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## **EQUITY RELEASE PRODUCTS AS A FORM OF PENSION SECURITY**

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**Summary:** The number of pensioners regularly increases in Poland. In 2010 there were 6.4 million of pensioners (which constituted approximately 17% of populations) but in 2060 there will be 11.4 million of pensioners (it will be approximately 37% of population). Pensioners will look for additional forms of financing because their state pensions will not be high (replacement ratio will not be high). Equity release products are one of solutions of that problem. Reverse mortgage is a financial product which enables conversion of capital allocated in real estate into liquid financial resources. The aim of the article is the analysis and assessment of the use of reverse mortgage as an additional pension security. Values of the supplementary life annuities under reverse mortgage agreements were calculated for each province capital in Poland. Life annuity calculations and the methodology developed by the Social Insurance Fund were used in the study. In addition values of pension gaps for each city were calculated. The study results indicate that a reverse mortgage can be a good additional pension security, provided that lenders use life annuity calculations. Supplementary annuities under a reverse mortgage can compensate for the missing financial resources, which are the consequence of retiring due to the low gross replacement rate.

**Keywords:** Pension security, equity release, reverse mortgage, life annuity, pension gap.

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### **1. Introduction**

The number of pensioners in Poland increases at a rapid rate. In 2010, there were 6.4 million of pensioners (which constituted approximately 17% of the whole population); by 2060, their number will increase to 11.4 million (corresponding to ca. 37% of the population).<sup>1</sup> In addition, the average life expectancy in Poland will increase from 72.1 years in 2010 to 77.1 years in 2035 for men, and from 80.6 years

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<sup>1</sup> For detailed information on demographic forecasts, see: [ZUS, 2013]. According to Eurostat analyses, by 2060, 34.5% of Polish population will be past the age of 65, and 12.3% – past the age of 80. For more on this, see: [Eurostat 2011].

in 2010 to 82.9 years in 2035 for women [GUS 2009, 2012]. This will undoubtedly have its impact on the average period of pension entitlements for both sexes. Considering that pension benefits are decidedly lower in volume compared to wages which were used to assess their level, the majority of retired persons will be forced to seek additional sources of income. However, the majority of the working age population are not always ready and willing to anticipate their future. As attested by the reports published regularly by the Polish Financial Supervision Authority (KNF), the number of working age persons with additional saving schemes made in the prime of their vocational activities is still drastically low. By the end of 2013, Individual Pension Accounts (IKE) were in use by only 5.2% of the working age population, with additional 3.2% keeping their savings in Individual Pension Security Accounts [KNF 2014]. There are many other pension-saving schemes available on the Polish market, including banking deposits, unit-linked insurance plans, fixed property investments, and alternative investment schemes. However, based on 2013 data, the rate of voluntary saving plans in Polish households is in decline [NBP 2014].

In view of the above, a large proportion of present and future pensioners will require some sort of additional income at retirement, since they have no savings to support them. Pensioners with fixed property rights may take the opportunity of transforming their fixed, non-liquid, accumulated assets into liquid financial assets by taking advantage of the various forms of Equity Release Schemes.

The aim of the article is the analysis and assessment of the use of reverse mortgage as an additional pension security.

## 2. Equity Release Schemes

Under the requirements of the European Commission, for a service to be classified as an Equity Release Scheme, it must meet the following criteria [Reifner et al. 2009]:

- be a financial service,
- be a source of liquidity for the future,
- contain a strong entitlement to remain in occupation of the property,
- rely solely on the sale of the property for repayment/payment of the funds released to be used as a retirement pension.

There are two models of ERS arrangements available on the market: the loan model and the sale model. The sale model involves the sale of the property to a third party, with additional provision of the right for the previous owner to remain in occupation (home reversion). The loan model, on the other hand, is a form of mortgage-secured loan, with repayment made from the proceeds from the eventual sale of the property on the death of the homeowner or after the property has been vacated for a specified period of time. In this model, the right to fixed property is transferred to the crediting institution only after the final demise of the borrower. The



loan model is also referred to as reverse mortgage. Reverse mortgage schemes are offered in many countries throughout the world and widely discussed in professional literature (see e.g.: [Tse 1994; Salter 2014; Nakajima Telyukova 2013; Foote 2007; Reifner et al. 2009, Bhuyan 2010; Skuza 2012]).

However, it is worth underlining that the loan model has been dominating since 2000 on the British market which is one of the most developed ERS markets (although between 1991 and 1997 the sale model prevailed) [Towers Watson 2013]. Both models also occur in Ireland, Spain, Germany and Hungary. Austria, Finland, France, Sweden and Italy offer only the loan model. On the contrary, in the Netherlands, Bulgaria and Romania citizens may use only the sale model [Reifner et al. 2009].

As it was mentioned above, such products as equity release serve as additional financing source for pensioners. Therefore the minimum age of individuals who may take advantage of this product is significant. Depending on the regulations of each European country, the age ranges from 55 to 65 years.

### **3. Legal conditions of equity release services development on the Polish market**

In April 2014, Polish government adopted a draft project of a reverse mortgage act. The aim of the draft statutory instrument was to introduce mechanisms for banks, trans-border credit institutions and their local branches operating on Polish market to develop their offers of reverse mortgage products, with particular attention to the claim vindication mechanisms. At the same time, the draft project was designed to offer consumer protection by providing extensive information on the ERS, both prior to the signing of the agreement, and within the text of such agreement, together with additional measures, such as the customer right to withdraw from the agreement within 30 days of its signing, the right to make an early repayment of the loan, and limiting the loaner's privilege of withdrawing from the agreement to selected and clearly defined cases. Under the draft project, the reverse mortgage agreement has to be secured by a mortgage on the property itself or a selected property right. After the beneficiary's demise, his or her inheritors will have the right to decide on full repayment of the loan to retain their rights to the property in question, or to transfer their rights on to the loaner. At the same time, even in the case of transferring the property rights to the crediting institution, the inheritors will receive the sum of the difference between the value of the loan claim and the real value of the property covered by the agreement – if such a difference is found to be in positive value. If the agreement beneficiary has no legal inheritors, the surplus value from property sale shall be paid to the district authorities or the State Treasury, in accordance with the inheritance act. The draft project contains solutions designed to protect the elderly,

but it must be noted that the text of the draft provides no age limitations for people willing to enter into a reverse mortgage agreement with a lender.

In May 2014, the Ministry of Economy prepared a public consultation document to negotiate the text of a future statutory act on the provision of lifelong financial benefits.<sup>2</sup> The legislators' intention was to regulate the operation of institutions providing equity release products based on the sale model (such as the Fundusz Hipoteczny DOM). At present, those institutions offer their financial products on the legal basis of a Civil Code definition of a lifehold agreement (art. 908–916). However, the Civil Code regulations do not provide full protection of the customer rights. Thus, the aim of the future statutory act on the provision of lifelong financial benefits is to offer legal conditions for customers to make informed and deliberate choices in their decisions regarding life annuity, based on careful evaluation of potential benefits and risks involved in such an agreement. The legal solutions should provide optimum protection of the beneficiary against any defaults on the part of the service provider, including bankruptcy, with the intention of limiting the risk involved in those types of agreements that offer financial benefits based on real property values.

#### 4. Predicted values of payments received from reverse mortgage arrangements

Payments received from reverse mortgage arrangements may take on different forms (more on this, see: [Kowalczyk, Poprawska 2009]). The most frequent form of such payment is life annuity or fixed-term annuity.<sup>3</sup> For the purpose of this paper, predicted values of future life annuity benefits were calculated, based on model reverse mortgage agreements for each provincial city in Poland, in two variants:

- the first variant, based on retirement calculation model employed by the Polish Social Insurance Institution (ZUS).<sup>4</sup> In this model, the value of life annuity benefits is calculated using the following formula:

$$b = \frac{RW_0 \cdot \alpha}{e_x}$$

where:  $b$  – the annual value of life annuity benefit (payment);  $RW_0$  – the market value of the property at the date of the signing of the agreement;  $RW_0\alpha$  – the

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<sup>2</sup> <http://konsultacje.gov.pl/node/3516>.

<sup>3</sup> Forms of payment depend on the lenders (bank, insurance company or other financial institution).

<sup>4</sup> This model is used to calculate the value of retirement benefit under the reformed pension system with fixed contribution, see: [www.zus.pl](http://www.zus.pl).

sum of the reverse mortgage granted, as percentage of the market value of the property at the date of the signing of the agreement;<sup>5</sup>  $e_x$  – the average life expectancy of a person at the age of  $x$ ;

- the second variant, based on the life annuity account [Skałba 1999; Gerber 1990], in which the sum of the reverse mortgage granted, as  $RW_0\alpha$ , is equal to the predicted sum of discounted life annuity (or fixed-term annuity) payments:

$$RW_0 \cdot \alpha = b \cdot \ddot{a}_x,$$

where:  $\ddot{a}_x = \sum_{k=0}^{\infty} v^k {}_k p_x$  – the present value of the life annuity received by a person aged  $x$ ,  $v = 1/(1 + r)$  – the discount rate;  $r$  – mortgage interest rate;  ${}_k p_x$  – the probability for a person aged  $x$  to live for the next  $k$  years.

Therefore, in this variant, the annual value of the benefit is calculated from the following formula:

$$b = \frac{RW_0 \cdot \alpha}{\ddot{a}_x}$$

The following calculations were based on average transaction prices for housing properties in each of the provincial cities (as product of an average floor surface of a housing property and the mean transaction price per one square meter of a housing property in a given city)<sup>6</sup>, using life expectancy tables of 2012<sup>7</sup>, with the average mortgage interest rate in 2012 at 6.51%<sup>8</sup>. The values of life annuities were calculated separately for male and female beneficiaries aged 67.

The results were included in Table 1.

The results indicate that life annuity benefits received from reverse mortgage, as a form of additional pension security measure, are markedly higher in the second variant. Moreover, they are higher for male beneficiaries, due to their shorter life expectancy estimates. The highest supplementary benefits under the reverse mortgage will be collected by residents of Warszawa, Kraków, Poznań and Wrocław. The lowest – by residents of Łódź, Katowice, Bydgoszcz and Zielona Góra.

<sup>5</sup> In many countries, this represents 50% of the property market value at the time of entering into a reverse mortgage agreement (it means that  $\alpha = 0.5$ ).

<sup>6</sup> Calculations were based on data published in: [NBP 2013].

<sup>7</sup> Available at: [www.stat.gov.pl](http://www.stat.gov.pl).

<sup>8</sup> Calculations were based on data published in: [Amron-Sarfin 2013].

**Table 1.** Values of annual life annuity payments from reverse mortgage for province capitals in Poland

City	Average value of a housing property in PLN	Variant I		Variant II	
		The value of annual life annuity benefits for a female aged 67, in PLN	The value of annual life annuity benefits for a male aged 67, in PLN	The value of annual life annuity benefits for a female aged 67, in PLN	The value of annual life annuity benefits for a male aged 67, in PLN
Białystok	224 023	6 174.83	7 904.83	11 221.704	13 596.75
Bydgoszcz	192 821.2	5 314.81	6 803.85	9 658.7514	11 703.00
Katowice	196 720.2	5 422.28	6 941.43	9 854.0592	11 939.65
Kielce	225 145.2	6 205.77	7 944.43	11 277.917	13 664.86
Kraków	348 555	9 607.36	12 299.05	17 459.73	21 155.04
Lublin	272 986	7 524.42	9 632.53	13 674.347	16 568.49
Łódź	179 077.6	4 935.99	6 318.90	8 970.3104	10 868.86
Olsztyn	239 730.8	6 607.79	8 459.10	12 008.535	14 550.11
Opole	239 441.4	6 599.82	8 448.88	11 994.039	14 532.55
Poznań	326 821.5	9 008.31	11 532.16	16 371.061	19 835.96
Rzeszów	299 779.1	8 262.93	10 577.95	15 016.46	18 194.66
Szczecin	228 000	6 284.45	8 045.17	11 420.919	13 838.13
Gdańsk	289 767.3	7 986.97	10 224.68	14 514.951	17 587.01
Warszawa	423 423	11 670.98	14 940.83	21 209.999	25 699.05
Wrocław	326 220.4	8 991.74	11 510.95	16 340.951	19 799.48
Zielona Góra	184 933.8	5 097.40	6 525.54	9 263.6578	11 224.29

Source: own research.

It is worth underlining that the value of supplementary benefits for women ranges from 411.33 PLN to 972.58 PLN per month, if the calculation of this benefit is based on the Variant 1 method, or from 747.53 PLN to 1767.50 PLN per month, if the calculation is based on the Variant 2 method. Meanwhile, the value of supplementary benefits for men is higher and ranges from 526.67 PLN to 1245.07 PLN per month (in case of Variant 1) or from 905.74 PLN to 2141.59 PLN per month (in case of Variant 2). Such huge discrepancies in the values of the supplementary benefits under the reverse mortgage depend primarily on the real estate value, sex and the average lifespan.

In order to assess whether acquiring supplementary financial benefits under the reverse mortgage would allow to obtain similar income as from the times of professional activity, the so called “pension gap” was calculated. For the purpose of

this article, the gap was defined as a difference between the average pension sum, increased by the average monthly life annuity paid under the reverse mortgage agreement and the average monthly salary. The calculations were based on the average net monthly income and average net pension sum in 2012 for each province capital. The calculation results were presented in Table 2.

**Table 2.** Monthly pension gap for province capitals in Poland

City	Pension gap for variant I		Pension gap for variant II	
	Gap value for a female aged 67, in PLN	Gap value for a male aged 67, in PLN	Gap value for a female aged 67, in PLN	Gap value for a male aged 67, in PLN
Białystok	-435.33	-291.16	-14.76	183.16
Bydgoszcz	-353.47	-229.38	8.53	178.88
Katowice	-399.99	-273.40	-30.68	143.12
Kielce	-381.01	-236.12	41.67	240.58
Kraków	-141.53	82.78	512.84	820.78
Lublin	-364.12	-188.45	148.37	389.55
Łódź	-536.54	-421.30	-200.34	-42.13
Olsztyn	-256.64	-102.37	193.42	405.22
Opole	-327.32	-173.23	122.20	333.75
Poznań	-144.54	65.78	469.03	757.77
Rzeszów	-185.80	7.12	376.99	641.84
Szczecin	-393.18	-246.45	34.86	236.30
Gdańsk	-411.07	-224.59	132.93	388.93
Warszawa	-692.89	-420.40	102.03	476.12
Wrocław	-331.52	-121.58	280.92	569.13
Zielona Góra	-422.38	-303.37	-75.19	88.20

Source: own calculations based on the data available at [www.stat.gov.pl](http://www.stat.gov.pl).

The results presented in Table 2 indicate that:

- in case of the Variant 1 – additional financial benefits paid under reverse mortgage are insufficient to compensate for the missing financial resources, which are due to retiring and taking pension. Positive pension gap occurred only in 3 cases: for men residing in Kraków, Poznań, Rzeszów. It is worth underlining that the greatest deficit was observed in case of women living in Łódź and Warszawa;

- in case of the Variant 2 – additional financial benefits paid under reverse mortgage are in most cases sufficient to maintain the standard of living from the times of professional activity. Negative pension gap was observed only in case of residents of Łódź (for both genders) and women living in Białystok, Katowice and Zielona Góra. The citizens of Kraków, Poznań and Rzeszów can count on the highest supplementary benefits. Similar values of positive pension gap for the citizens of Warszawa and Olsztyn were a surprise.

Only in one case, i.e. the residents of Łódź, independent of the variant used to calculate the supplementary reverse mortgage benefits and independent of gender, the pension gap was not filled in (remained negative).

It is worth adding that the aforementioned calculations may serve as a directive for those, who are in productive age and would like to invest in real estate, aiming at taking advantage of the reverse mortgage when retired. Real estates located in Poznań, Kraków, Rzeszów and Wrocław are attractive from this point of view.

## 5. Conclusions

The changing demographic situation in Poland will have a significant effect on the volume of pension benefits received from the obligatory part of the present social security system. However, in most cases, this value will be considerably lower than the value of the last remuneration received prior to retirement. Consequently, future pensioners will require additional sources of financing. Reverse mortgage is one of such additional sources of income for pensioners, allowing them to maintain or improve their living standard on retirement. The conducted calculations (for the biggest cities in Poland) indicate that supplementary financial benefits paid under reverse mortgages will be able to compensate for the insufficient financial resources, which are due to entering the retirement age – and on condition that lenders will use life annuity calculations to calculate these benefits. In addition, the market value of the real estates at the moment of signing the reverse mortgage agreement will influence the value of these benefits strongly. Therefore, the value of that benefits received by people who live in small towns will be smaller (because the market value of the property is also smaller). It is worth underlining that the data used for calculations is average and the obtained results are approximate.

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## PRODUKTY TYPU *EQUITY RELEASE* JAKO FORMA ZABEZPIECZENIA EMERYTALNEGO

**Streszczenie:** W Polsce regularnie rośnie liczba emerytów. W 2010 r. było ich 6,4 mln (co stanowiło ok. 17% populacji), natomiast w 2060 r. będzie ich 11,4 mln (co będzie stanowiło ok. 37% populacji). Ze względu na to, iż wartości emerytur z obowiązkowej części systemu emerytalnego są i będą niewysokie (stopa zastąpienia jest niska, a dostępne szacunki wskazują, że będzie jeszcze niższa), emeryci będą zmuszeni do poszukiwania dodatkowych form finansowania. Pewnym rozwiązaniem tego problemu dla emerytów posiadających

nieruchomość jest możliwość przekształcenia niepłynnego kapitału zakumulowanego w nieruchomości w płynne środki finansowe, czyli skorzystanie z produktów należących do grupy tzw. *equity release*. Celem artykułu jest analiza i ocena wykorzystania odwróconego kredytu hipotecznego jako dodatkowego zabezpieczenia emerytalnego. Na potrzeby artykułu zostały obliczone wartości dodatkowych świadczeń wypłacanych dożywotnio z umów odwróconego kredytu hipotecznego dla każdego miasta wojewódzkiego w Polsce. Wykorzystano tutaj rachunek rent życiowych oraz metodologię Zakładu Ubezpieczeń Społecznych. Obliczono także wartości luki emerytalnej w każdym z tych miast. Wyniki badań wskazują, iż przy wykorzystaniu rachunku rent życiowych przez instytucje kredytujące odwrócony kredyt hipoteczny może być dobrym dodatkowym zabezpieczeniem emerytalnym. Dodatkowe świadczenia pieniężne z odwróconego kredytu hipotecznego pozwolą na uzupełnienie brakujących środków finansowych, które powstają w momencie przejścia na emeryturę ze względu na niską stopę zastąpienia.

**Słowa kluczowe:** zabezpieczenie emerytalne, *equity release*, odwrócony kredyt hipoteczny, renta dożywotnia, luka emerytalna.