other cash benefits: other financial assistance, particularly payments made to the long-term unemployed."(Eurostat 2014a, 327f.)

As Figure 14 shows the mean of unemployment benefits differ widely between and within clusters. However, two main patterns can be identified. One follows the earnings life cycle profile of Figure 2 above, initially there is an increase in younger years, followed by a rather stable phase, and a sharp decline in later years. The other pattern shows a prominent increase just before the age of around 60, with a rather steep fall around retirement age. Only Ireland in Cluster 2 and LT and LV in Cluster 5 show an early maximum for younger age groups. These findings indicate that also the unemployment rate shows similar life cycle patterns in the respective countries.

Figure 14: Mean of unemployment benefits [mPY090G]



Source: Own calculation according to EU SILC 2014.

2. Children and family related allowances

Decision on children represents one of the main decisions non-single households take in rather younger age. Most countries provide some form or another of child-related benefits. As Figure 15 shows there is a rather uniform life cycle pattern in nearly all EU-28 member states as regards age groups which gain from such transfers. There is a peak both for young adults as well as for age groups around the age of 40. However, countries differ widely in the median of the financial support they provide for families or children. While there seem to be no such transfers in IT, EL

and LT, HU stands out with very generous family related transfers – at least compared to the other countries in Cluster 5.

Variable definition: HY050G: Family/children related allowance

"**Family/children related allowance (HY050G):** The Family/children Function refers to benefits that:

- Provide financial support to households for bringing up children
- Provide financial assistance to people who support relatives other than children
- It includes:
- Income maintenance benefit in the event of childbirth: flat-rate or earnings-related payments intended to compensate the parent for loss of earnings due to absence from work in connection with childbirth for the period before and/or after confinement or in connection with adoption;
- Birth grant: benefits normally paid as a lump sum or by instalments in the case of childbirth or adoption;
- Parental leave benefit: benefit paid to either mother or father in the case of interruption of work or reduction of working time in order to bring up a child, normally of a young age;
- Family or child allowance: periodical payments to a member of a household with dependent children to assist with the costs of raising children;
- Alimonies or supports paid by government (central or local) if the spouse for some reason does not pay the alimony/child support. The amount paid by the government should not be recorded in variables HY080 and HY081;
  Other cash benefits: benefits paid independently of family allowances to support households and help them meet specific costs, such as costs arising from the specific needs of lone parent families or families with handicapped children. These benefits may be paid periodically or as a lump-sum." (Eurostat 2014a, 217)

Figure 15: Median of children and family related allowances [medHY050G]

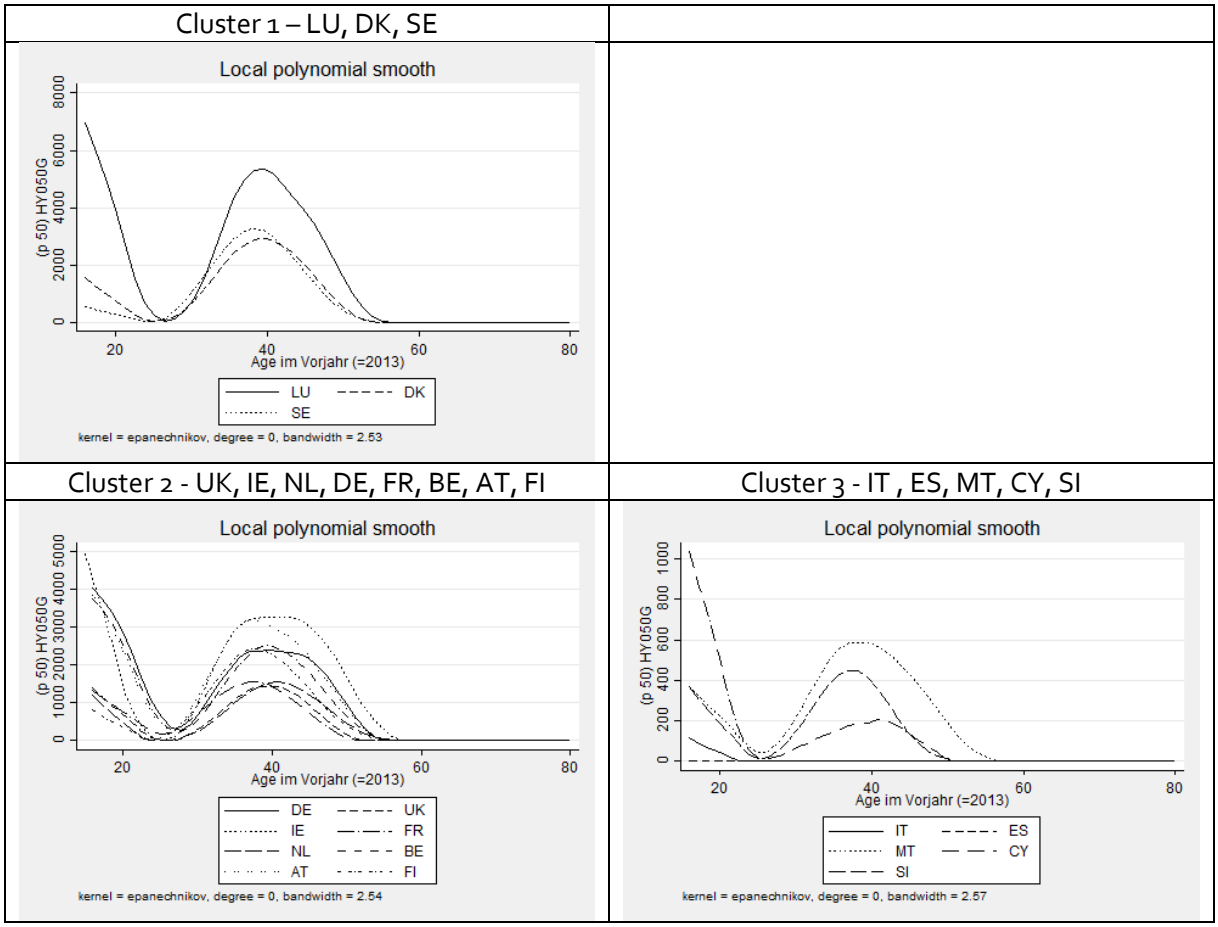
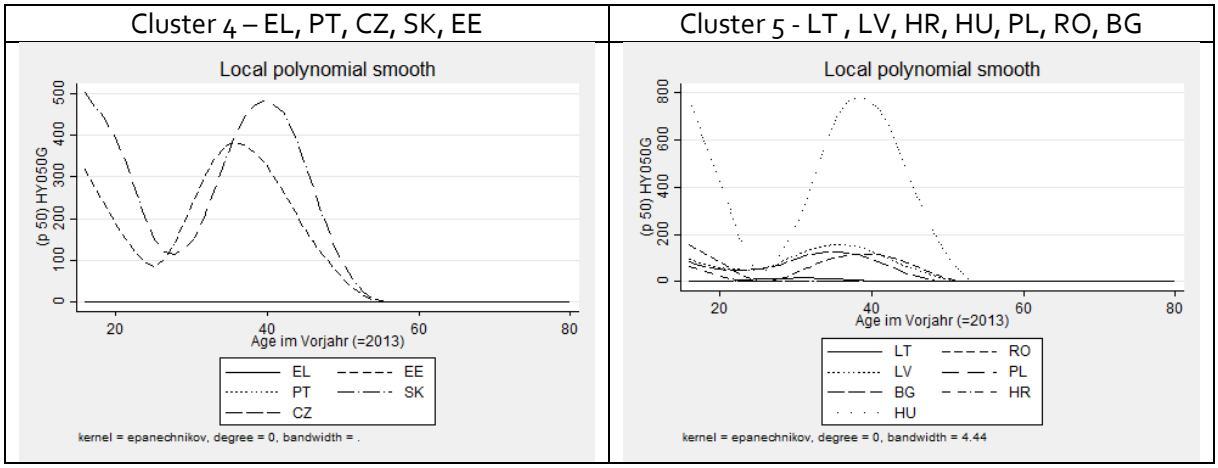


Figure 15: Cont.



Source: Own calculation according to EU SILC 2014.

3. Education related allowances

Variable definition: PY140G: Education-related allowances

> ***"Education-related allowances (PY140G):*** Education allowances refer to grants, scholarships and other assistance for education that is received by students." (Eurostat 2014a, 333)

Investment in one's own education is an important budget position for most households. Accordingly, public policies are targeted to promote investment in human capital by going to university, for example, through appropriate transfers. As Figure 16 shows, there is again a rather uniform life cycle pattern across all Clusters, with a peak of the mean for those aged 20 to 30. But again there is quite a variation within Clusters.

Figure 16: Mean of education related allowances [mPY140G]

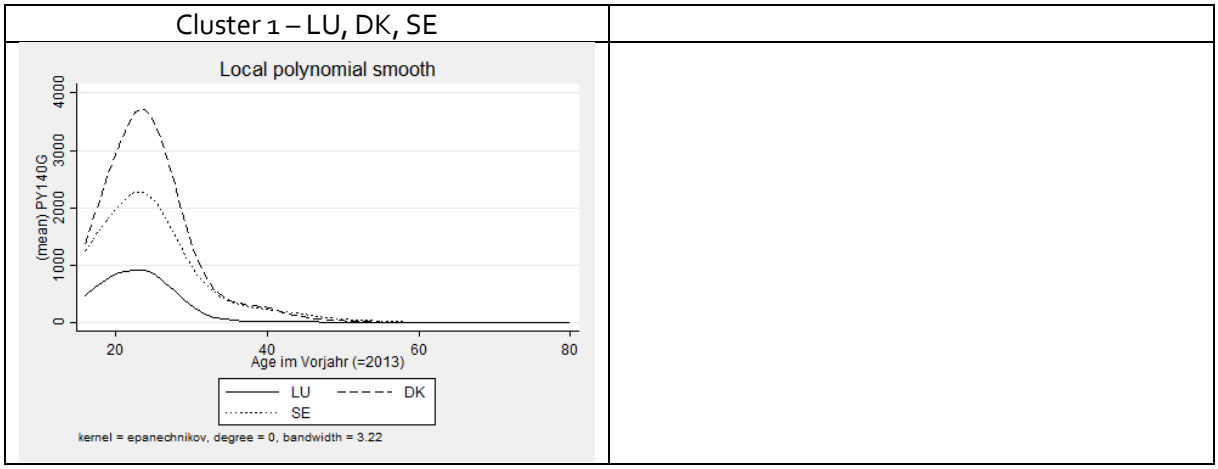
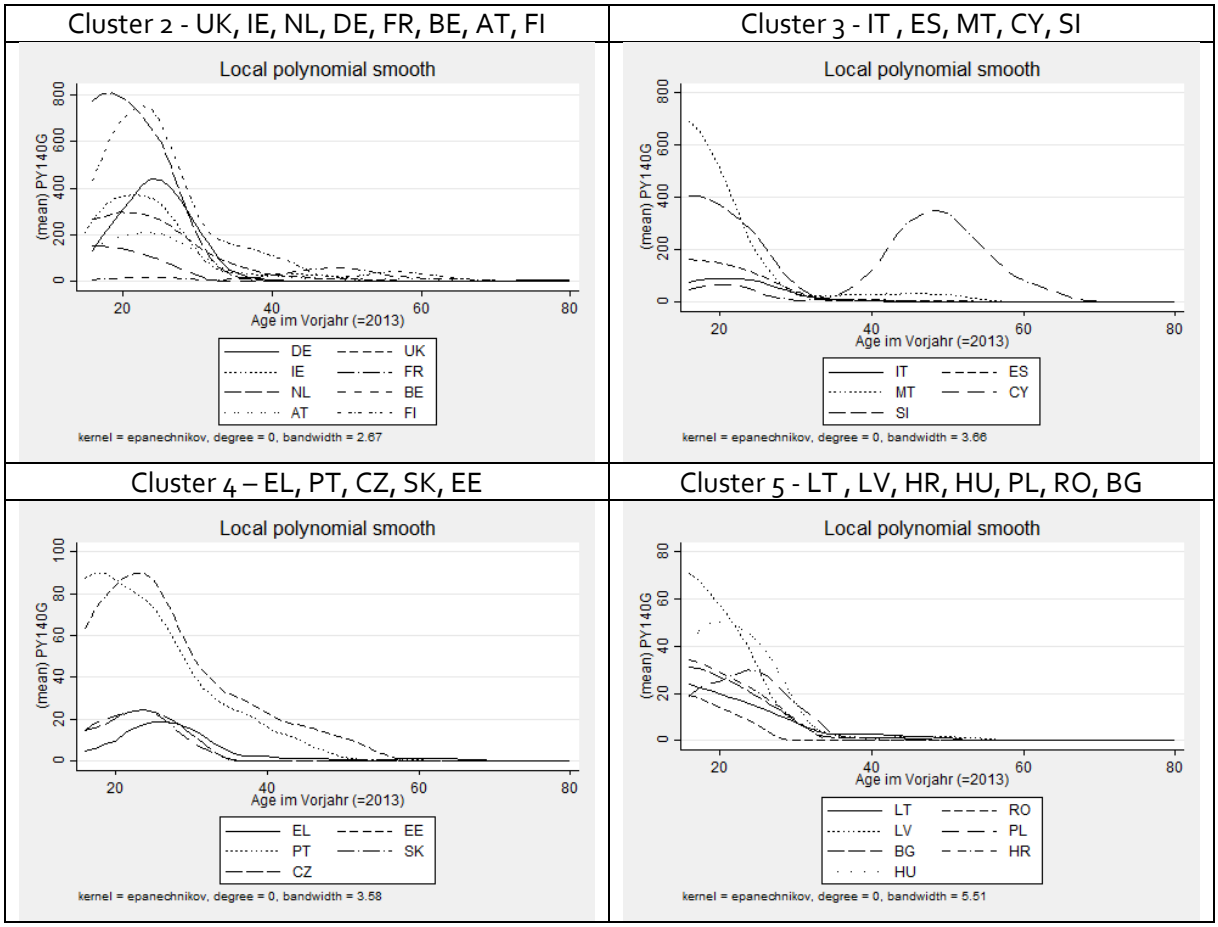


Figure 16: Cont.



Source: Own calculation according to EU SILC 2014.

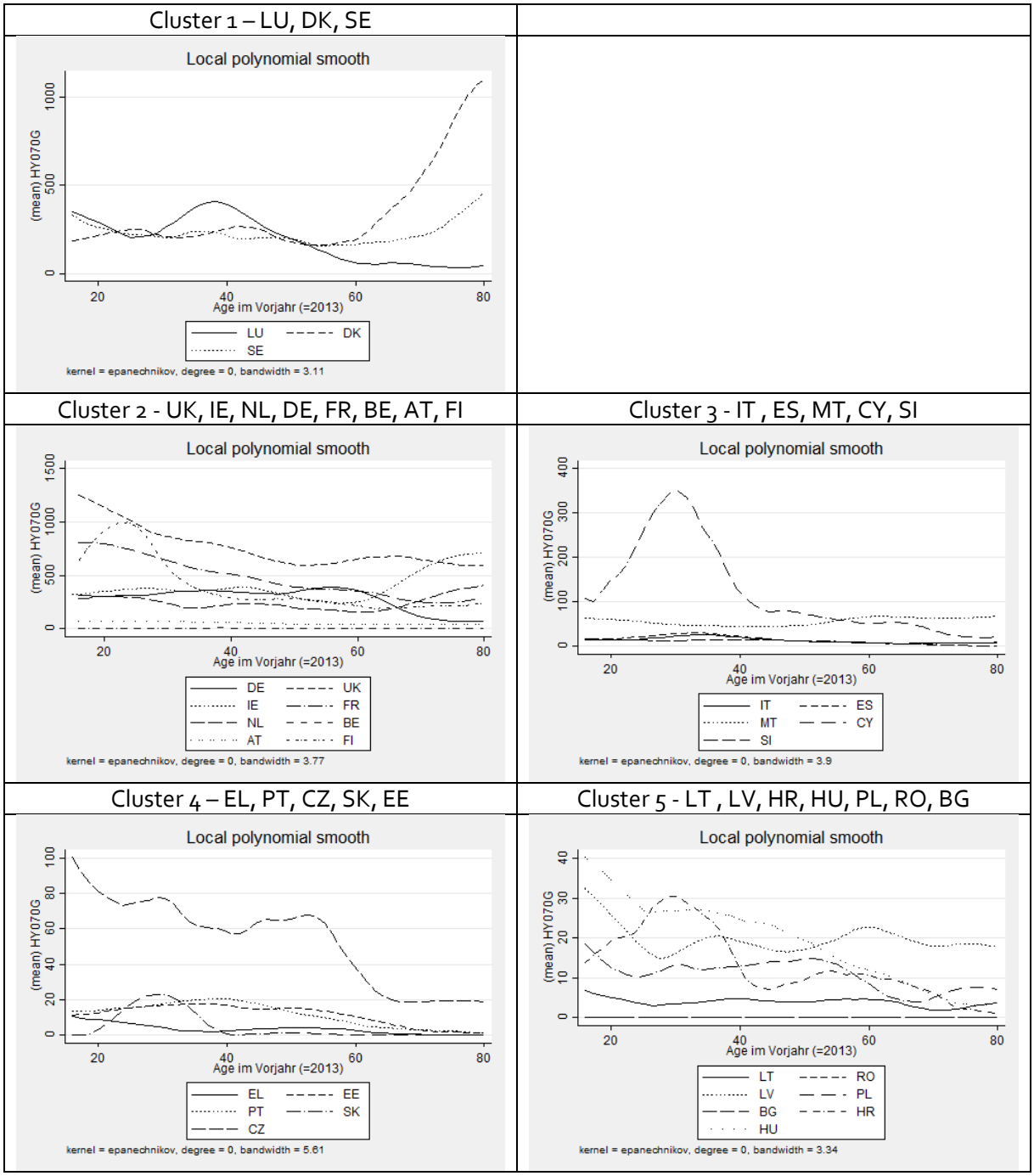
4. Housing related allowances

Variable definition: HY070G: Housing allowances

> **"Housing allowances (HY070G):** The Housing Function refers to interventions by public authorities to help households meet the cost of housing. An essential criterion for defining the scope of a Housing allowance is the existence of a qualifying means-test for the benefit.
> It includes:
> Rent benefit: a current means-tested transfer granted by a public authority to tenants, temporarily or on a long-term basis, to help with rent costs.
> - Benefit to owner-occupiers: a means-tested transfer by a public authority to owner-occupiers to alleviate their current housing costs: in practice often help with paying mortgages and/or interest.
> - It excludes:
> - Social housing policy organised through the fiscal system (that is, tax benefits)." (Eurostat 2014a, 217f.)

All capital transfers (in particular investment grants)"Expenses for houses are one of the most important budget position for individuals and households. Housing costs concern both tenants and owners of houses. Consequently, the EU-SILC variable on housing related allowances includes quite diverse transfers to households. Thus, it is not surprising that life cycle patterns vary broadly both across and within clusters as Figure 17 shows. However, there is no indication that generally either younger or older age groups receive on average more often or higher housing related transfers.

Figure 17: Mean of housing related allowances [mHY070G]



Source: Own calculation according to EU SILC 2014.

7. Findings regarding the country case studies

The composition of the countries selected also takes differences in financial stability/ vulnerability into account, which is of particular importance for old-age security products as well as for homeownership – as the Great Financial Crisis (GFC) has shown. Four of the countries are

members of the Eurozone (DE, IE, IT, NL), while HU and the UK have their own currencies. However, compared to the UK, which is a large open economy, Hungary, which as a small open economy, is rather vulnerable with regard to financial market instabilities as the GFC has shown. But there are also large differences among Eurozone members with respect to financial vulnerability (see Ireland and Italy compared to Germany and the Netherlands during the recent financial and Eurozone crisis).

Home ownership rates differ markedly between member states, with DE showing the lowest rate of home ownership in the EU-28 and – together with the NL – a very high share of persons living in rented dwellings. While the other four countries show very high rates of homeownership, with HU leading. The latter is a consequence of the privatization approach taken to public property during the transition process in Hungary in the early 1990s. Countries like IE and the UK have a very well developed mortgage market, which is a key element for acquiring private homeownership.

Pension systems differ in regard to the importance of public, occupational and private pension schemes within the EU-28. These are also covered by our selection of countries. In addition, there are also differences in regard to the outcome of the respective types of national pension systems. While HU, the NL and IE show a below average risk of poverty rate for person aged 65+ (2012), this risk is above average for DE, the UK and IT. However, when looking at the percentage of severe material deprivation of persons 65 years or over one finds that HU and IT are above the EU-28 average with the other four countries being below average. These data are much more pronounced for women than for men (Megyeri 2018).

Countries from different legal origins differ in many respects when it comes to regulatory and taxation rules (LaPorta 1999). Four out of the five types of legal origin are included in our country coverage: The UK and IE are of British legal origin, IT and the NL are of French legal origin, DE represents a country with a German legal origin order, while HU shows the legacy of socialist legal origin.

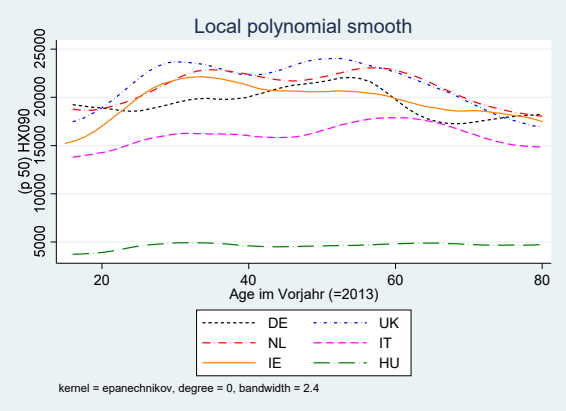
1. Main income components

Following from the cluster analysis on the median of the equivalised disposable household income over the life cycle, the six countries in our case studies belong to three different clusters: DE, IE, NL and UK to Cluster 2, IT to Cluster 3 and Hu to Cluster 5 (see section 2.2).

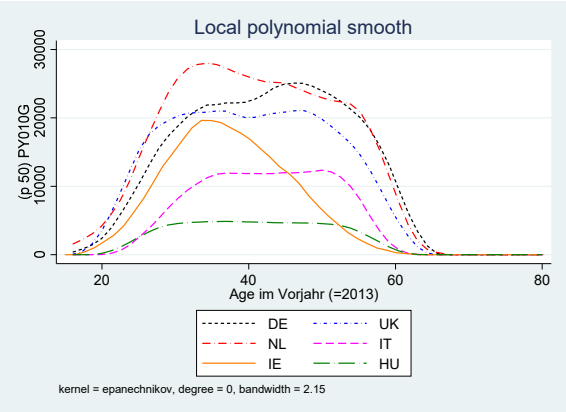
Figure 18 shows the variation over the life cycle between these six countries for the different income components. While the differences in income still hold for the median of employee cash or near cash income, IT performs as least as well as the other countries from Cluster 3 when it comes to old-age benefits. In regard to income from survivor's benefits, pensions from individual private plans and imputed rent from homeownership there is much more variation, independent of employing mean or conditional median values. This reflects the broad differences in how social security systems are designed.

Figure 18: Main Income components

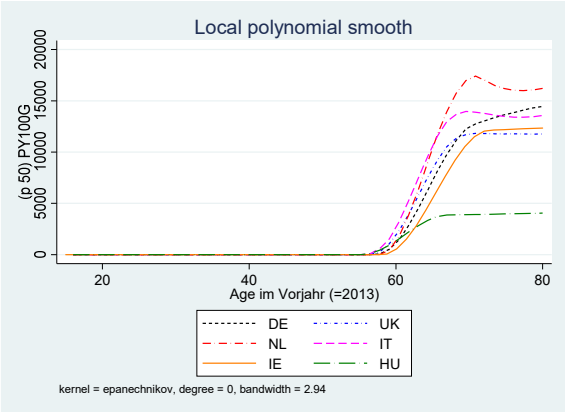
Median of equivalised disposable household income [medHX090]



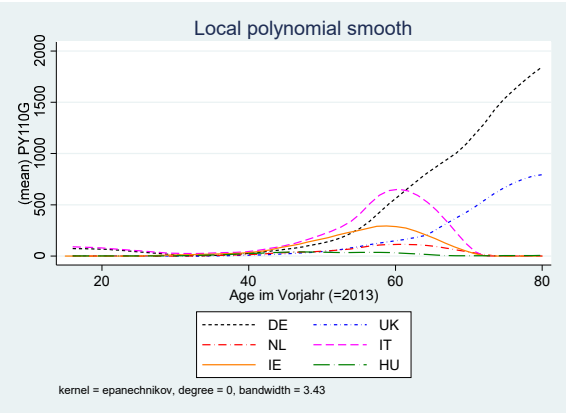
Median of employee cash or near cash income [medPY010G]



Median of old-age benefits [medPY100G]



Mean of survivor's benefits [mPY110G]



Mean of pensions from individual private plans [mPY080G]

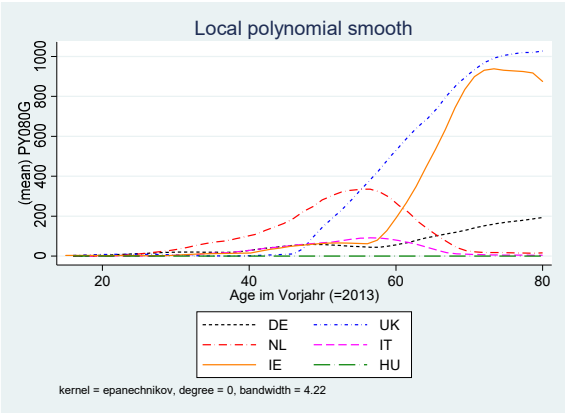
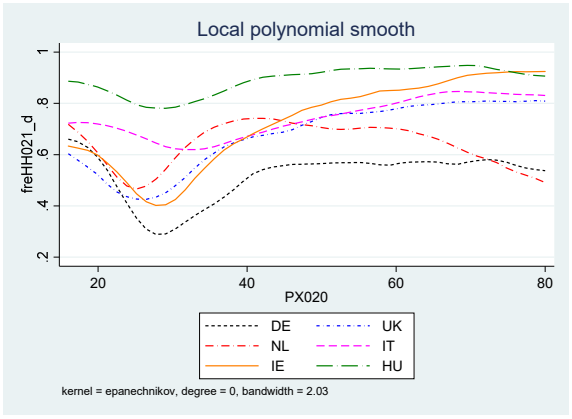
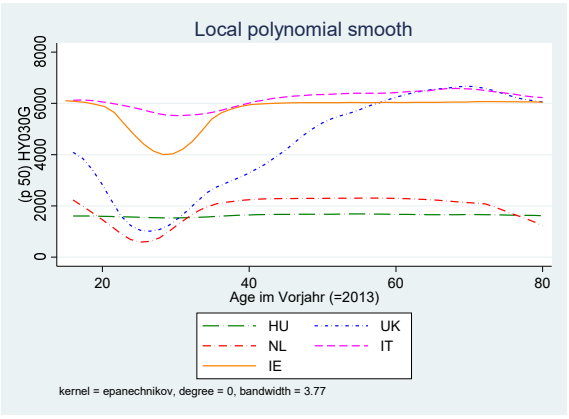


Figure 18: Cont.

Private homeownership rate [freHH021_d]	Median of imputed rent from homeownership (DE no data) [medHY030G]
	

Source: Own calculation according to EU SILC 2014.

2. Transfers and other social benefits

The life cycle patterns of transfers and other social benefits also show broad variation over the six countries. While there is some uniformity in which age groups particularly participate from the different benefits, the variation in the conditional median values are much more pronounced, again reflecting the broad differences in the underlying social security policies and thus in the priorities as showing in regard to eligibility and generosity of the different policies (see Figure 19).

Figure 19: Transfers and other social benefits

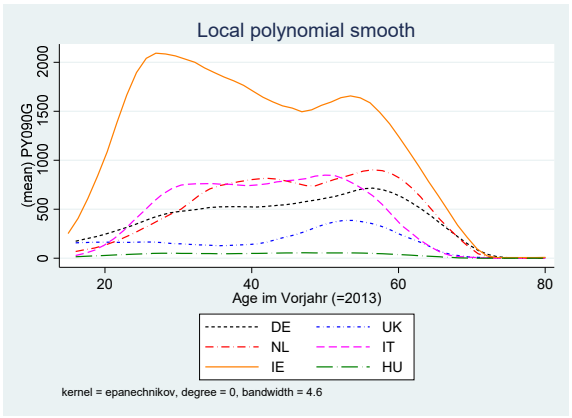
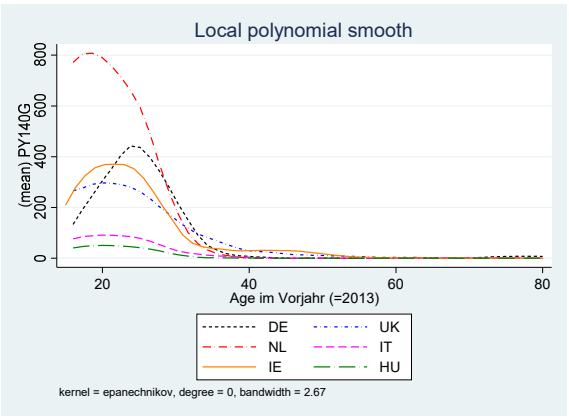
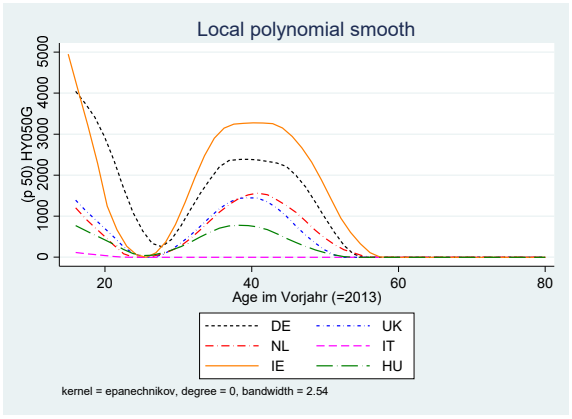
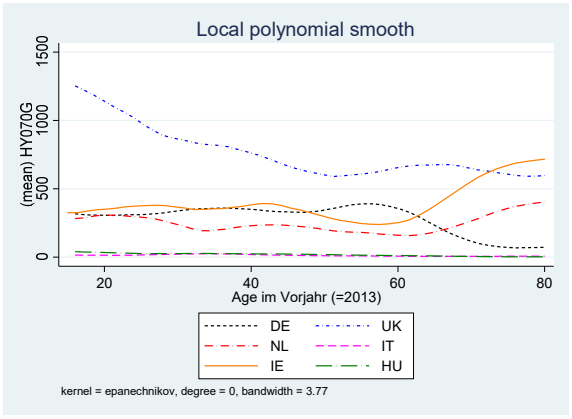
Mean of unemployment benefits [mPY090G]	Mean of education related allowances [mPY140G]
	

Figure 19: Cont.

Median of children and family related allowances [medHY050G]	Mean of housing related allowances [mHY070G]
	

Source: Own calculation according to EU SILC 2014.

3. Taxes and social security contributions

While the transfers and benefits presented in section 2 above increase disposable income, taxes and social security contributions reduce it. Figure 2= shows that taxes on labour income and social security contributions from employees vary over the life cycle in the same way as employers' social security contributions. Again, IT shows rather no difference when compared with the countries from Cluster 2 in our case studies. When it comes to taxes on wealth, the UK is a clear outlier, indicating a different approach to taxation income from different sources.

Figure 20: Taxes and social security contributions

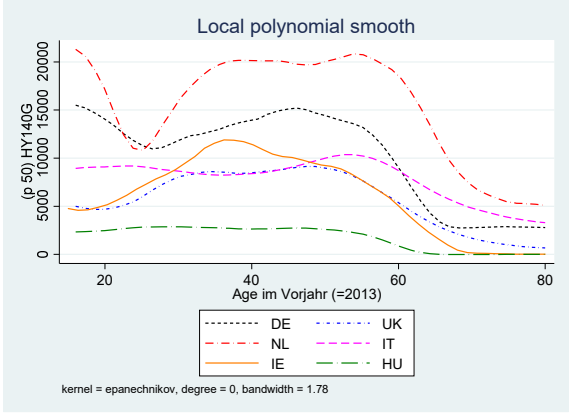
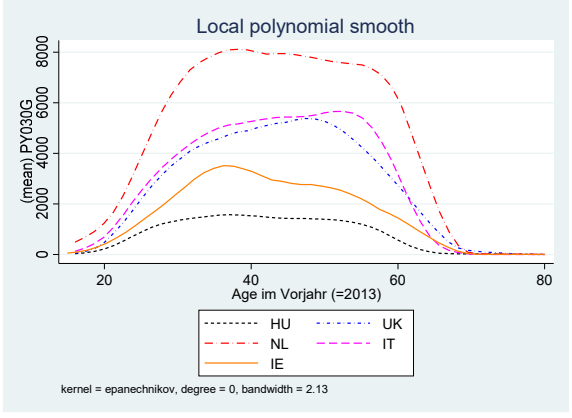
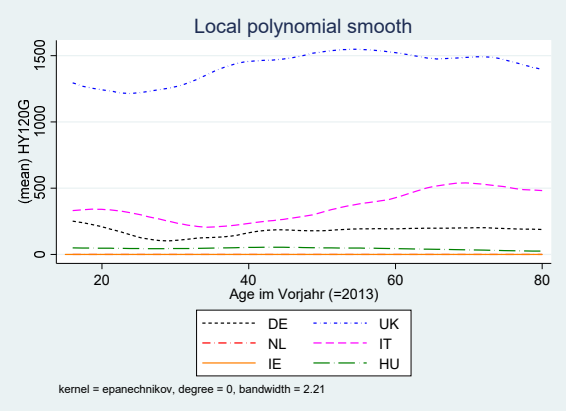
Median of tax on income and social contributions [medHY140G]	Mean of employers' social insurance contributions (DE no data) [mPY030G]
	

Figure 20: Cont.

Mean of taxes on wealth [mHY120G]	
	

Source: Own calculation according to EU SILC 2014.

4. Individual contributions to private pension plans and private homeownership

Figure 21 shows the burden resulting from investing in private pensions and/ or homeownership over the life cycle. Again, there is a lot of variation between the countries from the same clusters. Thus, disposable household income seems not to be the main factor determining investment in these assets. For a more detailed analysis of incentives set by public policies see the case studies presented in Eckardt/ Dötsch/ Okruch (2018).

Figure 21: Individual contributions to private pension plans and spending on acquiring private homeownership

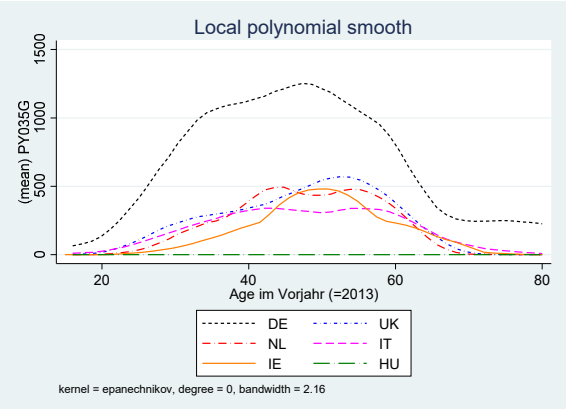
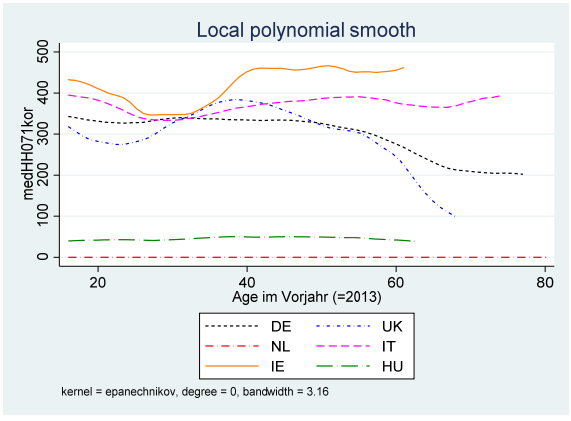
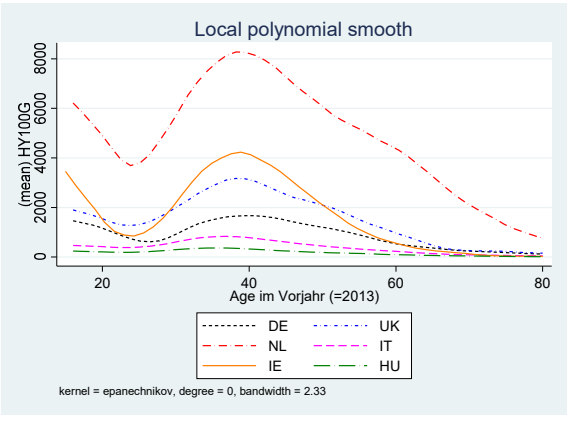
Mean of contributions to individual private pension plans [mPY035G]	
	

Figure 21: Cont.

Median of mortgage principal repayment [medHH071kor] (only for age cohorts with 20 and more observations)	Mean of interest repayment on mortgage [mHY100G]
	

Source: Own calculation according to EU SILC 2014.

8. Conclusion: Stylized facts regarding home ownership and personal private pensions

From the literature the following stylized facts emerge (see Eckardt/Dötsch/ Okruch 2018). Both homeownership rates and assets held in private personal pensions increase with income and age. In addition, the share of homeowners who live under poverty or who are at risk of poverty is lower than it is regarding the share of renters. This holds also for pensioners. Moreover, personal private pensions play a largely small role providing old-age income when compared to statutory or occupational pensions. Furthermore, governments apply public policies like tax deductions or subsidies to promote homeownership and savings in personal old-age provisions. These features are all common to different countries in the EU (and it also holds for the US). However, the life cycle patterns presented above show the broad variation for these assets across the EU-28. Only in part do they reflect differences in individual disposable income.

In regard to a number of features there are broad differences. EU member states vary markedly in the overall share of homeownership vs. renting in the housing market as well as regards the overall composition of the pension system with its different sub-systems. As a consequence, replacement rates and at-risk of poverty level for the elderly vary, too. And while all EU member states use public policy instruments to influence both housing and private old-age provisions, there is no unified approach both in regard to policy objectives nor policy instruments to tackle homeownership acquisition and private old-age provision in a coherent and consistent way (see Eckardt 2018). The above explorative analysis thus has to be complemented with a more detailed study of the underlying public policies as presented in the six country case studies in Workstream 2.1 (see Eckardt/ Dötsch/ Okruch 2018). In addition, it will complement future work to be done on ERS market potential by using EU-SILC data.

References

Alessie, R., Lusardi, A. and T. Aldershof (1997): Income and Wealth over the Life Cycle: Evidence from Panel Data. In: *Review of Income and Wealth*, Vol.43, 1-31.

Conde-Ruiz, Ignacio, González, Clara I. (2016): From Bismarck to Beveridge: the other pension reform in Spain, in: *SERIEs* Vol.7, 461–490, DOI 10.1007/s13209-016-0148-3.

Eckardt, M. (2018): Personal Pensions and Homewonership in the EU – an Overview, in: Eckardt, M., Dötsch, J., Okruch, S. (eds.) (2018): *Old-Age Provision and Homeownership – Fiscal incentives and Other Public Policy Options*, Heidelberg: Springer, forthcoming.

Eckardt, M., Dötsch, J., Okruch, S. (eds.) (2018): *Old-Age Provision and Homeownership – Fiscal incentives and Other Public Policy Options*, Heidelberg: Springer, forthcoming.

Eurostat (2014a): *Quality of Life, Methodological Guidelines and Description of EU-SILC Target Variables*, Directorate F: Social Statistics, Unit F-4, 2014 operation (Version October 2014), DocSILC065 (2014 operation).

Eurostat (2014b): *Differences Between the Data Collected (as Described in the Guidelines) and Anonymised User Database*, Year 2014, Cross-sectional Data, Directorate F: Social Statistics, Unit F-4.

Eurostat (2016): *Access to Confidential Data for Scientific Purposes (Scientific Use Files), Guidelines for Publication*, Directorate B: Corporate Statistical and IT Services, Unit B-1: Quality, Methodology and Research, Luxemburg, September 2016.

Eurostat (n.d.): *Income and Living Conditions*, http://ec.europa.eu/eurostat/web/income-and-living-conditions/overview [last access: 28/11/2017].

Kaufman, L., and P. J. Rousseeuw (1990): *Finding Groups in Data: An Introduction to Cluster Analysis*, New York: Wiley.

LaPorta, R., Lopez-de-Silanes, F., Shleifer, A. and R. Vishny (1999): The Quality of Government, in: *Journal of Law, Economics and Organization*, Vol. 15, 222-279.

Megyeri, E. (2018): Old-Age Poverty and Residential Property in the EU – An Analysis with the EU-SILC 2014 Data, in: Eckardt, M., Dötsch, J., Okruch, S. (eds.) (2018): *Old-Age Provision and Homeownership – Fiscal incentives and Other Public Policy Options*, Heidelberg: Springer, forthcoming.