



The use of gender in insurance pricing

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THE USE OF GENDER IN INSURANCE PRICING¹

Key messages

- The CEA firmly opposes unfair discrimination.
- The CEA supports differentiation in insurance based on objective and relevant statistical data.
- The use of statistics is indispensable in all applied sciences, including actuarial science.
- Gender is a legitimate determining factor in insurance pricing.
- Banning the use of gender in insurance pricing would be highly detrimental to consumers. It would:
 - change overall consumer demand, lead to adverse selection² and moral hazard³, and hence require higher risk margins;
 - lead to a general premium increase and to the withdrawal of certain products from the market;
 - generate significant additional administrative and operational costs that would ultimately be borne by consumers; and,
 - reduce market flexibility and competitiveness, and ultimately consumer choice.
- The retroactive implementation of unisex rates would raise legal challenges and cause market disruption.
 - The exact impact would depend on the national legal framework and market structure, but on the whole it would be significant.
 - The existing mathematical reserves of some contracts would have to be increased significantly.
 - Some existing policyholders could be unable to pay for the required premium increases, whereas others could face financial difficulties if their benefits (eg their annuity) were reduced.
 - This could also result in legal actions, create legal uncertainty and generate additional administrative and legal costs for both policyholders and insurers.

¹ "Insurance pricing" is used throughout the policy paper to refer to insurance pricing and benefit design

² See annex for definition

³ See annex for definition

The use of gender as a determining factor in insurance pricing is currently under discussion at EU level. This policy paper explains why insurance companies need to take account of gender in their pricing process and what would happen if the use of gender were prohibited.

1. Why gender is needed in insurance pricing

1.1 Insurance pricing relies on a fair risk assessment process

Unlike public schemes, private insurers offer consumers the freedom to choose insurance products and the scope of their cover. This means that applicants can choose whether and when to buy insurance, which types of insurance best suit their needs and what amount of cover they want.

Insurance pricing is founded on sound actuarial principles and on a fair risk assessment process. Due to the voluntary nature of private insurance, insurers need to assess risks in order to:

- limit adverse selection;
- ensure their solvency and protect existing policyholder funds; and,
- remain competitive, and thus enhance consumer choice.

The assessment of the risks submitted to insurers is based on:

- the information in the application form and additional questionnaires (when applicable); and,
- the guidelines in underwriting manuals (usually drawn up by reinsurers). These guidelines are extensively researched, regularly updated and derive from objective and relevant statistical data as well as medical knowledge.

Underwriting is the process by which an insurer determines whether or not and on what basis it accepts an application for insurance. In life and health insurance, for example, the primary goal of underwriting is the accurate prediction of future mortality and morbidity. These estimates are normally based on past experience, coupled with projections of future trends, for groups with similar risks and exposures. The grouping of applicants with similar risks and exposures for the purpose of setting prices is the fundamental precept of a workable, private, voluntary insurance system.

In summary:

- private insurers differentiate fairly between applicants;
- the premiums are appropriate, and the insureds pay a premium commensurate to their risks and exposure (fair pricing principle);
- as a result, consumers enjoy better access to voluntary private insurance.

1.2 Risk assessment does not constitute unfair discrimination

According to settled European Court of Justice case law, the equal treatment or non-discrimination principle requires that comparable situations are treated equally and that different situations are treated differently.

Differentiating between different risks on the basis of a comprehensive risk assessment is the core of private insurance. To be able to differentiate between the risks submitted to them, insurers must have access to objective and relevant statistical data at the time of underwriting. There is no reasonable way of providing full transparency to insurers with regard to personal insurance risks; applicants will always know more than the insurer, no matter how careful the underwriting. If the asymmetry is too pronounced, however — ie, if a product exposure to adverse selection or moral hazard is too high — then the insurer has no alternative but to substantially increase premiums or to take the product off the market and it is the consumers who suffer.

Comparable situations are treated equally and different situations are treated differently

1.3 Statistics are needed to price risks

Statistics are an essential tool in the development of all sciences. Over the last decades, scientists have developed the sound statistical standards that are used in actuarial science to assess insurance risks accurately.

The US Supreme Court delivered a landmark ruling in this respect as far back as 1983. In its *Norris* ruling, the Court explained why statistics are needed in annuity insurance:⁴ “Insurance and life annuities exist because it is impossible to measure accurately how long any one individual would live. Insurance companies cannot make individual determinations of life expectancy; they must consider instead the life expectancy of identifiable groups. (...) The writing of annuities thus requires that an insurance company groups individuals according to attributes that have a significant correlation with mortality. The most accurate classification system would be to identify all attributes that have some verifiable correlation with mortality and divide people into groups accordingly, but the administrative cost of such an undertaking would be prohibitive. Instead of identifying all relevant attributes, most insurance companies classify individuals according to criteria that provide both an accurate and efficient measure of longevity, including a person’s age and sex. These particular criteria are readily identifiable, stable, and easily verifiable.”

The use of statistics is indispensable in insurance pricing

⁴ *Arizona Governing Comm. v. Norris* (463 U.S. 073 (1983)), US Supreme Court, 6 July 1983

Gender is an objective determining factor allowing fair pricing

1.4 Gender is a legitimate determining factor in insurance pricing

Differentiated treatment in pricing is done on the grounds of objective determining factors. Gender is one such factor, as it allows insurers to address the issue of actuarial fairness and ensures fair risk classification and pricing processes. It is used for the pricing of insurance products when it has an objective impact on the risk to be covered. Conversely, gender is not used in pricing products when it does not have such an objective impact (eg home insurance⁵).

Currently, gender is used in the pricing of insurance products such as:

- life, disability and critical illness insurance (life expectancy, mortality, morbidity)
- private health insurance (morbidity, life expectancy)
- travel insurance (morbidity, life expectancy)
- motor insurance (risk exposure to road traffic accidents) and/or
- accident insurance (risk exposure to accidents)

Gender is a legitimate determining factor for the pricing of these products as there are strong indications of a causal relationship between gender and mortality and morbidity. Statistics show that the gender gap in life expectancy at birth in Europe still stands at 6.5 years ⁶. And even if other factors such as smoking habits, socio-economic or marital status and occupation are controlled for, the difference between sexes in terms of life expectancy remains ⁷. This difference is reflected in the pricing of insurance products. For instance, due to women's longer life expectancy, women usually pay less than men for term life insurance, whereas men's pension annuity rates are usually lower.

Furthermore, some diseases, such as prostate cancer or cervical cancer, are clearly sex-specific, which is why many private health insurers use gender as a criterion to assess the risk of the applicant. Moreover, the development of the new discipline of "gender medicine" in recent decades for instance in Germany and in Austria, has shown that men and women are affected differently by the same diseases, react in different ways to the same medicine and therefore need different treatments. This obviously has an impact on healthcare costs⁸.

Here, too, the US Supreme Court delivered a landmark ruling over 30 years ago when it acknowledged that gender is a legitimate determining factor in insurance pricing. In its *Manhart* decision of 1978⁹, the US Supreme Court stated that: "All the reasons why women statistically outlive men are not clear. But categorizing people on the basis of sex, the one acknowledged immutable difference between men and women, is to take into account all of the unknown reasons, whether biologically or culturally based, or both, which give women a

⁵ Actuarial and statistical data show no difference in claims experience between home insurance contracts signed by men or women

⁶ "Health at a glance: Europe 2010", pp.26 & 27, OECD http://ec.europa.eu/health/reports/docs/health_glance_en.pdf.

⁷ Press release: "Society should consider the full impact of unisex insurance, say actuaries" and Briefing Paper: "Unisex insurance ratings", Groupe Consultatif Actuariel Européen, 13 October 2010

⁸ "Methodologic Ramifications of Paying Attention to Sex and Gender Differences in Clinical Research", Martin H. Prins and others, Department of Epidemiology, University of Maastricht, The Netherlands, "Gender Medicine", Vol.4, Suppl. B, 2007, pp. 106 ff

⁹ *City of Los Angeles v. Manhart* (435 U.S. 702 (1978)), US Supreme Court, 25 April 1978

significantly greater life expectancy than men. It is therefore true (...) that any individual's life expectancy is based on a number of factors, of which sex is only one. But it is not true that, by seizing upon the only constant, "measurable" factor, no others were taken into account. All other factors, whether known but variable or unknown — are the elements which automatically account for the actuarial disparity."

Furthermore, in the Norris ruling cited earlier, the US Supreme Court also stated that "Life expectancy is a non-stigmatizing factor that demonstrably differentiates females from males and that is not measurable on an individual basis. (...) [T]here is nothing arbitrary, irrational, or 'discriminatory' about recognizing the objective and accepted (...) disparity in female-male life expectancies in computing rates for retirement plans".

1.5 There are no reasonable alternatives to gender in insurance pricing

If gender could no longer be used in pricing, insurers would be likely either to give more weight to other rating factors already used in pricing models or to use new rating proxies, or even to look for other ways of measuring the risks submitted to them.

If insurers were to give more weight to applicants' behaviour, for instance, their premium calculation would have to be based on highly personal and subjective characteristics such as, but not limited to, social status, income, occupation, place of residence, lifestyle (such as smoking or alcohol consumption), etc. Such an approach could obviously raise other issues, as in order to collect objective and relevant data on behaviour insurers might potentially adopt intrusive methods that could either infringe data protection legislation or be considered as indirect discrimination, or both. Furthermore, when pricing a long-term product, such as many private health or life insurance contracts, the question arises of how insurers should take into account individual characteristics that are not only highly personal but may also change over time.

Even if they were not prohibited by data protection legislation, the use of new rating proxies or new ways of measuring risks — for instance the systematic use of medical examination or of detailed medical or lifestyle questionnaires — would generate an additional administrative burden whose costs would have to be passed on to consumers. Gender, on the other hand, is a straightforward, objective, relevant and non-stigmatising factor.

Therefore, the CEA firmly believes that there are no reasonable and effective alternatives to the use of gender in insurance pricing.

2. The impact on consumers if gender were not allowed in insurance pricing¹⁰

2.1 Risk-inadequate pricing would increase premiums and lead to the withdrawal of products

Risk-inadequate pricing would create a redistribution effect, induce both adverse selection and moral hazard and lead to a general increase in premiums and possibly to the withdrawal of certain products from the market.

A ban on gender would lead to adverse selection and moral hazard

Even for compulsory insurance, without using gender it would be more difficult for an insurer to predict the proportion of men and women who would buy, keep in force or terminate a given insurance product and thus for that insurer to determine the gender distribution in its portfolio. Policyholders representing lower risks would be tempted to terminate their existing policy without taking up any new policy due to the required premium increase — eg, women for term insurance — whereas higher risk policyholders might want to maintain their existing cover or even purchase additional cover — eg, men for annuity insurance¹¹. In other words, it would induce both adverse selection and moral hazard.

Obviously, the redistribution effect would depend on the composition of the portfolio of each insurer. The change would be greater, for instance, for insurance companies that have created gender-specific products.

The true impact of adverse selection might indeed be impossible to anticipate because in practice — in personal insurance at least — adverse selection is usually cumulative; ie, it generates successive waves of insured persons terminating their policies, with each wave being followed by a premium increase. This phenomenon, also called selective lapsation, is well documented (the cumulative anti-selection theory) and can be explained by durational adverse selection; ie, the increased propensity of healthy customers to let their policies lapse.

A ban on the use of gender may also induce some insured persons to change their behaviour, thereby generating moral hazard. For example, young male drivers benefiting from lower insurance premiums would have a strong incentive to buy larger cars, which could encourage them to drive faster or more carelessly, resulting in a higher accident rate and an increase in medical costs. It could also mean more deaths on the road¹².

Therefore, if insurers were prevented from using gender in pricing, one could expect that higher margins would have to be built into the pricing process — in particular under the EU's new regulatory regime, Solvency II — to compensate not only for the emergence of adverse selection and moral hazard but also for the increased unpredictability in the mix of future business.

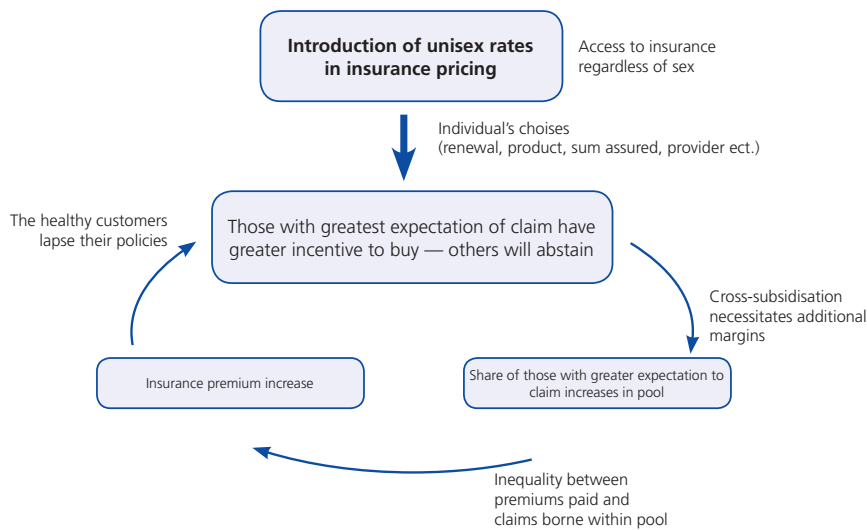
¹⁰ See also the Oxera report commissioned in 2010 by the Association of British Insurers (ABI): Full report <http://www.abi.org.uk/Publications/51810.pdf>

Summary <http://www.oxera.com/cmsDocuments/Agenda%20September%202010/ABI%20gender.pdf>

¹¹ See p.5 of the Oxera report

¹² See the Groupe Consultatif press release and briefing paper of 13 October 2010 mentioned above

Chart 1 | The effects of gender-neutral pricing



It must also be emphasised that these margins would come on top of:

- substantial additional administrative, operational and other costs
- the repricing as well as the costs related to the use of more sophisticated and thus more expensive risk management tools
- the costs generated by legal actions that could be brought against the legality of premium increases or benefit reductions.

In summary, the introduction of unisex tariffs for insurance products would not result in unisex rates converging at an arithmetical mean. It would lead — in all classes of business — to an increase in the average cost of insurance and possibly to the withdrawal from the market of the products particularly exposed to adverse selection or moral hazard, to the detriment of all consumers.

The introduction of unisex tariffs for insurance products would not result in unisex rates converging at an arithmetical mean

2.2 A ban on the use of gender in insurance pricing would reduce competition, innovation and consumer choice

Such a ban would mean that niche players — usually small and medium-sized insurers and insurance intermediaries — specialised in providing innovative, tailored insurance solutions for specific segments of the population (eg, motor insurance for women) could have to withdraw from the market, and this would result in reduced competition and less choice for consumers. It would also entail a loss of jobs at the small companies concerned.

This would go against the objectives of the EU to have a highly competitive social market economy as outlined in the Single Market Act of 27 October 2010¹³, and would be likely to jeopardise the future of numerous small and medium-sized enterprises (SMEs). As highlighted in the 2008 Small Business Act for Europe: “Our

¹³ EC Communication “Towards a Single Market Act for a highly competitive social market economy — 50 proposals for improving our work, business and exchanges with one another”, COM(2010) 608 final

capacity to build on the growth and innovation potential of small and medium-sized enterprises (SMEs) will therefore be decisive for the future prosperity of the EU. In a globally changing landscape characterised by continuous structural changes and enhanced competitive pressures, the role of SMEs in our society has become even more important as providers of employment opportunities and key players for the wellbeing of local and regional communities. Vibrant SMEs will make Europe more robust to stand against the uncertainty thrown up in the globalised world of today¹⁴.”

Any initiative at EU level prohibiting or limiting the use of gender in insurance pricing would deprive consumers of the concrete benefits of the insurance market's dynamism and competitiveness as well as of product innovation.

2.3 A retroactive gender ban would have a dramatic impact

The retroactive implementation of unisex rates would raise legal challenges and would cause market disruption

The retroactive implementation of unisex rates would raise legal challenges (eg, to the validity of contracts) and would cause market disruption. The impact would obviously vary depending on national legal frameworks and national market structures, but would certainly be significant. The existing mathematical reserves of some contracts would have to be increased significantly.

In cases where premium increases are possible (eg, motor insurance for young female drivers), some existing policyholders would be unable to pay for the required premium increases.

In cases where premium increases are not possible and the benefits that were being paid — annuities, for example — were reduced, some existing policyholders would face financial difficulties.

As a result, numerous policyholders would be likely to terminate their contracts because they would consider that they no longer provide good value for money. Other policyholders would choose to challenge the legality of their premium increase or benefit reduction.

To determine the impact of a retroactive implementation where the terms and conditions of the policies have been contractually guaranteed for the whole period of insurance, in particular for (very) long-term contracts, it is vital to assess whether the premiums or benefits can be adapted and, if so, to what extent.

Very rapidly, this situation would lead to cumulative anti-selection as described above.

¹⁴ EC Communication “Think small first — A ‘Small Business Act’ for Europe”, COM(2008) 394 final, p.2, 25 June 2008

2.4 Examples of the detrimental consequences of a gender ban for consumers

Due to the diversity of national social security systems and national legal systems, as well as economic, historical, cultural and political differences between EU member states, the impact of a gender ban would vary between national markets.

The impact on consumers would depend in particular on:

- the risks that are actually insured, which may differ between markets (eg, the degree of biometric risk coverage in pension products);
- the availability and relative attractiveness of substitutive products (eg, self-annuitisation contracts where the policyholders receive a fixed amount for a fixed period could become more attractive than pension annuities due to their lack of biometrical risk coverage);
- the penetration of insurance. In markets where there is, for instance, low demand for life insurance products for women, the impact of unisex tariffs would be much more limited than in markets where the demand is strong; and,
- whether the insurance product is mandatory or voluntary.

The following examples show the actual or expected impact of unisex tariffs on a few insurance products.

In Belgium, insurers have been applying unisex rates since a new law applicable to non-life insurance products came into force on 21 December 2007.

In motor third party liability insurance, statistics prove that there are clear differences between men and women. In 2008, claim costs for women were on average 14% lower than for men. The differences in claim frequencies between young female and male car drivers were even more marked. In 2008 the average claims frequency amounted to 7%, meaning that on average 7 out of 100 car drivers had an accident. For those aged 18, 19 and 20 years the claim frequencies were respectively 25.2%, 21.5% and 20.1% for young male car drivers and 13.9%, 12.5% and 11.9%¹⁵ for young female car drivers.

In practice, the gender ban in Belgium resulted in higher premiums and/or less insurance coverage for all non-life insurance products. Motor third party liability insurance was again a good example: the introduction of unisex rates for motor insurance in Belgium resulted in 2008 in premium reductions of 3–4% for young men (under 30 years old) and a premium increase of 7–15% for young women (under 30 years old).

In the UK, it is expected that the main impact of unisex tariffs on life insurance contracts would be that females pay more and males pay less, depending on the

¹⁵ Source: Assuralia's 2008 "Evolution de la fréquence des sinistres en assurance RC automobiles" at http://www.assuralia.be/fileadmin/content/stats/03_Cijfers_per_tak/01_Auto/08_Evolutie_schadefrequentie/FR/Evolution_fr%20E9quence_des_sinistres_RCAutomobile_FR_v2.pdf.

gender mix in the portfolio. As explained earlier, the unisex rate would be higher than the average between the current male and female rates, as shown in Table 1.

Table 1 | Illustration of redistribution effect — term life insurance¹⁶

Unisex premiums					
	Current premium	Gender mix	Weighted average	Including risk margin	% change
Female	£25	30%	£28.5	~£30	35–50% increase
Male	£30	70%	£28.5	~£30	0–10% reduction

With regard to motor insurance, the UK Department for Transport showed in 2008 that, in accident statistics, the number of male drivers exceeding the speed limit was more than six times the number of female drivers, and over three times as many male drivers were driving too fast for the conditions than females. Similarly, according to the UK Ministry of Justice (2008), in 2006 male drivers were responsible for 80% of all speeding offences and 90% of all driving offences. Against this background, research conducted in 2010¹⁷ shows that a ban on the use of gender in risk assessment for motor insurance would lead to a 25% premium increase for young female drivers and a 10% premium reduction for young male drivers.

In France, according to recent statistics, it is expected that the introduction of unisex rates for motor insurance would result in a premium increase of 30–60% for young female drivers¹⁸.

Furthermore, in the absence of pension funds in France, life insurance contracts are often taken out for pension savings purposes. It is clear that the overall impact of the ban on the use of gender in insurance pricing on life insurance would be significant. This would contravene the fair pricing principle and make it more difficult for some French consumers to have access to insurance.

¹⁶ See p.69 of the Oxera report: current premiums (broadly) reflect actual annual premiums for male and female (non-smoking) policyholders, assuming a 15-year term and a guaranteed amount of £150 000 (single cover). The unisex premium is calculated as the weighted average (plus risk margin), all else being equal

¹⁷ See the Oxera report summary: <http://www.oxera.com/cmsDocuments/Agenda%20September%2010/ABI%20gender.pdf>

¹⁸ See among others http://www.economie.gouv.fr/directions_services/dgtpe/assurance/differences_hf2010.pdf

Annex: Effects of asymmetric information

Asymmetric information results in two effects: adverse selection and moral hazard.

Adverse selection (anti-selection)

Anti-selection is a “mechanism between insurers and the insured, driven by asymmetric information, that for a heterogeneous population results in the worst risks being the most active purchasers of a given insurance contract.... If [insurers] were to offer the same insurance contract to all the members of [a given] population, assuming all members to be equally risk-averse, it would be the ‘bad risks’, i.e. those most at risk, who mainly would purchase the cover. The actual loss ratio would turn out higher than the loss ratio expected for the entire population.... In summary, adverse selection is the way bad risks pass themselves off as good risks due to the insurer’s inability to keep tabs on all the parameters affecting claim probability¹⁹.”

In other words, adverse selection occurs when one of the parties to an insurance contract (the insured) knows the risk better than the other party (the insurer) who is assuming the risk.

Adverse selection applies to every area of insurance: life, disability, unemployment, health, auto, workers’ compensation, liability, etc. The same asymmetric information problem is also present in other areas, such as the employment and loan markets.

Moral hazard

Moral hazard is “the term we use when the specifics of the contract induce [the insured] to adopt behaviour that is non-observable [to the insurer] and which is detrimental to their common interest. The notion of moral hazard is a different concept from that of adverse selection, though it is often extremely difficult to draw a clear distinction. Thus one may observe that claims are high for a particular product, but still find it difficult to determine whether this is the result of detrimental behaviour encouraged by one of the product’s features, or whether the product has attracted a specific group of insureds with inherently greater risk²⁰.”

“An additional distinction might prove helpful here: Ultimately, moral hazard and adverse selection may be differentiated by their causality, a term well known to econometricists. For example, the existence of insurance cover can remove some of the incentives for being prudent and actually increase the risk that it is designed to protect the [insured] against. For this to be considered moral hazard, the cover must exist prior to the increase in risk that it in fact causes. With

¹⁹ “Dictionnaire de l’économie d’assurance”, Risques, No.17, January – March 1994: pp.12–13

²⁰ “Assurance et économétrie des contrats: quelques directions de recherche (monograph)”, P.A. Chiappori, 14 December 1995, p.6

adverse selection, in contrast, it is the [insured's] characteristics — higher risk, for example — that exist prior to the contractual relationship, and are indeed one reason why the coverage was bought: the causal relationship between coverage and risk is neatly reversed²¹.“

One may also speak of moral hazard when specific contract provisions (eg, the level of commissions) induce similar “non-observable behaviours detrimental to the common interest“ in the seller (agent or broker).

21 “Assurance et économétrie des contrats: quelques directions de recherche (monograph)“, P.A. Chiappori, 14 December 1995, p.7



The CEA is the European insurance and reinsurance federation. Through its 33 member bodies — the national insurance associations—the CEA represents all types of insurance and reinsurance undertakings, eg pan-European companies, monoliners, mutuals and SMEs. The CEA, which is based in Brussels, represents undertakings that account for around 95% of total European premium income. Insurance makes a major contribution to Europe’s economic growth and development. European insurers generate premium income of over €1 050bn, employ one million people and invest more than €6 800bn in the economy.

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