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The comparison of the effect of gender equal treatment on insurance in Poland and other selected European Union countries

Since 21 December 2012 gender-based pricing for insurance products has been banned in Europe. It is expected that this ban will cause negative consequences for both insurance markets and consumers. A number of studies have been conducted to evaluate the potential impact of the changes. The aim of the present study is to examine the differences among European populations connected with unisex premiums and benefits in life and motor insurance. The differences in mortality have been investigated in 22 European countries. The mortality data have been taken from the Human Mortality Database and Polish Central Statistical Office. The risk in motor insurance has been evaluated on the basis of statistical data concerning drivers involved in accidents and driving licences recorded for Poland, Germany and the United Kingdom.

It has been demonstrated that Central-East Europe is characterized by larger malefemale differences in mortality, so as a result, the introduction of the ban to use gender as a risk factor in insurance will cause relatively greater changes of net premiums in these countries.

In the case of motor insurance, it is probable that the average cost of an insurance claim is going to be different across the EU countries. The risk of causing a car accident is much greater for young male drivers than it is for female drivers at the same age, but the figure differs between regions. The unisex pricing of premiums and benefits would cause various levels of changes in the EU countries. The above analysis does not take into account the effects of other possible changes in the underwriting process. The ban on gender-based pricing can cause such changes.

Key words: risk insurance, gender, life insurance, motor insurance.

Introduction

The decision of the European Court of Justice of 1 March 2011 (Test-Achats ruling) banning gender-based pricing for insurance products initiated a discussion about the potential impact of this decision on the insurance market. It is expected that this ban will cause negative consequences for both insurance markets and consumers.

The aim of this paper is to examine the differences among European populations connected with unisex premiums and benefits in life and motor insurance. In empirical study the differences in mortality have been investigated in 22 European countries. The mortality data have been taken from the Human Mortality Database and Polish Central Statistical Office. The risk in motor insurance has been evaluated on the basis of the statistical data concerning drivers involved in accidents and driving licences recorded for Poland, Germany and Great Britain.

1. The genesis of the introduction of gender equality principle in insurance

The principle of gender equality was originally introduced in the Treaty establishing the European Economic Community in 1957. Primarily, it was a negative obligation prohibiting discrimination. Later it developed into a positive principle promoting equality. The Charter of Fundamental Rights of the European Union states that "everyone is equal before the law." Any forms of discrimination are prohibited. It is also said there explicitly that "equality between men and women must be ensured in all areas."

To extend the scope of the application of this principle, three generations of Directives have been introduced. The first generation aimed at ensuring gender equality, especially on the labour market. The second generation extended the principle to personal characteristics other than gender, such as race, age and disability. The third generation of Directives consists of two groups of legal regulations. The aim of the first group is to reorganise and make legislation more accessible in this area, the second extends the application of the principle to different areas beyond the labour market. These directives introduced the concepts of direct and indirect discrimination. Direct discrimination refers to treating one person less favourably than another on certain specified grounds, whereas indirect discrimination occurs where the effect of certain requirements, conditions or practices has an adverse disproportionate impact on a specific group. The European Union considers gender equality a concept related to individuals. Individuals have the right to be treated equally regardless of the group (e.g., gender group) to which they belong.[1]

One of the third generation directives is Directive 2004/113 (Council Directive 2004/113/EC of 13 December 2004) which took effect in December 2007. In general, this directive prohibits "the use of sex as a factor in the calculation of premiums and benefits for the purposes of insurance and related financial services" "in all new contracts concluded after 21 December 2007." The directive gave the Member States the option to permit proportionate differences in individu-

1. E. Torella, "On lies and statistics: the relationship between gender equality and insurance," *ERA Forum* 12 (2011): 60 and Thierry Y. and Schoubroeck Van C., "Fairness and Equality in Insurance Classification," *The Geneva Papers* 31 (2006).

als' premiums and benefits when gender is considered a determining factor in assessing risks, the use of which would be justified by actuarial data and statistics that the public authorities consider sufficiently relevant and accurate. A number of countries have applied this option.[2] Over the years, the insurance sector has used gender as an underwriting factor in life insurance and some classes of non-life insurance, particularly motor insurance. On 1 March 2011, the Court of Justice of the European Union decided, in the Test-Achats ruling, that as from 21 December 2012 the use of gender as a risk factor by insurers should not lead to individual differences in the premiums and benefits for men and women. It was argued that the use of gender as a rating factor was contrary to the objective of equal treatment of men and women.[3] The decision was taken despite the explicit recognition of the fact that men and women "do not face the same risks" and their profile is thus different. The Commission based its reasoning upon two main elements. Firstly, there is a wide range of factors besides gender which can be more accurate to calculate individual premiums.[4] This includes lifestyle factors, such as eating habits, marital status or smoking and level of income, which frequently have a stronger impact on health and life expectancy. Secondly, it was argued that the examples of the countries using unisex rules in calculating premiums proved that gender as a risk factor was not irreplaceable.

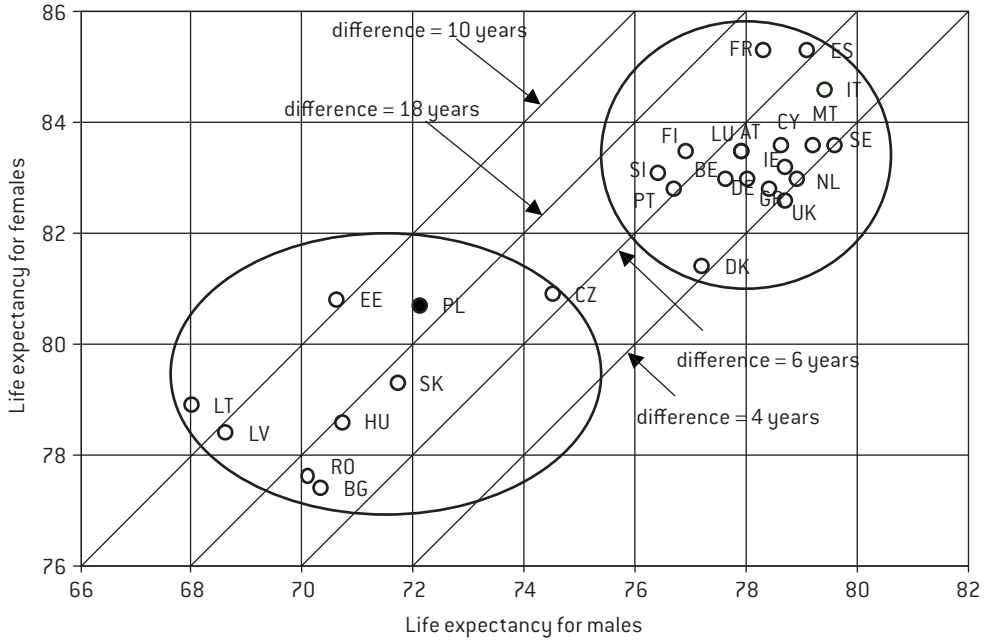
On the other hand, a number of research conducted in the 20th century proved the importance of gender and age as significant risk factors.[5] On the basis of research and practice of insurance companies, gender is considered as a long-term and stable indicator of risk.[6] Excluding important risk factors from risk models can result in adverse selection and more heterogeneous insurance portfolios. In the future differences in the results of the ban will be seen in particular countries due to the differences in demographic structures.

2. Excess male mortality in Poland and selected European Union countries

The difference in the mortality of males and females is a biological regularity.[7] Moreover, the differences in mortality are observed among regions. An essential parameter of the distribution of lifespan is life expectancy. This parameter is shown for the 27 EU countries in Figure 1. The vertical axis is life expectancy for females and the horizontal axis is life expectancy for males, both in the year 2010. The EU countries are divided into two groups according to the life expectancy

2. V. Petkantchin, "EU anti-discrimination policy's impact on insurance risk management: A parallel with the US sub-prime crisis," *Pensions* 15, 3 (2010): 156.
3. "Gender-neutral insurance," Ernst & Young, accessed March 2012, www.ey.com; B. Jackowska and E. Wycinka, "Znaczenie wyroku Trybunału Sprawiedliwości Unii Europejskiej z dnia 1 marca 2011 r. w wybranych ubezpieczeniach życiowych i majątkowych," *Wiadomości Ubezpieczeniowe* 3(2012): 5-15.
4. Torella, "On lies," 64.
5. Cf. H. L. Doerpinghaus, J. T. Schmit and J. Yeh, "Age and Gender on Auto Liability Insurance Payouts," *The Journal of Risk and Insurance* 75, 3 (2008): 527-550; H. S. Lonczak, C. Neighbors and D. M. Donovan, "Predicting risky and angry driving as a function of gender," Accident Analysis and Prevention, 39 (2007): 536-545 and many other authors.
6. "The impact of a ban on the use of gender in insurance," European study conducted by Oxera, December 2011, i.
7. D. A. Glei and S. Houriuchi, "The narrowing sex differential in life expectancy in high-income populations: ...effects of differences in the age pattern of mortality," *Population Studies* 61, 2 (2007).

Figure 1. Life expectancy at birth for males and females in the countries of the European Union in 2010



AT	Austria	FI	Finland	LV	Latvia	SK	Slovakia
BE	Belgium	FR	France	MT	Malta	SI	Slovenia
BG	Bulgaria	GR	Greece	NL	Netherlands	SE	Sweden
CY	Cyprus	ES	Spain	DE	Germany	HU	Hungary
CZ	Czech Republic	IE	Ireland	PL	Poland	UK	United Kingdom
DK	Denmark	LT	Lithuania	PT	Portugal	IT	Italy
EE	Estonia	LU	Luxemburg	RO	Romania		

Source: GUS, *Trwanie życia w 2011 r.*, (Warszawa: GUS, 2012).

of males and females. The first group includes the countries of Central and Eastern Europe (except Slovenia), that is Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania and Slovakia. The second group consists of Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovenia, Spain, Sweden, and the United Kingdom.

The first group is characterized by shorter life expectancy for both males and females, and in most cases, the larger difference in life expectancy between males and females as compared to the other group. In the first group, male life expectancy was in the range from 68.0 years (Lithuania) to 74.5 years (the Czech Republic), and female life expectancy from 77.4 years (Bulgaria) to 80.9 years (the Czech Republic). In this group, the smallest difference in average life expectancy between males and females was 6.4 years (the Czech Republic), and the highest was 10.9 years (Lithuania). In the second group, life expectancy for males varied from 76.4 years (Slovenia) to 79.6 years (Sweden), and for females from 81.4 years (Denmark) to 85.3 years (Spain). In this group, the difference between life expectancy for males and females was in the range of 3.9 years (the United Kingdom) to 7.0 years (France). Due to the fact that in the EU countries the phe-

nomenon of excess male mortality occurs with varying intensity, the adoption of unisex life tables affects the actuarial calculation results in different degrees in particular countries.

In the further analysis, we have employed five-year-age death rates as well as complete life tables for males and females separately and complete unisex tables[8] derived from the Human Mortality Database (HMD)[9]. The HMD has no data concerning the following EU countries: Croatia, Cyprus, Greece, Malta and Romania. In order to maintain a uniform methodology for determining mortality rates and probabilities of death, these data have been used as the only source of data, so the above-mentioned countries have been excluded from the further analysis. Additionally, Luxemburg has been excluded from the analysis due to its insurance indicators being incomparable to those of other countries.[10] Finally, the comparison took account of 22 EU countries with the 2009 data. These are the latest available data for all the selected countries. For countries where there are fewer than four million inhabitants (Estonia, Latvia, Lithuania and Slovenia) five-year data (2005–2009) have been used in order to exclude random effects in mortality pattern.

The force of mortality is strongly differentiated by age and gender. In the analysed countries death rates for males in almost all five-year age intervals exceeded the corresponding rates for females (Table 1). The degree of male-female differences in mortality depends on the age and the country.[11] In the majority of the countries, the largest excess mortality occurred in the interval 20–24 years. In the age intervals with the highest excess mortality, the death rate for males was several times higher than the death rate for females:

- more than 5-times in Estonia;
- more than 4 times in Latvia, Lithuania, Slovakia, Slovenia and Poland;
- more than 3 times in Bulgaria, the Czech Republic, Finland, France, Hungary, Ireland and Sweden;
- more than twice in the remaining analysed countries.

The ratios of male to female death rates achieve low values for infants and children and increase for older age groups. The maximum is observed most frequently at the age interval of 20–24 years or at next intervals. In the following intervals the values of the ratios decrease with the local minimum for most of the countries at the interval 40–44 years or 45–49 years and then increase (except for Estonia, Latvia, Lithuania, Poland and Slovenia). The second local maximum is between the ages of 55 and 70. However, this maximum is lower than the first one (except for Spain). To illustrate these characteristics the specific shape of the ratio curve for three EU countries with the highest gross written premiums (France, Germany and the United Kingdom) and for three countries from Central and Eastern Europe with the highest gross written premiums (Czech Republic, Hungary and Poland) is presented in Figure 2.

8. R.L. Brown, "Introduction to the Mathematics of Demography" (Winsted, Connecticut: AXTEX Publications, 1993).
9. The Human Mortality Database (HMD) is a project of the University of California at Berkeley (United States) and the Max Planck Institute for Demographic Research (Rostock, Germany) [www.mortality.org].
10. Luxembourg, due to its tax system and administrative procedures, is very often chosen for headquarters by the insurance companies who operate in other European countries.
11. Besides genetic reasons, cultural and social conditions are causes of excess male mortality.

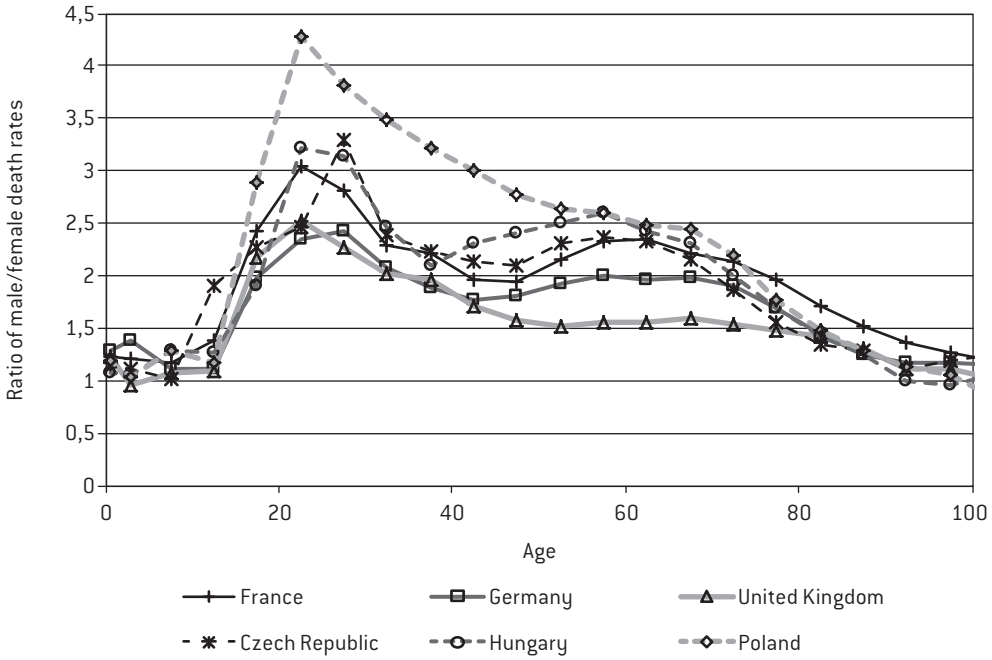
Table 1. The ratio of male/female death rates in the selected European Union countries in 2009* (the highest value for each country is in bold)

Country	Age																				
	0	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99
Austria	1.141	0.900	1.221	1.265	2.828	**2.980**	2.603	2.240	1.994	1.965	1.993	1.878	2.229	2.111	2.001	1.892	1.720	1.452	1.310	1.164	1.098
Belgium	1.235	1.394	0.640	1.495	1.737	**2.831**	2.367	1.991	2.020	1.607	1.600	1.744	1.810	1.889	1.832	1.851	1.773	1.530	1.399	1.261	1.222
Bulgaria	1.309	0.846	2.108	1.794	2.122	**3.044**	2.217	2.091	2.165	2.356	2.296	2.582	2.647	2.577	2.191	1.743	1.442	1.259	1.099	1.064	1.056
Czech Republic	1.134	1.109	1.019	1.896	2.276	2.464	**3.285**	2.384	2.222	2.132	2.094	2.299	2.365	2.326	2.159	1.870	1.560	1.350	1.284	1.116	1.192
Denmark	1.080	0.543	0.678	1.338	1.900	**2.630**	2.255	2.057	2.030	1.774	1.479	1.629	1.618	1.616	1.476	1.506	1.429	1.455	1.372	1.347	1.067
Estonia*	1.300	1.131	1.273	1.503	2.799	3.517	**5.135**	4.014	3.405	3.412	3.228	3.168	3.105	3.065	2.948	2.478	1.959	1.491	1.311	1.187	1.035
Finland	0.936	0.964	1.439	0.908	2.553	2.896	2.828	**3.109**	2.716	2.139	2.300	2.241	2.121	2.265	2.308	2.117	1.909	1.584	1.393	1.212	1.237
France	1.233	1.211	1.169	1.382	2.421	**3.036**	2.814	2.279	2.216	1.966	1.946	2.152	2.335	2.350	2.210	2.126	1.965	1.711	1.512	1.355	1.261
Germany	1.279	1.379	1.110	1.115	1.979	2.341	**2.422**	2.076	1.874	1.771	1.798	1.913	1.991	1.952	1.972	1.901	1.681	1.435	1.255	1.171	1.162
Hungary	1.077	1.048	1.279	1.264	1.898	**3.220**	3.147	2.465	2.095	2.302	2.398	2.493	2.595	2.433	2.313	1.995	1.696	1.418	1.239	1.003	0.955
Ireland	1.328	1.214	0.959	1.293	2.839	**3.411**	2.773	2.582	2.188	1.855	1.365	1.632	1.523	1.674	1.916	1.615	1.570	1.546	1.376	1.175	1.196
Italy	1.175	1.250	1.036	1.838	2.645	2.653	**2.807**	2.321	1.960	1.794	1.605	1.666	1.847	1.964	1.985	1.894	1.794	1.617	1.402	1.243	1.200
Latvia*	1.104	1.591	1.891	1.708	2.469	4.149	**4.226**	3.903	3.121	3.144	2.972	2.916	2.911	2.934	2.655	2.199	1.802	1.429	1.254	1.177	1.104
Lithuania*	1.184	1.423	2.028	1.565	3.030	**4.850**	4.636	4.136	3.657	3.386	3.259	3.178	3.009	3.043	2.813	2.257	1.791	1.481	1.221	1.073	0.973
Netherlands	1.182	1.212	1.212	1.259	1.629	**2.351**	1.844	1.628	1.366	1.262	1.210	1.223	1.440	1.555	1.700	1.807	1.747	1.570	1.389	1.267	1.164
Poland	1.193	1.033	1.288	1.174	2.880	**4.277**	3.808	3.477	3.221	3.012	2.764	2.640	2.593	2.490	2.451	2.184	1.767	1.469	1.276	1.128	1.054
Portugal	1.307	1.270	1.198	1.318	2.250	2.505	**2.782**	2.336	2.088	2.294	2.368	2.358	2.475	2.284	2.146	1.968	1.754	1.499	1.265	1.170	1.155
Slovakia	1.446	1.073	1.627	1.124	2.027	**4.619**	3.094	2.686	2.696	2.589	2.535	2.638	2.603	2.598	2.432	1.956	1.645	1.390	1.174	1.064	1.005
Slovenia*	1.029	1.487	0.559	1.327	2.530	3.929	**4.141**	2.988	2.528	2.699	2.465	2.239	2.419	2.449	2.354	2.096	1.826	1.498	1.303	1.239	1.137
Spain	1.183	1.216	1.114	1.654	2.119	2.167	2.424	2.304	2.022	1.976	2.051	2.214	2.559	**2.651**	2.586	2.230	1.967	1.606	1.337	1.152	1.091
Sweden	1.072	1.599	1.392	1.753	1.607	**3.045**	2.928	2.289	1.727	1.523	1.446	1.473	1.551	1.498	1.558	1.535	1.616	1.514	1.375	1.296	1.241
United Kingdom	1.222	0.963	1.078	1.093	2.176	**2.514**	2.275	2.025	1.951	1.712	1.569	1.508	1.564	1.552	1.600	1.539	1.481	1.410	1.307	1.119	1.108

Five-year data (2005–2009) for countries where there are fewer than 4 million inhabitants.

Source: own elaboration on the basis of the HMD data.

Figure 2. The ratio of male/female death rates in five-year age groups* in the selected countries of the EU in 2009



* Age intervals 0, 1–4, 5–9, 10–14, ..., 95–99.
Source: own elaboration on the basis of the HMD data.

3. The importance of using unisex tables for life-insurance purposes

Excess male mortality has different values in different countries (compare Figure 1 and Table 1). The introduction of the ban on the use of gender as a factor in calculations of premiums and benefits will cause a different range of changes in life-insurance in these countries. To evaluate the range of changes, for the 22 selected EU countries, net monthly premiums for whole life insurance have been calculated.[12] The assumptions for the calculations are as follows: whole life insurance, entry age of 20–60 years, a fixed sum insured, the technical insurance rate 3 per cent. The second evaluation is for the amount of monthly payments from a whole life annuity[13] purchased at the age of 60–80, a fixed value of a net single premium, the technical insurance rate 3 per cent. If demographic

12. Calculations according to actuarial principles. Formula for the net premiums payable m-times a year. E.g., N.L. Bowers, H.U. Gerber, J. Hickman, D. Jones and C.J. Nesbitt, "Actuarial mathematics," in *The Society of Actuaries* (Schaumburg, Illinois, 1997), 189; H.U. Gerber, "Life Insurance Mathematics," (Zurich: Springer, 1990), 52–55.

13. Calculations according to actuarial principles. Formula for the actuarial present value of a whole life annuity with m-times a year payments. E.g., N.L. Bowers, H.U. Gerber, J. Hickman, D. Jones and C.J. Nesbitt, "Actuarial mathematics," in *The Society of Actuaries* (Schaumburg, Illinois, 1997), 149–152; H.U. Gerber, "Life Insurance Mathematics," (Zurich: Springer, 1990), 37–38.

Table 2. Percentage changes caused by the ban on differentiating premiums and benefits based on gender for whole life insurance and whole life annuity in the selected EU countries – calculations on the basis of 3 per cent interest rate and life tables for 2009*

No.	Country	Interval of changes of net monthly premiums for whole life insurance** entry age x = 20, 21, …, 60		Interval of changes of monthly values of payments from whole life annuity*** purchased at age x = 60, 61, …, 80	
		Males Decrease in %	Females Increase in %	Males Decrease in %	Females Increase in %
1	Austria	10.3–13.3	10.8–11.6	7.4–10.4	4.7–5.6
2	Belgium	9.7–13.2	10.2–11.0	7.3–12.1	5.3–6.2
3	Bulgaria	12.6–15.5	15.3–17.7	6.2–9.5	4.2–8.5
4	Czech Republic	11.3–14.8	13.2–14.4	8.9–9.9	4.7–7.0
5	Denmark	7.9–10.2	8.3–8.8	5.8–11.5	4.4–6.2
6	Estonia*	19.3–23.2	20.8–26.2	13.1–16.1	4.7–11.1
7	Finland	12.4–15.2	13.3–14.8	8.5–11.9	6.1–7.0
8	France	12.2–15.4	12.8–14.2	8.3–13.5	6.0–6.6
9	Germany	9.6–12.8	10.3–11.1	7.1–10.2	4.4–5.5
10	Hungary	14.1–18.9	16.9–20.5	10.3–12.5	4.8–9.2
11	Ireland	8.8–11.6	8.8–10.6	6.4–12.0	5.0–6.7
12	Italy	9.4–12.9	9.4–10.5	6.9–12.1	5.0–6.2
13	Latvia*	19.1–23.0	20.1–26.3	12.8–15.7	4.1–11.1
14	Lithuania*	20.6–23.0	21.1–30.4	11.6–14.9	4.6–11.4
15	Netherlands	7.5–12.0	6.9–9.6	6.6–12.3	4.7–6.5
16	**Poland**	**15.4–18.2**	**17.0–19.1**	**10.3–12.0**	**6.2–9.0**
17	Portugal	11.4–13.2	11.7–13.4	7.4–10.2	5.8–6.5
18	Slovakia	13.6–17.4	16.0–18.2	9.5–11.7	4.7–8.7
19	Slovenia*	12.7–15.6	15.0–16.0	9.1–12.2	5.1–7.8
20	Spain	11.1–14.5	12.9–14.2	7.8–10.6	5.9–7.0
21	Sweden	7.3–9.8	7.1–8.2	5.2–10.7	4.0–6.3
22	United Kingdom	7.9–9.9	7.8–8.5	5.4–9.2	4.0–4.9

* Five-year data (2005–2009) for countries where there are fewer than 4 million inhabitants.

** With a fixed sum insured (on a particular assumed value).

*** For equal value of a single net premium (on a particular assumed value).

Source: own elaboration on the basis of life tables from the HMD.

life tables concerning particular countries[14] are taken for actuarial calculations, the replacement of separate life tables for males and females by unisex tables causes the decrease in net premiums in life insurance for males and their increase for females.

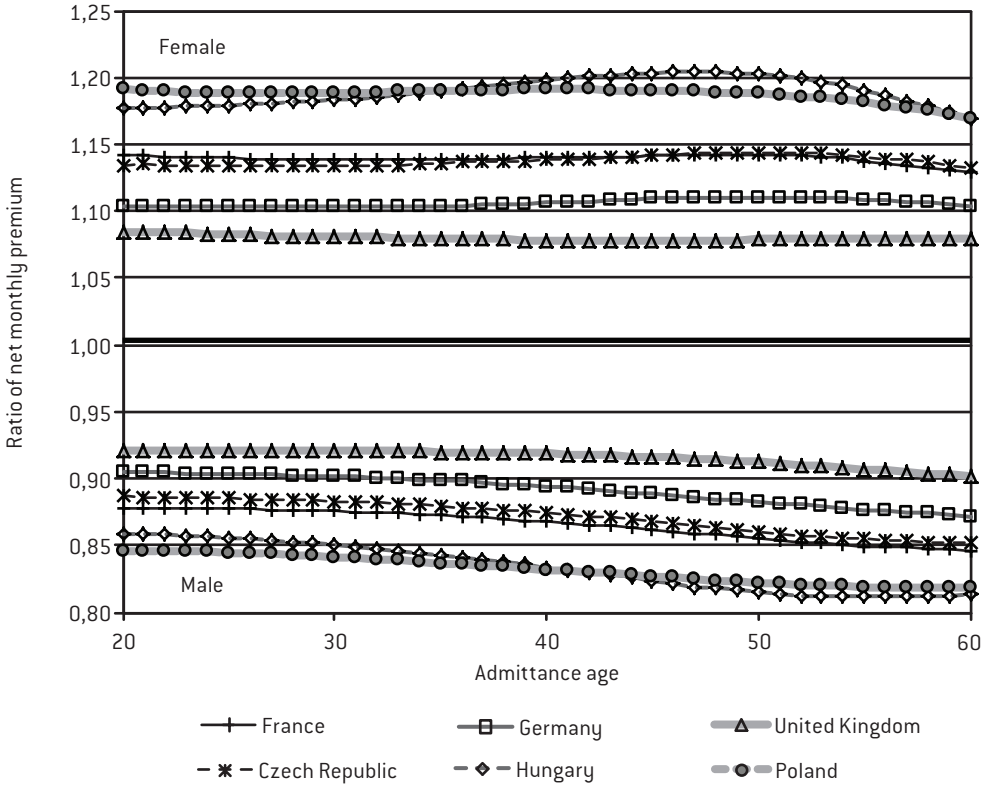
14. In practice, a population of the insured can be different from a country population. Insurance companies create actuarial life tables based on their own data and use demographic life tables only incidentally. A. Finkelstein, J. Poterba, "Adverse Selection in Insurance Markets: Policyholder evidence from the U.K. Annuity Market," *NBER Working Paper* 8045 (2000).

The opposite situation will be observed in life annuities: the decrease in the amount of payments for males and its increase for females (Table 2). The higher relative changes are, the bigger excess male mortality is. The percentage change of the net monthly premium for a whole life cover with entry age of 20–60 and with a fixed sum insured as well as the percentage change of monthly payments for life annuity made at the age of 60–80 for a fixed net single premium (Table 2):

– was the biggest in Estonia, Latvia and Lithuania,
– was the smallest in the UK, Sweden and Denmark.

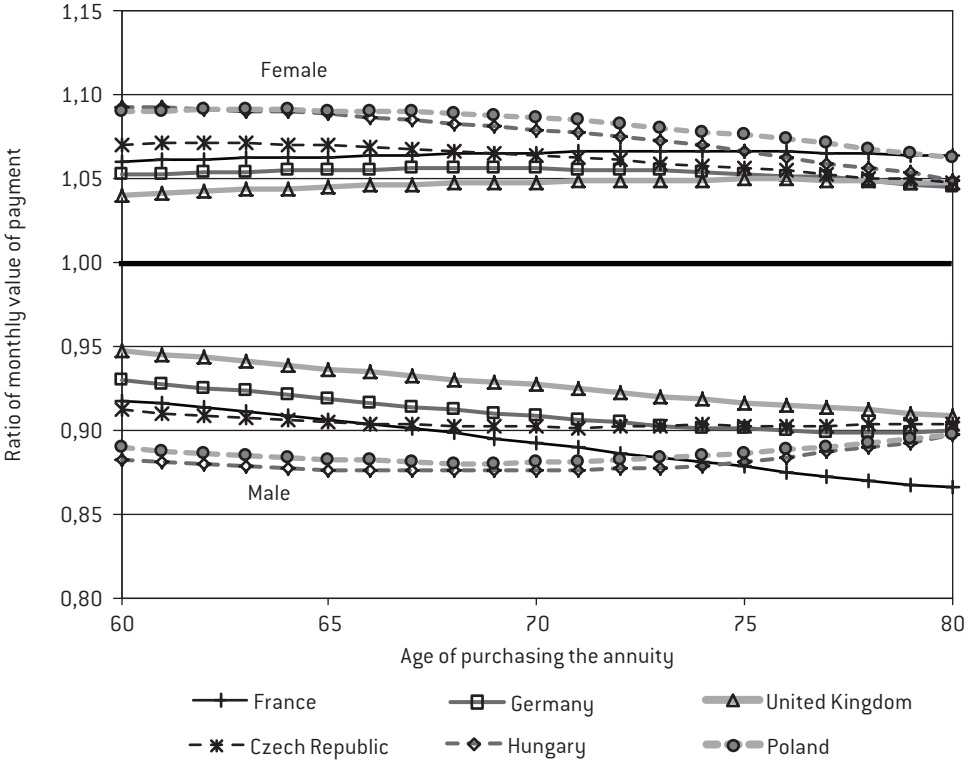
The following figures present the influence of the ban on differentiating premiums and benefits according to gender for three EU countries with the highest gross written premiums (France, Germany and the United Kingdom) and for three countries from Central and Eastern Europe with the highest gross written premiums (Czech Republic, Hungary and Poland). Figure 3 displays the above changes for the value of the net monthly premium for a whole life insurance cover purchased at the age of 20–60 with a fixed sum insured. The changes in monthly payments from life annuities purchased at the age of 60–80 with a fixed single net premium are given in Figure 4.

Figure 3. Whole life insurance—the ratio of the net monthly premium calculated on the basis of the unisex life tables to the net monthly premium calculated on the basis of the separate life tables for males and females in the selected EU countries (fixed sum insured, technical insurance rate 3%, life tables for 2009)



Source: own elaboration on the basis of life tables from the HMD.

Figure 4. Whole life annuity—the ratio of the monthly payment calculated for the unisex tables to the monthly payment for the life tables for males and females in the selected EU countries (fixed value of net premium, technical interest rate 3%, life tables for 2009)



Source: own elaboration on the basis of life tables from the HMD.

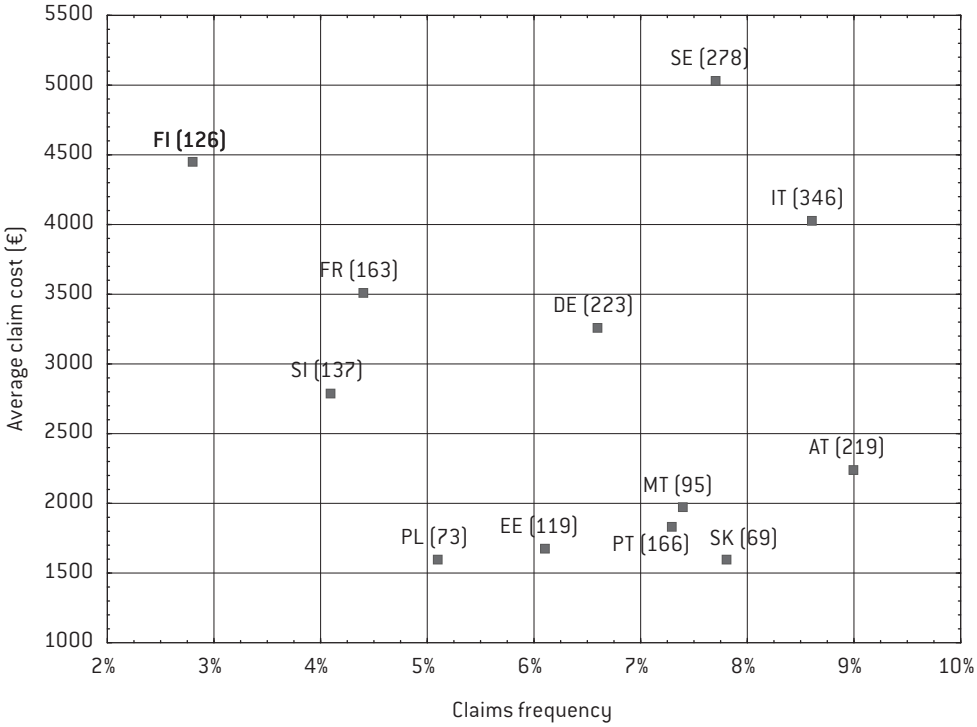
To sum up, Central and Eastern European countries are characterized by larger male-female differences in mortality (Figure 1 and Table 1), so as a result, the introduction of the ban on the use of gender as a risk factor in insurance will cause relatively greater changes in net premiums in these countries (Table 2). The calculations have been done on demographic data concerning the selected EU countries. Due to the selection made by insurers in the underwriting process, the diversity of populations in male-female differentials in mortality can be smaller, but cannot be avoided. The presented calculations show the maximum span of changes for monthly premiums in life insurance and monthly payments for whole life annuities.

4. Gender as a risk factor in motor insurance

For motor insurance, first of all, insurers face the risk that an insured driver causes an accident. Due to the fact that the MTPL insurance is obligatory in all the EU countries, this type of non-life insurance plays the most important role on the insurance market. Premium calculations in non-life insurance are coupled with claim costs. Claim costs depend on the probability that an insured

driver makes a claim and on the average cost of a claim. Multiplying the average claim cost by the claims frequency makes it possible to determine the net risk premium. The net premium plus operating expenses is equal to the total premium. The price paid by the policyholder is also affected by different national taxes and levies and other country-specific legislation.[15] Net risk premiums show disparities between the countries (Figure 5).

Figure 5. The average claim cost (€), claims frequency and net risk premium (in brackets) for both male and female drivers in the selected EU countries (CEA members) in 2007



Source: own elaboration on the basis of "The European Motor Insurance Market," CEA Statistics N°38, February 2010, 37.

Different levels of the net risk premium may result from different claim frequencies or different average claim costs. Therefore, a decrease in one of the two factors may have a different impact on the net risk premium in the investigated countries, depending on the level of the other factor. The task of insurers is to precisely evaluate these two factors. By accumulating statistical data, insurance companies find out that some characteristics are associated with a systematically more frequent occurrence of the risk they wish to insure.

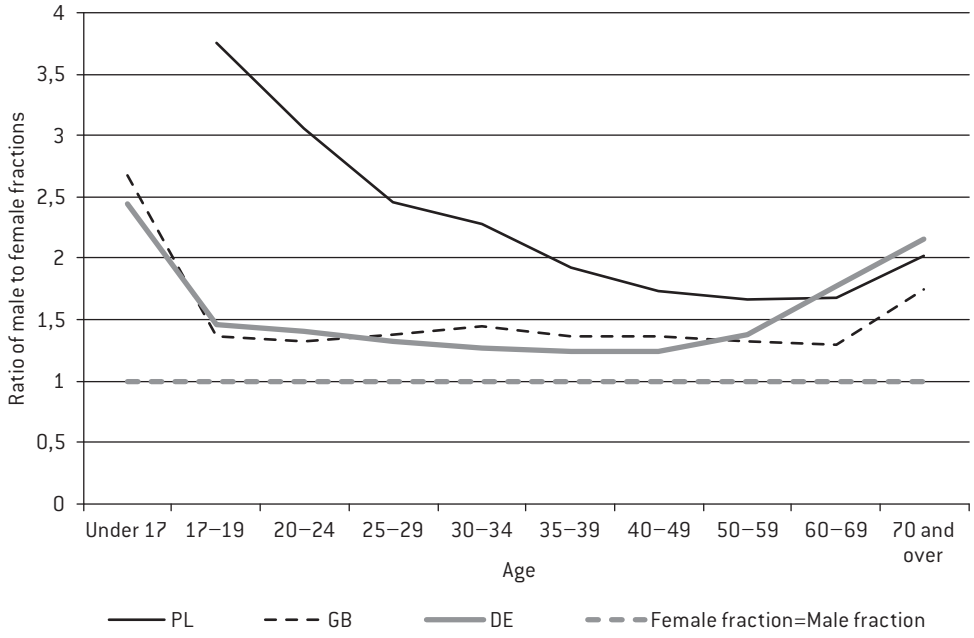
Insurance companies use numerous risk factors in pricing motor insurance. These factors are vehicle properties, environmental factors and the characteristics of the driver. Among the last ones, a driver's claims history, age and gender have been employed most frequently. Statistical

15. CEA Insurers of Europe, "The European Motor Insurance Market," *CEA Statistics* 38 (2010): 37.

data provide evidence that age and gender taken together are one of the most important risk factors for motor insurance.[16]

Figure 6 shows the ratio of male to female fractions of drivers causing accidents in three countries: Poland, Great Britain and Germany. The last two countries have been chosen because they are the biggest insurance markets in Europe. The fractions of drivers causing accidents are quotients of the number of drivers causing accidents and the number of issued driving licences. The data for the UK and Germany are from the year 2009, and for Poland from the year 2006. As it is shown in Figure 6, male drivers have a higher frequency of claims than female ones in all age groups. In Poland the frequency of accidents caused by 17–19-year-old drivers is 3.7 times higher than for female drivers at the same age. In Germany and Great Britain the above ratio is much smaller and equals 1.3 and 1.4 respectively. The lowest ratio is for the age group of 19–69 for Germany and Great Britain. For Polish drivers the ratio decreases until the age of 69 and then increases. Therefore, besides gender, age is also a crucial risk factor. As it is shown in the report prepared by Oxera[17] both young drivers (under 25 years) and elderly drivers (above the age of 70) have a higher frequency of claims and a higher average cost per claim The conclusion is that male drivers, especially the young ones, should pay higher premiums.

Figure 6. The ratio of male/female fractions of drivers causing accidents in the United Kingdom, Germany and Poland



Source: own calculations based on data from national statistics.

16. Oxera, "Why the use of age and disability matters to consumers and insurers," (Oxera, 2012), 30, cf. "The impact of a ban on the use of gender in insurance," European study conducted by Oxera, December 2011, www.oxera.com.

17. Oxera, "Why the use," 30.

Until December 2012, in most of the EU countries, insurers charged higher premiums from young male drivers than from female drivers at the same age. For instance, for a twenty-year-old male driver the increase in premium was from 19 per cent in Germany to 60 per cent in the UK (as compared to a female driver at the same age).[18] In comparison to a forty-year-old driver, the increase for a twenty-year-old male driver was 60 per cent in Germany and 12 per cent in the UK; whereas for the female driver the figures were 40 per cent and 50 per cent, respectively. Belgium and the Netherlands were pioneers in unisex pricing. They introduced the ban in 2008. As a result, insurers put greater emphasis on age as a risk factor, increasing the difference in premiums between young and older drivers. Moreover, unisex premiums were not calculated as the average of the premiums previously imposed on males and females but rather approximated the highest values. Irrespective of unisex pricing, there are differences in the frequency of accidents and their severity for males and females.[19] Hence, the ban on the use of gender in determining motor insurance premiums would result in a redistribution of premiums, with lower-risk consumers paying more. The range of the differences in particular countries will depend on the percentage of female drivers and their driving habits.

Conclusions

In life and motor insurance gender is a significant risk factor. The risk of death in life-insurance is higher for males than for females. Demographic data show high excess of male mortality at the age from 20 to 80 years. In motor insurance the risk of causing a car accident is much greater for young male drivers than for female drivers at the same age. Statistics concerning different countries confirm this hypothesis. Moreover, the unisex pricing of premiums and benefits will cause various levels of changes in the EU countries. As it is shown in the above-mentioned examples, the greatest effects can be observed in Central and Eastern Europe. Gender equal treatment legislation can have the effect of hindering sound risk management by companies that offer protection against the hazards of life.[20]

It is worth mentioning that the example of US mortgage loans crisis shows that public policies against discrimination have actually been one of the factors contributing to the current recession.[21] In some EU countries this lesson should be treated more seriously than in others.

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18. Oxera, "The impact," 18.
19. Ibidem.
20. V. Petkantchin, "EU anti-discrimination policy's impact," 155.
21. Ibidem, 155.

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Porównanie efektu ujednolicenia ze względu na płeć składek i świadczeń ubezpieczeniowych w Polsce i wybranych krajach Unii Europejskiej

21 grudnia 2012 r. wprowadzony został w Unii Europejskiej zakaz różnicowania składek i świadczeń ubezpieczeniowych ze względu na płeć. Spodziewano się, że wprowadzenie zakazu spowoduje negatywne konsekwencje zarówno dla rynku ubezpieczeń, jak i dla samych ubezpieczonych. W celu oszacowania potencjalnych skutków zmian, które niesie za sobą wprowadzenie zakazu, przeprowadzonych zostało szereg badań empirycznych. W niniejszym artykule poddano analizie terytorialne zróżnicowanie efektów stosowania jednakowych składek i świadczeń w ubezpieczeniach na życie oraz w ubezpieczeniach komunikacyjnych. Różnice w umieralności analizowano w 22 krajach UE na podstawie danych

demograficznych z The Human Mortality Database oraz Głównego Urzędu Statystycznego. Ryzyko spowodowania wypadku komunikacyjnego oceniano na podstawie danych statystycznych dotyczących liczby kierowców powodujących wypadki drogowe oraz liczby czynnych praw jazdy w trzech wybranych państwach: Polsce, Niemczech i Wielkiej Brytanii.

W artykule wykazano, że kraje Europy Środkowo-Wschodniej charakteryzują się wyższą nadumieralnością mężczyzn, co powoduje większe zmiany składek netto wyznaczanych bez względu na płeć w porównaniu do składek wyznaczanych dla obu płci oddzielnie. W ubezpieczeniach komunikacyjnych prawdopodobieństwo spowodowania wypadku drogowego oraz średni koszt szkody są zróżnicowane regionalnie. We wszystkich analizowanych krajach ryzyko spowodowania szkody jest większe dla młodych mężczyzn niż kobiet, natężenie tego zjawiska jest jednak zróżnicowane terytorialnie. Wprowadzenie zakazu różnicowania składek komunikacyjnych ze względu na płeć może skutkować różnym poziomem zmian wysokości składek dla kobiet i mężczyzn w poszczególnych państwach. W powyższych analizach nie uwzględniono efektów innych potencjalnych zmian procedury oceny ryzyka, które mogą zostać wprowadzone przez zakłady ubezpieczeń w odpowiedzi na zakaz różnicowania składek i świadczeń ze względu na płeć .

Słowa kluczowe: ryzyko ubezpieczeniowe, płeć, ubezpieczenia na życie, ubezpieczenia komunikacyjne.

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