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International Experience in Financing Self-Employed Pensions

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ABSTRACT

The rapid development of modern self-employment, the massive transition from employment to self-employment and vice versa is a challenge for traditional pension systems. The Organisation for Economic Co-operation and Development (OECD) responded by adopting compulsory state pension schemes for the self-employed shared with employees. Russia following global trends with a small-time lag, unlike others, provides an unconditional guarantee of social pensions. It is all the more important to study the advanced international experience in attracting the self-employed to pension insurance. This is **the aim** of the study. Research **tasks** are as follows: to identify different approaches to organizing pension insurance for the self-employed across OECD countries, to examine the mechanisms and factors arising, and to evaluate their performance. **The research method** is cluster analysis of the generated self-employed pensions parametric indicators database according to OECD data (2019–2021) (18 indicators as part of clustering, architecture, finance, performance factors) for 28 countries. The study identifies 3 clusters (approaches) to the organization of pension provision for the self-employed: 1 — employee-like mandatory contributions to state pension schemes; 2 — mandatory contributions with advantages; 3 — voluntary pension contributions with advantages. In general, none of the approaches can be called "the best". The effectiveness of pension decreases with any form of low-income self-employed inclusion in income-based pension schemes, as well as dependent self-employment. The author **concludes** that for Russia alternative options for self-employed pensions are quasi-mandatory pension insurance, self-employed employee-like participation in voluntary funded pension schemes only, state co-financing, practical training in financial literacy without going into the depth of financial knowledge. Discussion for **further research** is a detailed study of the application of the results into self-employed pension insurance practice in Russia.

Keywords: self-employed; pension financing; cluster analysis; parametric characteristics; minimum income; theoretical pension; relative pension level; contribution rate

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INTRODUCTION

The rapid development of self-employment, as well as non-standard forms of employment, is a challenge for traditional pension systems built on the stability of contributions. The dominant trend has been the transition of the self-employed to the same mandatory public pension schemes as employees.

The earnings of a self-employed person (full-time worker) are lower than those of an employee.[1] The transition to the status of self-employed reduces the future pension [1]. The incomes of the self-employed differ: instability, unverifiable, less dependence on the profession and level of education [2].

The situation is aggravated by the growth of self-employment without employees [1, 3], which is often considered as an intermediate form between employment and unemployment [4, 5]. A large review of the literature on the issues of single forms of self-employment is given in the works of Van Stel and De Vries [6]. Their detailed analysis after 2020 is presented by T. Boeri [4].

Comprehensive studies of the organization of pension provision for the self-employed are presented in two works: "A look at pensions" by the OECD 2019,[2] as well as "The policy of social protection of the self-employed" by S. Spasova [7].

The study of self-employment in Russia is focused on the issues of its legalization [8, 9]. There is an opinion about a small number of self-employed for a noticeable impact on the Russian pension system [10].

The study of the pension provision of the self-employed in Russia has not yet been formed as a separate area and is considered in the system of wages, incomes, taxation and social insurance (V. D. Roik, A. K. Soloviev, O. N. Grabova, M. E. Dmitriev A. N. Pokida, O. V. Sinyavskaya, V. E. Gimpelson, R. I. Kapelyushnikov, E. N. Tikhonova, etc.).

The authors note "a complex of institutional and parametric problems of the state pension system" [11, p. 188], in which the involvement of the self-employed is impractical due to the discrepancy between pension rights and state obligations [11, p. 188; 12, p. 227].

The task is not to expand the coverage of the self-employed (prevails abroad), but to ensure a decent level of their pensions [13, p. 121]. Although it is noted: unacceptably low coverage of the self-employed by pension insurance — 15–20% (40–60% in developed countries), the risk of poverty for older people [13, p. 122], the forced nature of self-employment in Russia [9].

On the one hand, mandatory pension insurance contributions in Russia retain the features of a tax and are paid by employers. The size of the solidarity tariff has little effect on the size of the future pension [14]. A minimum fixed contribution based on the minimum wage for individual entrepreneurs (and voluntarily self-employed) is "not beneficial" for the pension system [15].

On the other hand, the low-income level of the self-employed does not arouse their interest in pension insurance [16]. A large burden falls on the system of social pensions and the state budget.

Russia may have its own pension system for the self-employed. At the same time, there is no doubt about the rapid spread of self-employment against the background of low incomes of the population [17, p. 517], job cuts in the economy [18, p. 24]. It is all the more important to study the advanced foreign experience of attracting the self-employed to pension insurance and correctly apply it to Russian conditions.

The aim of the article is to generalize the international practice of organizing pension provision for the self-employed. The author set **the task** of identifying common approaches in OECD countries to involving the self-employed in pension insurance, factors related to them; assessment of the effectiveness of approaches, including for Russia.

The article developed and prepared a database of parametric characteristics of pension systems with the participation of the self-

[1] OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (accessed on 14.09.2020).

[2] See above.

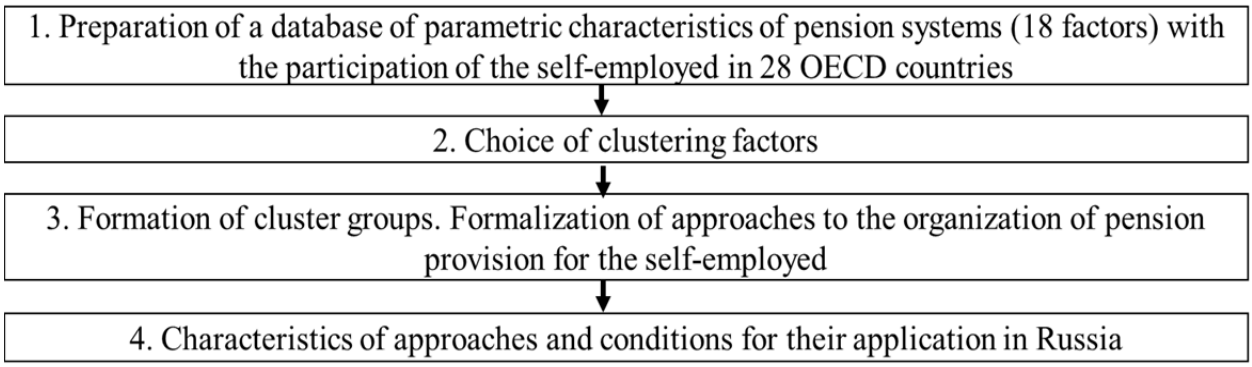

Fig. 1. **Research method**

Source: author's approach.

employed, identified 3 approaches (cluster) to the organization of pension provision for the self-employed in the OECD. A comparative analysis of these approaches was carried out as part of cluster-forming factors, factors of the architecture of pension systems, financial factors and cluster performance factors (18 indicators). Attention is paid to the mechanisms for improving the conditions of participation for the self-employed. An approach has been systematized within which it is possible to organize the provision of pensions for the self-employed in Russia. Separate effective tools and mechanisms for involving the self-employed in pension insurance in Russia will be presented in the next article.

MATERIALS AND METHODS

The practical basis of the study was the database of parametric characteristics of pension systems by 18 indicators with the participation of the self-employed in 28 OECD countries: Austria, Belgium, Great Britain, Hungary, Germany, Greece, Denmark, Ireland, Iceland, Spain, Italy, Canada, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovenia, USA, Turkey, Finland, France, Czech Republic, Switzerland, Sweden, Estonia (presented on an external electronic resource [19]). The base was formed using OECD statistics on self-employment rates,[3] as well as data for the Pensions at a Glance report, Part 2,[4] data from national agencies. The cluster analysis method was used (*Fig. 1*).

RESULTS AND DISCUSSION

1. Base of parametric characteristics of pension systems with the participation of the self-employed

A database of parametric characteristics for 28 OECD countries for 2019–2020 has been prepared (presented on an external resource [19]). A system of 9 qualitative and 9 quantitative indicators was used as part of clustering factors, architecture, financial factors, and performance indicators of pension systems with the participation of the self-employed (*Table 1*).

2. Choice of clustering factors

Factors A1 and A2 (*Table 1*) are defined as cluster-forming.

1. The evolution of approaches went from denying the need to resolve this issue to mandatory participation in pension insurance for all categories of the self-employed in general schemes with employees (*Table 2*).

2. Combinations of factors A1 and A2 make it possible to distinguish three approaches (clusters) to the organization of pension provision for the self-employed (*Table 3*).

A separate study is required for the self-employment scale (B4) and the income level of the self-employed (B5).

[3] OECD (2020), Self-employed without employees (indicator). URL: https://doi.org/10.1787/5d5d0d63-en (accessed on 14.09.2020).

[4] OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (accessed on 14.09.2020).

Table 1

System of self-employed pensions parametric indicators

	A. Qualitative indicators*		B. Quantitative indicators*
Clustering factors	**A1** — Compulsory or voluntary participation of the self-employed **A2** — Equality of insurance rates for self-employed and employees or lower rates for self-employed	Cluster performance factors	**B1** — The size of the theoretical pension of the self-employed as % of the theoretical pension of the employee **B2** — The size of the average self-employed pension as % of the average employee pension **B3** — Volume of self-employed contributions relative to the share of self-employed in the employed population, %
Architecture factors	**A3** — Architecture of pension systems with the participation of the self-employed **A4** — Coverage of all self-employed or their individual categories **A5** — Presence or absence of benefits compared to employees	Architecture factors	**B4** — Share of self-employed without employees in the employed population, % **B5** — The level of income of the self-employed relative to the average income of an employee, %
Financial factors	**A6** — Contribution base **A7** — Discrete base A6 **A8** — The presence of a minimum income for calculating contributions **A9** — The presence of requirements for minimum income and (or) the number of working hours for the appointment of a pension	Financial factors	**B6** — Tariff for calculating contributions **B7** — Income levels of the self-employed for the calculation of contributions (in the case of a discrete approach) **B8** — Minimum income for calculating contributions **B9** — Frequency of calculation and payment of contributions

Source: author's approach.

Comments to Table 1:

A1, A2 — *clustering factors*. The position of countries relative to the evolutionary trend *architecture factors* (A3 — A5, B4 — B5).

A3, A4, A5 — a set of pension subsystems with the participation of the self-employed. They differ: in the form of ownership — public or private; by coverage — general or professional, for all self-employed or individual categories; basic income or tax-financed; shared with employees or separate schemes, distributions or savings; with the presence of benefits for the self-employed or with their absence (link with B4).

B4, B5 — quantitative characteristics of self-employment. Determine the place of the self-employed in the economy, their income potential. *Financial factors* (A6 — A9, B6 — B9).

A6, B 6 — *contribution calculation base*. For the employee, part of the contribution (or the entire contribution) is paid by the employer, the tariff is applied to income minus income tax. The self-employed person (usually) pays the full rate in relation to gross income himself. Mechanisms that reduce the contributory base can be used to level the playing field for the self-employed (link to B4).

A7, B 7 — *discreteness of the contribution calculation base*. Calculation of the contribution not from real income, but from its established general limits (optional) or using fixed contributions (link to B4).

A8, B 8 — *the presence of an established minimum income for the calculation of contributions*. In income-based pension schemes, the participation of the self-employed with incomes below a certain level is inappropriate. The options are: accrual all the same from the minimum level (minimum contribution concept) or transition from mandatory to voluntary participation or withdrawal (participation suspension) from the pension scheme.

A9 — *the presence of requirements for a minimum income and (or) the number of working hours for receiving a pension*. As a rule, reduces the coverage of the self-employed with pension insurance.

B9 — *frequency of calculation and payment of contributions (*monthly, quarterly, annually). Less frequency = more accommodation to the unstable income of the self-employed.

Cluster performance factors (B1 — B4).

B1 — *theoretical pension* — the calculated value of the pension of a self-employed person with a regular income equal to the average salary in the country from the age of 22 to retirement age, as% of the employee's theoretical pension.[1]

B2 — *the size of the average pension of a self-employed person,* as% of the average pension of an employee. Calculated according to state pension schemes.[2]

B3 — an indicator of the share of financial participation of the self-employed in state pension schemes, considering the spread of self-employment in the country's economy.

B4 — *the share of self-employed without employees in the employed population,%*. Self-employment indicator in modern forms, separately for men and women.[3]

[1] OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (Fig. 2.13) (accessed on 14.09.2020).

[2] Там же, Fig. 2.6.

[3] OECD (2020), Self-employed without employees (indicator). URL: https://doi.org/10.1787/5d5d0d63-en (accessed on 14.09.2020).

Table 2

The evolution of self-employed pensions

I stage (until the 1970s)	II stage (the 1970s to the 1990s)	III stage (the 1990s to the 2010s)	IV stage (the 2010s to present)
Without the participation of the state. Without incentive mechanisms	From the state — a basic minimum, subject to certain conditions. Stimulation of voluntary participation of the self-employed in non-state pension plans [20, Table 1]	Active reform of pension systems. Selective compulsory participation of the self-employed in income-based pension schemes. Without special adaptation mechanisms. At the same time, insurance rates increased. Pension schemes were formed for self-employed certain professions (by 2000, 12 countries: Spain, Austria, Belgium, Finland, France, Germany, Greece, Italy, Japan, Korea, Poland, Turkey (the last 6 for farmers) [20, Table 2]	Focus on mandatory participation of the self-employed in income-based public pension schemes, together with employees Adapting conditions for the participation of the self-employed

Source: analysis results.

Table 3

Cluster analysis results

Cluster No.	Cluster 1	Cluster 2	Cluster 3
Countries *	13 countries out of 28: HU, GR, IS, ES, CA, LT, LU, PL, SL, US, TU, CZ, EE	11 out of 28: AT, BE, GB, IT, IR, LV, NL, NO, PT, FI, SE	4 out of 28: DE, DN, FR, CH
Clustering factors (A1, A2)	Mandatory participation of the self-employed in public pension schemes (A1) with rates equal to those of employees (A2)	Mandatory participation of the self-employed in public pension schemes (A1) with lower rates than for employees (A2)	Voluntary participation of the self-employed in pension insurance (A1) with lower tariffs than for employees (A2)

Source: Self-employed pensions parametric indicators database [19].

Note: * — a list of countries by the international standard code ISO 3166–1 alpha-2.

***Impact of self-employment* (B4)**

An analysis of data on the share of the self-employed without wage labor in the employed population by country only partially confirms the impact of the scale of self-employment on the organization of pension systems. Countries with voluntary pension insurance for the self-employed are concentrated in the zone of low self-employment. Countries with mandatory participation both on preferential and general terms (by tariffs) are evenly distributed among the zones of low, medium and high self-employment (*Fig. 2*).

Impact of self-employed income levels

An analysis of the income level of the self-employed (16 OECD countries) does not reveal the desired pattern. Countries with mandatory participation of the self-

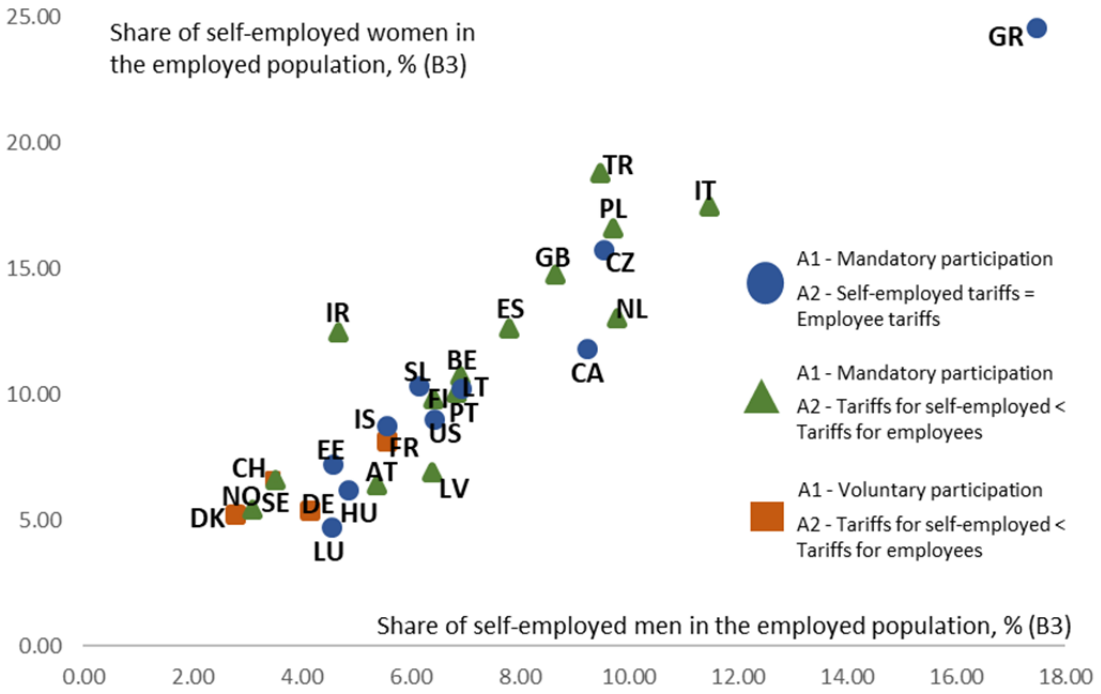

Fig. 2. **The share of self-employed without employees and clustering factors in OECD countries***

Source: Table 3, OECD (2020), Self-employed without employees (indicator). URL: https://doi.org/10.1787/5d5d0d63-en (accessed on 14.09.2020).

Note: * — the blue circle indicates the country's membership in the group with mandatory participation of the self-employed in pension insurance (A1) with rates equal to those of employees (A2);

– a green triangle indicates that the country belongs to the group with mandatory participation of the self-employed in pension insurance (A1) with rates less than those of employees (A2);

– the orange square indicates the country belongs to the group with voluntary participation of the self-employed in pension insurance (A1) with rates lower than those of employees (A2).

employed, both on preferential and general terms with employees, as well as countries with voluntary participation, are evenly distributed among low-, medium- and high-income zones. However, most countries with mandatory participation of the self-employed on preferential terms are in the middle-income zone (*Fig. 3*).

Factors B4 and B5 were not considered as cluster-forming. They are included in the parametric characteristics of pension systems with the participation of the self-employed to analyze the clustering results.

3. Cluster Analysis

There are 3 clusters (approaches) to the organization of pension provision for the self-employed on the basis of: mandatory or voluntary participation of the self-employed (A1); equality or lower insurance rates for the self-employed compared to employees (A2) (*Table 3*).

The boundaries of the clusters are outlined quite clearly: by factors of the architecture of pension systems for the self-employed (*Table 4*), by financial factors (except for A6 — the contribution base and A7 — the discreteness of the base) (*Table 5*), by cluster efficiency factors (except for B2 — self-employed pensions; and B3 — the number of countries in which self-employed contributions are less than 50% of their share in the employed population) (*Table 6*).

Architecture factors of pension systems

The transition from Cluster 1 to Cluster 3 is from the main public system of

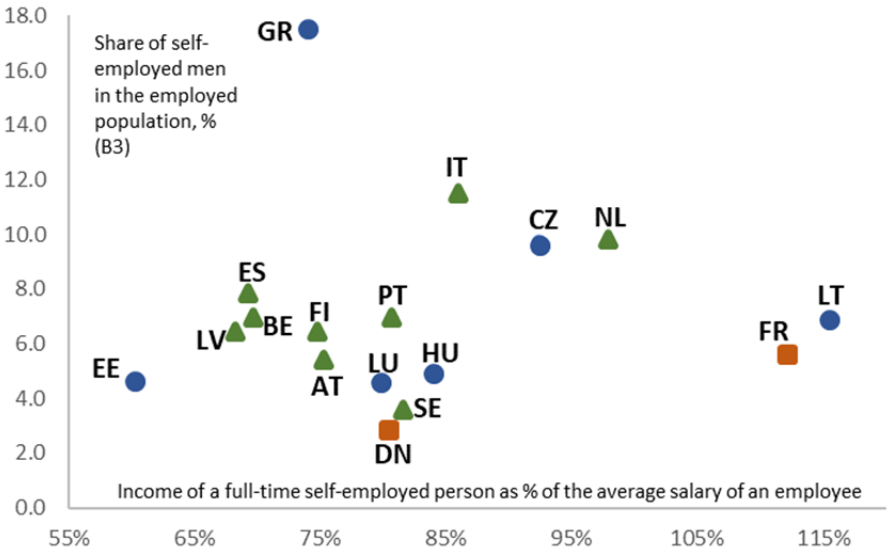

Fig. 3. **The share of self-employed without employees and income of self-employed in OECD countries***

Source: Table 3, Self-employed without employees (indicator). URL: https://doi.org/10.1787/b6d3dcfc-en; Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (Fig. 2.3) (accessed on 14.09.2020).

Note: * — see above *Fig. 2*.

mandatory pension insurance to equivalent pension schemes, including private funded and professional (A3); from mandatory participation of all self-employed to coverage of large professional categories (A4); from the absence of benefits to their large number (A5) (*Table 4*).

Peculiarities of architecture of pension systems by Cluster 1

The core of the cluster (61%) is made up of countries with a strong public mandatory pension insurance system, which can be represented by one (Hungary, Slovenia, Turkey) or several (Estonia, Czech Republic) pension schemes. The self-employed are usually given the right to choose between pension schemes (Canada, Poland) (*Table 4,* A3).

The mandatory pension insurance covers all self-employed in Hungary, Canada, Estonia, Poland, Slovenia.[5] The Czech Republic and Lithuania exclude temporary self-employed and part-time workers. In Greece, Spain, Iceland, Luxembourg, all self-employed persons are covered by the mandatory pension insurance system plus one or more major professional programs. In the USA, voluntary schemes of equal importance operate with the basic scheme, covering the main categories of the self-employed (*Table 4*, A3). In Turkey, the mandatory participation of the self-employed is limited by a high minimum income threshold (A4).

The conditions for self-employed and employees are equalized by the discreteness of the calculation base (fixed or declared income) in Hungary, Iceland, Lithuania, Poland, Turkey, Spain, Slovenia. Reducing coefficients to the calculation base are used by the Czech Republic, Slovenia, Lithuania. All together — 62% of countries. 23% of countries apply benefits (tax deductions, exemptions, reduced tariffs) (Canada, Luxembourg, USA) — *Table 4*, A4. In Greece and Estonia there is no equalization and benefits.

Cluster 1 includes countries with a high share of the self-employed in the employed population (*Table 4*, B5). The gap with the wages of employees among the self-employed is smaller than in other clusters (B6).

[5] The self-employed are covered by professional categories, but their list is consistently expanding.

Table 4

Pension system architecture factors

Factors	Characteristics of factor	Cluster 1	Cluster 2	Cluster 3
	Countries*	**13:** HU, GR, IS, ES, CA, LT, LU, PL, SL, US, TU, CZ, EE	**11:** AT, BE, GB, IT, IR, LV, NL, NO, PT, FI, SE	**4**: DE, DN, FR, CH
A3	1. Shared with employees, the state income scheme is the main one for the self-employed. It can be represented by several schemes in the mandatory pension insurance system. Private and/or professional schemes are small or non-existent	**8 countries (61%): HU, CA** (choice of 2 schemes), **CZ** (basic and solidarity), **EE** (solidarity and funded), **LT, PL** (choice of 2 schemes: only solidarity or funded and solidarity), **SL**, **TU**	**4 countries (36,4%):** LV (conditionally funded and funded), PT, FI, SE	-
	2. Shared with workers (or separate but equivalent) mandatory government income-based scheme provides most of the retirement income. A smaller but significant part is provided by private and/or professional schemes	**4 countries (31%): GR, ES** (+ funded scheme for farmers), **IS** (+ professional schemes), **LU** (+funded schemes for "liberal professions"	**4 countries (36.4%): AT** (several schemes with a plan to combine until 2050 into a common one with employees + scheme for farmers) **IT** (DB scheme for freelancers), **BE, NO** (+ professional schemes)	**2 countries (50%):** DN, CH (general scheme with employees + voluntary professional and private schemes)
	3. General state mandatory insurance establishes a minimum pension income. Other equal participation of several separate pension schemes (often on voluntary terms)	**1 country (8%): US** (basic + equitable voluntary pension schemes, incl. occupational)	**3 countries (27.2%):** UK and IR (mandatory basic scheme + voluntary funded and professional), NL (the same + mandatory funded for a number of professions)	**2 countries (50%):** FR, DE (separate compulsory professional schemes)
A4	1. All categories of self-employed are included	**9 countries (68%): HU, GR, IS, ES, CA, EE, LU** and **SL** (not all, but coverage is expanding) **PL (**auto-subscribe)	**4 countries (36.4%): LV, NO, PT, SE** (+ professional schemes — 28% coverage)	**-**
	2. Not all are included, but the main professional categories (except for temporary self-employed, part-time workers)	**3 countries (23%): US, LT** (except temporary)**, CZ** (part-time — voluntary)	**3 countries (23.4%): AT, BE** (not covered by low-paid platform self-employed)**, IT**	**-**
	3. Limited participation (high mandatory participation threshold)	**1 country (8%):** TU	**4 countries (27.2%): UK, IR, FI**	**4 countries (100%):** FR, DE (general compulsory participation in plans)**,** DN, CH
A5	1. No significant benefits	**2 countries (15%):** GR, EE	**-**	**-**
	2. Benefits for the settlement base (discreteness, reducing coefficients to the settlement base, reduced tariffs (the latter — for clusters 2 and 3)	**8 countries (62%):** HU, IS, LT, PL, TU, CZ, ES, SL	**5 countries (45%):** AT, BE, IT, LV, NL	**-**
	3. Significant tax benefits and preferences (deductions, exemptions from contributions, conversions), in addition to benefits on the calculation base	**3 countries (23%):** CA, US, LU,	**6 countries (54%):** UK, IR, NO, PT, FI, SE	**4 countries (100%):** FR, DE, DN, CH

Table 4 (continued)

Factors	Characteristics of factor	Cluster 1	Cluster 2	Cluster 3
	Countries*	**13:** HU, GR, IS, ES, CA, LT, LU, PL, SL, US, TU, CZ, EE	**11:** AT, BE, GB, IT, IR, LV, NL, NO, PT, FI, SE	**4**: DE, DN, FR, CH
4	Average share of self-employed without employees in the employed population, % (by clusters)	female **7.9**; male **12.0** (extremum: GR — 17.5 and 24.5)	female **6.7**; male **10.3**	female **4.0**; male **6.3**
B5	Average income level of self-employed relative to the average income of an employee, % (by clusters)	***84*** *(for 7 known indicators: HU, ES, PL, LT, CZ, EE)*	***76*** *(for 7 known indicators: AT, BE, IT, LV, PT, FI, SE*	***112*** *(FR data)*

Source: Self-employed pensions parametric indicators database [19].

Note: * — a list of countries by the international standard code ISO 3166–1 alpha-2.

Peculiarities of architecture of pension systems by Cluster 2

The architecture of self-employed pension systems in Cluster 2 is shifting towards more supplementation of the mandatory pension insurance system with large occupational schemes (Austria, Italy, Belgium, Norway), often equivalent in size (UK, Ireland, the Netherlands). For the latter, the mandatory pension insurance is limited to the basic minimum pension scheme. In total together — 63.6%. Countries in which the main mandatory pension insurance is shared with workers account for 36.4% (Latvia, Portugal, Finland, Sweden) (*Table 4,* A3).

Latvia, Norway, Portugal, Sweden (27.2%) cover all self-employed people with pension insurance. In Austria, Italy, specific professional categories are covered by a wide range. Belgium excludes the low-paid self-employed of the platform economy (23.4% of countries). In the UK, Ireland, Finland (27.2%), all categories are covered, but with a high entry threshold (work for a certain number of months a year, income above the minimum level) (*Table 4*, A4).

The self-employed persons in Cluster 2 receive more benefits. All have discounted rates. 54% of countries (Great Britain, Ireland, Norway, Portugal, Finland, Sweden) have tax benefits, deductions (*Table 4*, A5). Cluster 2 is characterized by a smaller share of the self-employed in the employed population (*Table 4*, B5) and lower incomes of the self-employed compared to employees than in Cluster 1 (B6).

Peculiarities of architecture of pension systems by Cluster 3

Cluster 3 is represented by Germany, Denmark, France, Switzerland. These are differentiated, predominantly voluntary pension systems with preferential rates, tax breaks and preferences. They are distinguished by a smaller share of the self-employed in the employed population (*Table 4*).

Public schemes provide a basic minimum pension income (in Denmark and Switzerland). To receive a higher pension, it is important to participate in voluntary professional schemes, private savings schemes. In Denmark, the public scheme has a zero contribution. In Switzerland, mandatory contributions to the public system start at age 20 at a lower rate for the self-employed. With an annual income below the established level, the rate is significantly reduced.[6]

[6] 1st pillar: OASI/DI/APG. SME Portal for small and medium-sized enterprises. URL: https://www.kmu.admin.ch/kmu/en/home/concrete-know-how/personnel/personnel-management/employers-obligations/social-insurance/1st-pillar.html (accessed on 31.01.2021).

In Germany, the participation of a part of the self-employed (teachers, craftsmen, nannies, etc., dependent self-employed) is mandatory. In France, there are separate compulsory schemes for self-employed persons in certain professions. These countries are planning to switch to a mandatory scheme with workers.

Financial factors

General — use gross income as the basis for calculating contributions (except US — net income). Transition from Cluster 1 to Cluster 3:

- from the use of mechanisms for adjusting the contribution calculation base (discreteness, reduction factor) to the absence of such mechanisms (*Table 5*, A6, A7, B7);
- from strict conditions for calculating the contribution (for incomes below the minimum level — the contribution is still calculated from the minimum base) to soft conditions (for incomes below the minimum level — transition to voluntary participation) or to the absence of a minimum income level (*Table 5*, A8);
- from the absence of requirements for the appointment of a pension to the requirements for the established level of income and the number of hours worked (*Table 5*, P9);
- from a higher insurance rate to a lower one with an increase in the spread of values (*Table 5*, B6) and from a higher minimum income for calculating contributions to a lower one (*Table 5*, B8);
- from monthly to annual frequency of contributions (*Table 5*, B9).

Financial factors by Cluster 1

In Cluster 1, the conditions for calculating contributions are determined by mechanisms for equalizing the conditions of the self-employed with employees by adjusting the calculation base (part of the contribution is paid by the employer, part of the employee's tariff is applied to income after mandatory payments):

- application of the tariff only to a part of the base for calculating contributions (reducing factor) — Czech Republic, Slovenia, Lithuania (*Table 5*, A6);
- granting the right to the self-employed to independently choose a fixed level of the base for calculating contributions (Poland, Iceland, Turkey). The more the base — the more the pension, but 70% choose the minimum base for accrual. In Hungary, Lithuania, Slovenia, this mechanism is applied to certain categories of self-employed with special taxation schemes (self-employed without employees — Hungary,[7] 7 professional categories — Lithuania,[8] small businesses and traders — Slovenia[9]).

All countries (except Iceland) set a minimum income for the calculation of contributions, of which 50% of countries with incomes below the minimum contribution are still calculated from the minimum level (Hungary, Greece, Lithuania, Luxembourg, Poland).

Insurance rates for the self-employed are the same as for employees (with employer's contribution). Their size is on average higher than in other clusters with a smaller spread of values. There are no requirements for granting a pension (A9) (except for Canada and Turkey). Fees are calculated and paid on a monthly basis (except for Canada and the USA) (*Table 5*).

Financial factors by Cluster 2

The Cluster 2 main advantage for the self-employed is lower wages compared to employees. At the same time, the mechanisms for lowering the calculation base are applied to the same extent as in Cluster 1 (fixed assessment bases: Great Britain, Ireland, Latvia, Portugal, Finland) (*Table 5*, A6, A7, B7).

Most countries (except the Netherlands, Portugal) set a minimum income for the

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Table 5

Financial factors of pension systems

Factors	Characteristics of factor	Cluster 1	Cluster 2	Cluster 3
	Countries*	**13:** HU, GR, IS, ES, CA, LT, LU, PL, SL, US, TU, CZ, EE	**11:** AT, BE, GB, IT, IR, LV, NL, NO, PT, FI, SE	**4**: DE, DN, FR, CH
A6	1. Gross income before taxes with the application of the tariff to the entire base, taking into account additional conditions (see A7)	**8 countries (62%):** HU GR, CA, LU, TU, EE, US, ES (net income)	**6 countries (55%):** AT, BE, IT, NL, NO, SE	**4 countries (100%):** FR, DE, DN, CH
	2. With the application of the tariff to a part of the base for calculating contributions (50–90%)	**3 countries (28%):** CZ (50%), SL (75%), LT (90%)	–	–
A7, B 7	1. No discreteness of the calculation base	**6 countries (46%):** GR, CA, LU, US, CZ, EE	**6 countries (55%):** AT, BE, IT, NL, NO, SE	**4 countries (100%):** FR, DE, DN, CH
	2. Discreteness of the calculation base for certain categories of self-employed	**3 countries (23%):** HU, LT, SL	–	–
	3. Discreteness of the calculation base for all self-employed persons	**4 countries (31%):** IS, ES, PL, TU	**5 countries (45%):** UK, IR, LV, PT, FI	–
A8	1. The minimum income (base) for calculating contributions, if the income is lower — the calculation of the contribution from the minimum base	**6 countries (46%):** HU, GR, LT, LU, PL (with income below — reduction of the base for calculation), EE (contributions below — not included in the length of service)	**2 countries (18%):** AT, LV (below the minimum income — at a reduced rate)	–
	2. Minimum income for the calculation of contributions, with income below — voluntary participation	**6 countries (46%):** ES, CA, SL, TU, US, CZ	**7 countries (64%):** BE, UK, IR, IT, NO, FI, SE	**2 countries (50%):** DE, CH
	3. No minimum income (base) for calculating contributions	**1 country (8%):** IS	**2 countries (18%):** NL, PT	**2 countries (50%):** FR, DN
A9	1. No requirements for a pension	**11 countries (85%):** IS, ES, PL, TU, HU, GR, IS, ES, LT, LU, PL, SL, US, CZ, EE	**6 countries (55%):** BE, IT, LV, NL, PT, SE	–
	2. Income requirements	**2 countries (15%):** CA, TU	**4 countries (36%):** AT, UK, IR, FI	**2 countries (50%):** FR, CH
	3. Requirements for the number of hours worked	-	**1 country (9%):** NO	**2 countries (50%):** DE, DN
B 6	Average rate for calculating contributions (by cluster), %	**18.75** (extremum: CZ — 28, LT — 9)	**17.43** (extremum: IT — 29.1, IR — 4)	**17.13** (extremum: DN — 0 (basic scheme), FR — 24.9%)
B 8	The amount of the minimum income for calculating contributions (converted at the exchange rate of the ruble to the national currency of the corresponding country at the exchange rate as of 08.01.2021), rubles per month	**11 946.6** (extremum: LU — 43553, CA — 1840)	**10 902.9** (extremum: IT — 34 591.9, IR — 1 513.3)	**4 954.7** (CH)
B 9	1. Payment of contributions monthly	**11 countries (85%):** HU, GR, IS, ES, LT (or annually, choice), LU, PL, SL, TU, CZ, EE	**4 countries (36%):** AT, BE, UK (weekly), PT	**1 country (25%):** FR
	2. Payment of contributions annually	**2 countries (15%):** CA, US	**7 countries (64%):** IR, IT, LV, NL, NO, FI, SE	**3 countries (75%):** DE, CH, DN

Source: Self-employed pensions parametric indicators database [19].

Note: * — a list of countries by the international standard code ISO 3166–1 alpha-2.

calculation of contributions, of which only Austria and Latvia calculate the contribution from the minimum level for incomes below the minimum. In the rest of the countries (64%), there is a transition to voluntary participation (*Table 5*, A8).

Russia, there are no opportunities for a differentiated approach to the creation of private and professional pension plans for the self-employed.

Softer conditions for calculating contributions (preferential rates, the possibility of reducing the accrual base) are expressed in a smaller amount of incoming contributions, which is offset by more stringent conditions for assigning a pension (in 45% of countries: Austria, Great Britain, Ireland, Finland, Norway). Another feature compared to Cluster 1 is the predominance of the annual frequency of payment of contributions (Ireland, Italy, Latvia, the Netherlands, Norway, Finland, Sweden) (*Table 5*), indicators B8, B9.

Financial factors by Cluster 3

The minimum income for calculating contributions is either not set (France, Denmark), used to exclude low contribution participants (Switzerland), or applied to a scheme mandatory for some categories of self-employed (Germany). In case of income below — voluntary participation (*Table 5*). The benefits are accompanied by the introduction of conditions for the appointment of a state pension: the minimum number of hours worked (Denmark), the minimum income threshold (Switzerland).

Performance factors

The efficiency of clusters is determined by the size of the theoretical pension of the self-employed as a percentage of the employee's theoretical pension. This is the estimated value of a pension with a regular income equal to the average salary in the country, from 22 years to retirement age and payment of only mandatory contributions.

The mandatory pension insurance system, which covers all categories (Cluster 1), makes it possible to receive a high pension income (on average 89% of an employee's theoretical pension). In Cluster 2, the average theoretical pension is below 83.5% (more benefits for more countries). Cluster 3 is distinguished by a low value of the theoretical pension of the self-employed — 59.3% (all countries provide wide benefits to the self-employed (*Table 6*, B1, for comparison — A5).

The values of the average pension of a self-employed person compared to the average pension of an employee are given considering state pension schemes for those countries for which data are available (Table 6, B2). The gap varies by country, regardless of their cluster membership. Countries with a gap of up to 10% [Denmark (2%), Switzerland (4%), Czech Republic (9%)] differ in the state basic pension system, covering all self-employed persons, but with the conditions for granting a pension.

The basic scheme in Denmark is zero-contributory, with pensions tied to exceeding a minimum service level. In Switzerland, the basic state pension is granted to persons with incomes above the threshold level (*Table 4*, P3) with mandatory contributions throughout their working life. As a result, indicator B2 includes the self-employed with higher incomes. At the same time, Switzerland is among the 9 OECD countries where self-employed contributions in relation to the share of self-employed in the employed population is less than 50% (*Table 6*, B3).

The Czech Republic has a strong public pension system with basic and income-based pensions. The latter have a pronounced distributional effect: for incomes below the established minimum, the replacement rate for lost profits is 100%, for incomes in the average established range — 30%, for incomes above — 10%.[10]

[10] Pension System in Czech Republic. Pension Funds online. URL: https://www.pensionfundsonline.co.uk/content/country-profiles/czech-republic#:~:text=The%20contribution%20

Table 6

Pension system performance factors

Factors	Characteristics of factor	Cluster 1	Cluster 2	Cluster 3
	Countries*	**13:** HU, GR, IS, ES, CA, LT, LU, PL, SL, US, TU, CZ, EE	**11:** AT, BE, GB, IT, IR, LV, NL, NO, PT, FI, SE	**4**: DE, DN, FR, CH
B 1	B 1 — the size of the theoretical pension of the self-employed, as% of the theoretical pension of the employee	**88.9** (extremum: HU — 128). Without ES (42). PL (59), TU (52) — **100.8**	**83.5** (extremum: AT — 111, NL — 39). Without NL **— 88.4**	**59.3** (extremum: FR — 83, CH — 50)
B 2	B 2 — the size of the average pension of the self-employed, as% of the average pension of the employee	LU — 62, PL — 63, ES — 76, SL — 81, GR — 82, CZ — 91	BE — 75, AT — 78, SE — 87, BT — 98	DE — 51, FR — 66, CH — 96, DN — 98
B 3	B 3 — the size of self-employed contributions relative to the share of self-employed in the employed population,%. Reported as the number of countries with a specified indicator value < **50%**	**4 countries (31%):** HU, CA, SL, TU	**4 countries (36%):** IR, LV, PT, SE	**1 country (25%):** CH

Source: Self-employed pensions parametric indicators database [19].

Note: * — a list of countries by the international standard code ISO 3166–1 alpha-2.

The largest gap in the average pension between self-employed and employees is in Germany (49%), Luxembourg (38%), Poland (37%), France (34%).

Germany and France are characterized by low coverage of the self-employed persons by compulsory schemes (different for different categories). In Germany, there is an option to exit compulsory schemes after 18 years of participation, with income below the minimum — a 50% tariff. France has significantly lower rates for the self-employed in the main occupational categories.[11] Prospects are outlined for combining individual schemes for the self-employed into a general scheme with employees.

The pension systems of Poland and Luxembourg are characterized by a large general mandatory income-based pension scheme. They are characterized by a high coverage of the self-employed with the possibility of reducing the calculation base. In Poland — the choice of a fixed minimum base, its significant reduction with incomes below the minimum.[12] In Luxembourg — a system of exemption from the payment of contributions.[13]

rate%20for%20the,whole%2028%25%20of%20their%20earnings.&text=The%20base%20on%20which%20pensions,and%2010%25%20above%20this%20sum (accessed on 25.01.2021).

[11] For artisans and merchants: Years 1 and 2 — fixed income, then — 17.75% of annual income up to 39,732 euros + 0.6% from excess. For self-employed "liberal" professions — 8.23% of annual income up to 39,732 euros + 1.87% in the range of 39,732–198,660 euros (for employees — 28%) (OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (Fig. 2.12) (accessed on 03.02.2021).

[12] In Poland, the minimum income for calculating contributions is 60% of the average monthly income (Social Security Programs Throughout the World: Europe. Wash.: U.S. Social Security Administration. Office of Retirement and Disability Policy, ISSA. URL: https://www.ssa.gov/policy/docs/progdesc/ssptw/ (accessed on 03.02.2021). Below income, the calculation base is reduced to 30% of the minimum wage or 60% of the average wage for 3 years every 5 years. (OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en) (accessed on 03.02.2021).

[13] In Luxembourg, the minimum income for contributory purposes is equal to the minimum monthly social wage (40% of the average wage in 2019). (OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing,

4. Alternative pension options for the self-employed and proposals for Russia

The approaches to the provision of pensions for the self-employed identified in international practice are not yet implemented in Russia. Mandatory participation of the self-employed is effective at incomes equal to or higher than those of employees. The provision of benefits reduces the average pension. In Russia, there are no opportunities for a differentiated approach to the creation of private and professional pension plans for the self-employed.

Most countries apply mechanisms that equalize the position of employees and the self-employed in general pension insurance schemes.

What are the alternatives? First, these are quasi-mandatory participation options. For example, the introduction of the obligation of a person engaged in labor activity, regardless of employment status, to be a member of any pension insurance system of their choice. Related conditions: freedom to convert contributions from one pension scheme to another.

Secondly, the development of pension insurance for the self-employed in general schemes with employees in terms of not the entire mandatory pension insurance, but only the voluntary funded component. In Russia, discussions on the Guaranteed Pension Product (GPP) project, as well as the draft law of the Ministry of Finance on voluntary pension contributions, provide opportunities for this.

The potential of the funded system is the young population, able to form pension savings sufficient to receive a funded pension larger than the social one. Numerous surveys among young people show their interest: in greater independence in the disposal and management of pension savings, in self-registration in the system, in choosing the contribution rate (fixed, as a percentage of income), in the possibility of using part of the savings in certain life situations, in choosing ways savings management.

Thirdly, under Russian conditions (savings in social pension payments, incentives for the self-employed to leave the informal zone), co-financing of contributions from the state is justified.

Fourthly, increase the financial literacy of the population. Abroad, special pension products are being designed for the self-employed. For Russia (an emerging financial market), it is important to create resources that are easy to understand:

- online pension calculators that use forecasting tools to calculate pensions in the conditions of expected retirement that are relevant for the future pensioner;
- development of mobile technologies for accessing and managing one's pension account through a single software.

This will create strong incentives and opportunities for the self-employed (and not only) to master the financial aspects of participating in pension products.

In Russian conditions, it is important to create conditions for the growth of the participation of the self-employed as their income increases and they come out of the "shadow". It is promising to use separate mechanisms for providing pensions to the self-employed from international practice. Their detailed presentation is proposed in a subsequent article based on a study of the quantitative and qualitative characteristics of Russian self-employment.

CONCLUSIONS

In the organization of pension provision for the self-employed, 3 clusters have been identified. The differences are determined to a greater extent by the architecture of pension

Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (Fig. 2.12) (accessed on 03.02.2021). Benefits in the nationwide scheme: State participation, exemption from contributions for project implementation (3 months a year); in the mandatory accumulative professional scheme for persons of "free" professions — a tax deduction of 20%.

systems and to a lesser extent by the size and income of the self-employed.

Mandatory participation of all self-employed people in the state system of public pension systems common with employees and on equal terms with them (Cluster 1) can provide a higher pension for the self-employed, but if people with incomes above the minimum predominate in their structure and with a high distribution potential of the public pension system.

Compulsory participation provides a greater ratio of the theoretical self-employed pension to the employee's pension (Cluster 1 — an average of 89%, Cluster 2–84%, Cluster 3–59%, *Table 5*, B1).

The actual ratio is lower due to the low incomes of the self-employed. The self-employed pays contributions without the help of an employer, his rate is applied (as a rule) to gross, and not to net income, as for employees. Most countries apply mechanisms that equalize the position of employees and the self-employed in general pension insurance schemes. This is the use of its fixed levels instead of the actual amount of income (as a rule, an acceptable minimum is chosen); reduction factors — 30–40% to the calculated base (*Table 5*, A6, A7).

Providing benefits for the self-employed: reduced tariffs, tax deductions, exemptions on contributions, etc. (Cluster 2) does not improve the coverage of the self-employed and their retirement income. Differentiation of pension systems [high importance of professional and private pension schemes (Cluster 3) with voluntariness and benefits leads to lower self-employed pensions. Their coverage does not exceed 30% of the self-employed in OECD countries[14]].

The amount of the pension is reduced when the self-employed with an income below the minimum level are included in the pension schemes:

- when establishing unprecedented benefits on contributions for the self-employed with income below the established minimum level (Germany, Latvia);
- if contributions from incomes below the minimum are allowed while maintaining the insurance period (Spain, partly countries where the participation of the self-employed in income schemes with income below the minimum becomes voluntary — more than 50% of countries, *Table 5*, A8);
- with special pension regimes for low-paid categories and dependent self-employed (France, Latvia — contributions up to 4 times lower; Hungary, Latvia, Slovenia — minimum fixed contributions for almost 50% of the self-employed; Spain, Portugal, Italy, Germany — low rates and obligation dominant clients to pay part of the pension contributions for dependent self-employed[15]).

The size of the average pension depends on the availability of separate schemes for farmers (special treatment, benefits, state subsidies). Example — Poland, partly — Austria, Finland, France, Germany, Greece, Spain. The inclusion of temporary self-employment, part-time work has an impact.

None of the approaches gives a noticeably better result in the provision of pensions for the self-employed. At low incomes, a convincing factor in the success of pensions (the fight against pension poverty) is inclusion in large-scale mandatory public schemes with a high distributional effect. Increasing the level of their coverage with professional pensions and private pensions can be called a factor in the growth of self-employed pensions.

For Russia, alternative options for providing pensions to the self-employed are relevant — conditionally mandatory participation, association with employees not of the mandatory pension insurance, but of the voluntary funded component. At the same time, two directions can give a good return: state co-financing and the practical development of financial literacy, without going into the depths of financial knowledge.

[14] OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, chapter 2. URL: https://doi.org/10.1787/b6d3dcfc-en (Fig. 2.6) (accessed on 14.09.2020).

[15] More than 50% of their income depends on one or more large clients.

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