The personalisation of prices and conditions in the insurance sector

An exploratory study

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The Dutch Authority for the Financial Markets

The AFM is committed to promoting fair and transparent financial markets.

As an independent market conduct authority, we contribute to a sustainable financial system and prosperity in the Netherlands.

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Management summary

In this exploratory study, the AFM describes, analyses and identifies the development and use of personalised premiums and policy conditions in the Dutch insurance sector, with a focus on non-life insurance. The increasing availability of data, more advanced models and algorithms enables insurers to personalise premiums and policy conditions. Insurers can use personalisation to produce a more refined estimate of claims or to reduce the claims cost (cost component of the premium), or to maximise profit (margin component of the premium). The AFM explores the possibilities and developments, identifies opportunities and risks, and on that basis has formulated considerations regarding premium personalisation, for both individual insurers and the insurance sector and policymakers.

The behaviour-based personalisation of premiums in particular is making a gradual entry into the Dutch insurance sector. Personalised policy conditions currently appear to be hardly used, if at all. The cautious approach adopted towards the use of personalised premiums and personalised policy conditions can be attributed to the scope of the legal framework, social acceptance, technical limitations and the moral compass. At the same time, examples from abroad show that developments can quickly gain momentum, that consumer awareness and resistance are limited and that the competitive pressure can overshadow the moral compass.

Personalised premiums and personalised policy conditions pose both opportunities and risks. The opportunities include a lower claims cost in behavioural pricing and the perception of a fairer market because risk-averse consumers ‘pay a lower share of the costs' of the risk-taking behaviour of others. The risks inherent in personalised premiums and policy conditions include a greater risk of uninsurability, the use of data as a means of acceptance or payment, and a less transparent market for comparing insurance products.

As a precaution against the undesirable effects or side effects of this development, in this exploratory study the AFM provides a set of considerations (see figure 1) directed to individual insurers, the sector and policymakers. The structuring of and responsibility for using personalised premiums and policy conditions in a responsible manner lies largely with the individual insurers. The potential undesirable effects or side effects of an individual action could be prevented at sector level. In areas where the insurance sector is unable to take that responsibility, there may be a role for policymakers.

Individual insurers
1. Take into consideration how imputable and influenceable the input data used are.
2. Take the customer's interests into consideration in a balanced manner when using data to determine the premium.
3. Do not use insights derived from data for a specific insurance for the pricing of other types of insurance as well.
4. Do not make the sharing of behavioural data mandatory.
5. Ensure that the data and data analysis are of high quality, so that unjustified (indirect) discrimination will never occur.
Sector and policymakers
6. Take both the short and long term into consideration.
7. Transparency and explicability can help raise customer awareness.
8. Safeguard customers' insurability.
9. Compulsory acceptance is a means of safeguarding insurability.

Figure 1. Considerations by stakeholder

The AFM's key mandate regarding pricing techniques and personalised policy conditions is the PARP standard. The *Product Approval and Review Process* (PARP) standards require financial product developers to take the interests of consumers into consideration in a balanced manner. A financial product must demonstrably be the result of the balancing of such interests, in which cost efficiency may also plays a role. Where the PARP standard does not suffice, the AFM can invoke the general duty of care.

The AFM has conducted this exploratory study with the aim of providing guidance to insurers and to lay the foundations for a dialogue with all stakeholders involved. Where the legal framework governing the use of pricing techniques has open standards, the moral compass is all the more important. The speed at which the techniques outlined are developing, the potential impact on consumers and the potential wider social impact call for a proactive dialogue, in addition to monitoring. The AFM would like to engage in this dialogue with the sector and all stakeholders involved.

1. Background

Digitalisation is a significant development with major consequences for the AFM's mission. The world around us, including the financial sector, is digitalising at lightning speed.[1] This development offers opportunities for both consumers and financial organisations. At the same time, the AFM believe that it has a duty to proactively identify the potential risks of this development, particularly for consumers in vulnerable situations.

The digital world offers organisations new opportunities to use insights into their potential and existing customers for their own or the customers' benefit. Providers can more easily obtain data online from digital processes and the trail left behind by consumers, which they can then monitor and analyse. They can use this information to improve the online customer experience or to anticipate customer questions. In addition to improving customer service, data and methods are also available to approach specific customer groups and to facilitate differentiation of prices. Advanced models can be used to adjust the selling price for customer groups or individuals in a split second. To what extent is differentiation of prices common practice in the financial sector?

This exploratory study centres on the development of pricing and personalised conditions in a digitalising world, specifically for the insurance sector. Given the developments and potential, the focus lies on non-life insurance. Put simply, cost plus a margin determines the commercial price. For insurance, risk (probability and the extent of damage or loss) is a key component in determining the cost and hence the final commercial price. Risks may vary for individuals and insurers use actuarial data to assess these risks as accurately as possible. The volume of data is growing rapidly and the techniques and models used to analyse the data are becoming more advanced. As a result, insurers are able to further refine profiling, for example on the expected claims cost (as part of the cost price). More advanced models are equally capable of assessing an individual's willingness to pay, or personalising policy conditions. This exploratory study focuses on both differentiation of the variable cost component (expected claims cost) and the margin component of the premium. The use of personalised policy conditions is also discussed.

Although the use of personalised pricing techniques in the Netherlands is still in its infancy compared to the United States and the United Kingdom, the expectation is that developments will pick up speed here as well. Personalised premiums can lead to 'fairer' premiums because the costs of individual risks are more accurately estimated and priced. At the same time, individual premiums may undermine solidarity in the insurance sector and consumers may be affected by indirect discrimination or uninsurability. The question is whether European legislation in this area is sufficient to prevent any undesirable effects. In conclusion, naïveté-based discrimination can occur when consciously responding to certain target groups' weaknesses (limited attention span

[1] AFM (2020) *Trend Monitor 2021.*

and information searching/decision-making skills), which may lead not only to ethical objections, such as the loss of privacy, the perception of unfair prices, a shift in power, but also to welfare loss[2].

1.1 Aim of this exploratory study

The AFM has conducted this exploratory study with the aim of achieving the following five objectives:

1. Exploring the **possibilities of** personalised pricing and policy conditions for the insurance sector in a digital world and **current use** by market parties.
2. Identifying **the effects or side effects** of personalised pricing and policy conditions for the insurance sector and consumers.
3. Based on the analysis of opportunities and effects or side effects, **providing considerations** for individual insurers, the insurance sector and policymakers regarding personalisation of premiums and the personalisation of policy conditions.
4. Ensuring that insurers strike a **careful balance** between the potential advantages and disadvantages when using pricing techniques.
5. Initiating the **dialogue** on the opportunities and risks between the insurance sector, industry associations, the government and national and international supervisory authorities, not only from the perspective of protecting individual consumers (duty of care), but also from the social perspective.

This AFM exploratory study aims to alert the market to the undesirable effects of personalised pricing in the insurance sector and provide considerations for using it. Consumer resistance does not seem to be effective in preventing potentially undesirable developments arising from price personalisation. It is difficult for consumers to offer resistance to something they do not know or recognise, or have no insight into[3], especially because consumers can be passive. Consumer resistance is usually driven by an active minority. In the market structure around further personalisation, the active minority benefits from the current system and will therefore refrain from taking the lead on behalf of the whole consumer group in preventing undesirable developments. Greater transparency will only partially solve the problem and may have undesirable side effects[4].

[2] Tuinstra & Van der Noll (2020)
[3] Behavioural experiments carried out on behalf of the European Commission (2018) and OECD (2021) show that personalisation and price differentiation are difficult for consumers to recognise. Consumer research shows that consumers hardly take provided information into consideration in their purchase decisions (OECD, 2021) or are even unconsciously motivated by this information to overconsume (from the Rest et al., 2020).
[4] ASIC/AFM (2019) *Disclosure, why it shouldn't be the default.*

1.2 Scope of the exploratory study

The exploratory study focuses specifically on the insurance sector due to the wide range of possibilities for pricing techniques. The insurance sector has already taken steps in the area of differentiated premiums, such as granting a premium discount if consumers demonstrate safe driving behaviour or a healthy lifestyle. Differentiated premiums and policy conditions can also be used for life insurance, but the exploratory study has revealed that the market focuses on non-life insurance. Unlike supplementary health insurance, premium personalisation is prohibited for the basic health insurance. For other financial products, such as mortgage loans or investment products, new pricing techniques would seem to be less appropriate for the time being. Although pricing techniques are strongly linked to topics such as online targeting and the online choice environment, in this exploratory study the AFM specifically discusses pricing techniques.

In addition to the dynamics in product pricing, the possibilities of personalised policy conditions have also been included in this exploratory study. The feasibility and verifiability of this technique were primarily examined for this component.

For the sake of readability, where this exploratory study refers to 'insurers', the AFM actually means anyone who has an influence on the insurance premium, conditions or acceptance policy. In addition to insurers, this may also include authorised underwriting agents, advisers and intermediaries where they have such a role.

1.3 Approach to the exploratory study

The insights from this exploratory study are based on a literature review and sector-wide interviews, conducted by the AFM, with various stakeholders. The interviewees included scientific and commercial experts, Dutch insurers, other market players and national and international supervisory authorities. The aim was to obtain a picture of both current practice and the expected pricing developments in the insurance sector.

1.4 Reading guide

The exploratory study addresses the developments and considerations regarding advanced pricing techniques for insurance. First, the variety of pricing techniques are discussed (Chapter 2). The techniques already used in the Dutch insurance sector are then outlined (Chapter 3). The potential positive and negative effects of personalised pricing in the insurance sector and the resulting considerations for insurers and policy makers are subsequently discussed (Chapter 4), followed lastly by the AFM's mandate (Chapter 5).

2. Price and possibilities in a digital world

The price essentially is the amount people must pay to purchase a product or service, and is usually based on fixed costs, variable costs and margin. This chapter discusses the specific price components of insurance products, the pricing techniques that may potentially be used, and how data play a key role.

2.1 Price structure of non-life insurance products

The premium for an insurance product consists of the same components as the price of any other product: fixed costs, variable costs and margin. Fixed costs include operational, distribution, acquisition and administration costs for an insurance policy. The variable costs of an insurance policy often include an estimate of the expected claims cost for insured persons or a group of insured persons. The insurer makes a risk assessment based on variables that vary according to the type of insurance. In car insurance, for instance, factors such as age, place of residence and the characteristics of the car that is to be insured play a role. The calculation of the expected claims cost is an approximation of reality, which can be negative for the insurer for one policy (more damage on average than estimated and priced in advance) and positive for another (less damage on average than estimated and priced in advance). In addition to the fixed and variable costs, the premium consists of the margin component, from which an insurer can earn a return. The margin level is mainly determined by the level of competition for the type of insurance product and the insurer's strategic considerations, such as the extent to which the insurer aims to gain market share or prefers to achieve a higher return.

Box 1 | Combined ratio

The profitability of a non-life insurance product is often expressed by the combined ratio. The combined ratio is determined by adding up the claims paid and the fixed costs and then dividing the total amount by the premium received. An insurance product is profitable if the combined ratio amounts to less than 100%. An insurance product makes a loss if the ratio is higher than 100%. An insurer with a combined ratio of 94%, incurs fixed and variable costs amounting to 94 euros out of every 100 euros of premium received and earns a margin of 6 euros.

2.1.1 Cost component

Insurers can increase their return by reducing fixed costs as much as possible. Fixed costs can be reduced, for example, by more efficient processes and changes in the distribution strategy, partly thanks to digitalisation.

The personalised estimation of the expected claims cost, the second cost component, may potentially help the insurer to approximate the actual claims cost. More data can provide a more detailed picture so that a more accurate prior estimate can be made of the claims cost of an individual or customer group. The more refined and detailed the segmentations are, the smaller

each group becomes; a combination of segments that leads to a group consisting of one individual is comparable to personalisation. Monitoring and prevention can also be used to minimise risks or to adjust the premium during the policy period.

2.1.2 Margin component

In addition to the personalisation of the variable cost component, the personalised determination of the margin is increasingly being facilitated in a digitalising world. Traditionally, an insurer charges the same margin on a product or service for all interested parties and therefore the same margin on top of the cost price for everyone. In a digitalising world, it is possible to tailor the margin more specifically to a group or individual. This means that one person or group pays a higher margin than another person or group. An insurer can charge a higher margin for people who are willing to pay for it. In theory, this offers the insurer the opportunity to increase its profit by minimising the consumer surplus (for every individual). If the consumer surplus is zero, no consumer pays less than the maximum amount they are willing to pay.

Box 2 | Consumer surplus

The equilibrium price is where the supply of goods equals demand. From an economic point of view, this is the optimal price, because it is the point where supply and demand intersect. However, the demand line reflects the willingness to pay of all consumers in the market. This means that there are consumers who would have been willing to pay more than the equilibrium price and therefore pay less than the maximum amount they are willing to pay. The difference between the willingness to pay and the equilibrium price is the consumer surplus.

Organisations can partially absorb the consumer surplus through price discrimination and price differentiation. When using price differentiation, a different price is charged for a slightly different product, whereas for price discrimination the differences in price cannot be traced back to differences in costs or product characteristics. In other words, a different price is charged for the same product for various consumers or consumer groups.

Figure 2.1. Overview of pricing techniques

There are three degrees of price discrimination:

- First-degree price discrimination is the most detailed and potentially enables an organisation to determine the willingness to pay for each individual. This allows the insurer to fully absorb the consumer surplus. If this is feasible, the insurer can achieve the maximum margin for each individual.
- Second-degree price discrimination focuses on the quantity purchased based, for example, on volume or package discount**.**
- Third-degree price discrimination enables an organisation to vary the price for different customer groups. The purchasing preferences of potential buyers are less clear, but consumers' personal characteristics, such as age, are known. This enables the insurer to partially absorb the consumer surplus by responding to the price elasticity of the customer groups that have been defined.

In personalised pricing, consumers' willingness to pay is approximated for individuals or groups. Personalised pricing is often confused with dynamic pricing. Personalised pricing can be construed as any form of price discrimination, using personal characteristics and consumer behaviour (according to group or individual) resulting in a price that approximates consumers' willingness to pay[5]. Consequently, personalised pricing includes not only first-degree price discrimination, where the focus lies on achieving the willingness to pay (or just below the maximum amount), but second-degree (where sufficient data have been collected) and third-degree price discrimination also fall under this definition. Dynamic pricing adjusts the prices according to changes in supply and demand, without using the buyer's personal characteristics.

[5] OECD (2018) *Personalised pricing in the digital era*.

It should be noted that it is also possible to offer everyone a uniform price, and then personalise it after purchase using discounts tailored to individuals or groups. Prices after discounts are more difficult to compare, but may lead to highly personalised prices.

This exploratory study will centre on the development of personalised pricing and the possibilities of personalised policy conditions in the insurance sector.

2.2 Data and advanced analyses as a basis for determining price

Big data and advanced data analyses enable organisations to obtain a variety of information and insights about existing and potential customers. Consumers' increasing interaction via the Internet, partly using smartphones and apps, generates an ever-increasing flow of data to organisations. Organisations not only acquire insight into personal information (age, place of residence, etc.), but also into aspects such as online search behaviour via search engines, browsing behaviour on the organisation's websites, interests and preferences shared on social media and locations shared. In addition to the increasing flow of data sources, the data analysis techniques that can be applied are becoming more advanced as a result of the introduction of self-learning algorithms, for instance. This means that organisations not only have more information about the customer, but are also capable of translating it more efficiently into knowledge, insights and actions.

2.2.1 Input required to personalise price

To understand how organisations can personalise the price, it is important to zoom in on the input data required to actually be able to personalise the price. Although the pricing process can differ for individual organisations, according to an OECD study[6], three general steps can be identified that organisations use to personalise prices:

1. The organisation collects data on the personal characteristics and behaviour of a particular customer or customer group.
2. The organisation determines the willingness of the particular customer or customer group to pay based on the data collected.
3. The organisation applies personalised pricing based on the estimated willingness to pay and the optimal price for each customer or customer group.

2.2.2 Collecting characteristics

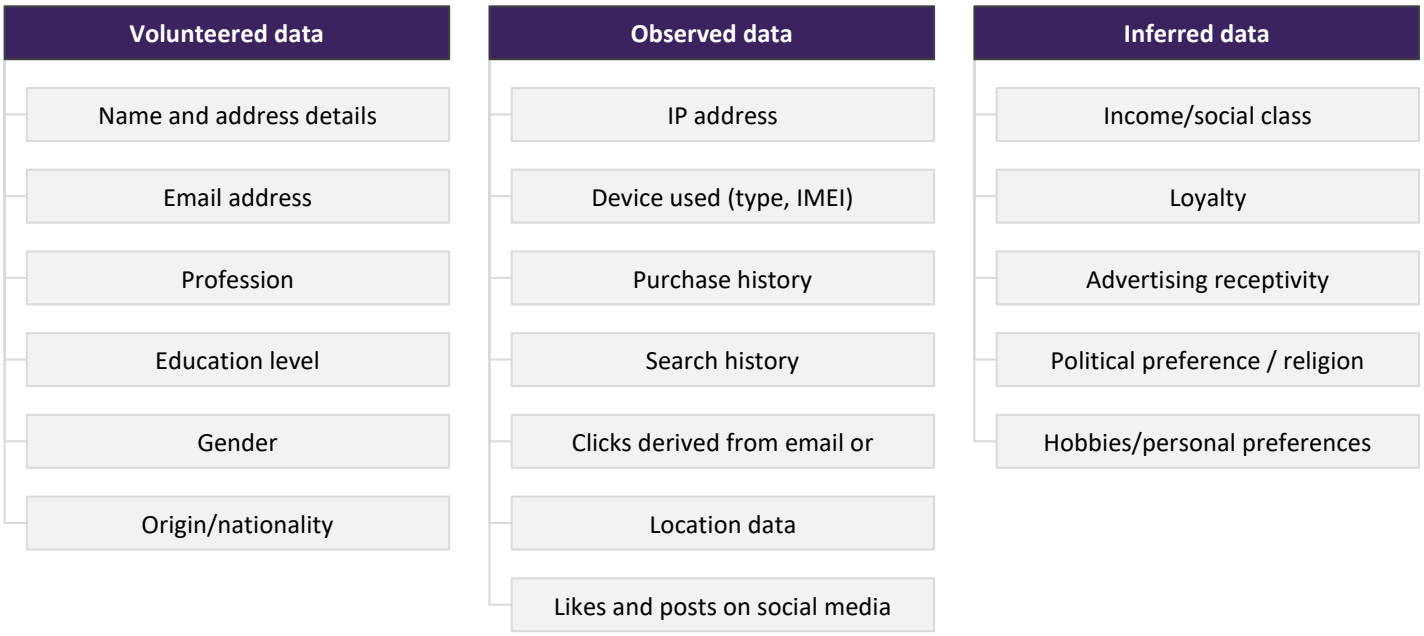
The first step, collecting personal characteristics and behavioural data on a particular customer or customer group, is the most important step in successfully applying personalised pricing. The data required can roughly be divided into three categories:

[6] OECD (2018) *Personalised pricing in the digital era.*

- The data submitted by the customer personally (volunteered data);
- The data the organisation can immediately extract from the customer (observed data);
- The data that can be derived from the customer's online behaviour (inferred data).

The table below shows examples of input data for each category that can be obtained in various ways. For example, customer data can be requested using the online application form, cookies can be used and internal data sources can be enriched with externally purchased data.

Figure 2.2. Examples of input data by category



2.2.3 Determining willingness to pay and the ideal price

In the second and third steps, the organisation can estimate the willingness to pay based on the characteristics and behaviour of a customer or customer group and translate it into an optimal price. It is not easy to determine each individual customer's willingness to pay, but with large quantities of data and more refined data it does not seem impossible. Currently, the costs may not yet outweigh the potential benefits. At the same time, it is uncertain whether the profit will be maximised if the organisation sets the price of a product for a particular customer in accordance with willingness to pay. Firstly, determining willingness to pay will always remain an estimate, due to which the willingness to pay of a particular customer or customer group, at a specific time, may be overestimated. That customer or customer group will not purchase the product because the estimated price is higher than the amount the customer or customer group is actually willing to pay. Organisations will generally set the prices at a slightly lower level than the actual willingness to pay of the customer or customer group to reduce the risk of losing customers. Secondly, due to market competition organisations may not always be able to charge a price that approximates the willingness to pay of the customer or customer group if consumers are able to and actually compare prices.

This exploratory study focuses on the use of personalised premiums by insurers. Personalisation can be applied to both the cost component of the premium, specifically the expected claims cost, and the margin component of the premium.

3. Insurance sector developments

At the end of 2019, the Financial Conduct Authority (FCA) published a study on the data usage of large UK insurers. Based on an analysis of millions of cases, the FCA[7] concluded that insurers are capable of performing highly advanced data analyses, based not only on traditional variables such as age, but also on information about a person's shopping behaviour, browser type and media consumption.

One of the most striking conclusions drawn in the report is that UK insurers performed data analyses to determine which customers would *not* switch after the renewal date of their policy. These customers were confronted with the highest premium increases, as the insurer had calculated that these groups of customers would probably agree to the 'loyalty penalty' (also referred to as price walking or dual pricing). In order to attract new customers, the insurers concerned used this margin gain to lower the premiums for new customers. Some of these new customers in turn will ultimately be faced with the same loyalty penalty. Although some insurers found this practice unethical, they were forced to apply the same mechanism, as they would otherwise no longer be able to compete with other insurers' low rates. The FCA is deliberating on what measures to take against the loyalty penalty. The loyal penalty also appears to be a frequently used method in Australia and the US.[8] At the end of 2020, the Irish supervisory authority published a report,[9] which revealed that dual pricing was used for car insurance and home insurance, with new customers receiving an insurance premium proposal that differed from that of existing customers.

Whether a loyalty penalty is used in the Netherlands has not been quantitatively researched in this exploratory study. It is evident that other sectors use the loyalty penalty, such as the energy sector, where loyal customers are often aged 65 and above, are low-skilled and/or have low incomes.[10] However, the AFM has found examples of cross-subsidisation. In the case of health insurance, different premiums may be offered between entities within one group. The policy conditions may also vary slightly.[11]

3.1 Drivers behind pricing techniques

The behaviour of other insurers is a strong driver behind the use of pricing techniques. Insurers use actuarial models to calculate a cost price for their insurance policies. In practice, actuaries provide a price range for the insurance. Several departments are involved in determining the final

[7] FCA (2020) *General insurance pricing practices market study*
[8] NAIC (2015) *Price Optimization White Paper*
[9] Central Bank of Ireland (2020) *Review of Differential Pricing in the Private Car and Home Insurance Markets - Interim Report*
[10] Tuinstra & Van der Noll (2020)
[11] ACM and NZA (2018) *Beter kiezen op de polismarkt*

commercial price, and competitor prices are also taken into account. If an insurance premium appears to be far lower than that of competitors, the premium can be adjusted upward to generate more margin without losing the designation ‘cheapest insurance’. Insurers use data from third parties to perform competitive analyses.

3.1.1 Legislation and ethics

The use of pricing techniques is limited by the law, social acceptance and the moral framework of insurers. What is legally prohibited, such as racial or gender differentiation, is not likely to occur. Moreover, Dutch citizens seem to value their privacy more than other countries, which tends to elicit social resistance when financial institutions use privacy-sensitive information for insurance premium or marketing purposes. Moral boundaries are also visible: insurers seem to concur that they should not use genetic testing to charge people with a genetic predisposition to serious illnesses higher prices for life or invalidity insurance, for instance. Nevertheless, indirect discrimination may occur if an insurer differentiates according to a characteristic that is not prohibited (such as postal code), but is linked to a prohibited ground (relatively more people of a certain origin live in certain postal code areas, than in other postal code areas)[12].

Diverging opinions in the sector about what is fair. Some consider measuring driving behaviour unfair because this would mean heading down a slippery slope towards the disappearance of solidarity. Others believe that driving behaviour-based pricing should be used as much as possible, for example in car insurance, to avoid risk-averse citizens 'subsidising’ the risk-taking behaviour of others. Opinions on the loyalty penalty described earlier also differ: some consider it undesirable while others point out that price increases for existing customers in the telecommunications and energy sectors are also common practice, and that switching is a consumer's own responsibility. The number of people switching between insurers annually might be an indicator of how well the market and competition work. In the Netherlands, 8% of people switched their car insurance to another provider[13] and at the end of 2020, 6.5% of people switched their health insurance to another provider, similar to previous years.[14]

3.2 Pricing and differentiation in the Dutch insurance sector

Differentiation in the insurance sector is an age-old phenomenon. Price differentiation strategies include targeted marketing campaigns or advertising in specific postal code areas. In these cases, however, a relatively broad differentiation strategy is implemented, rather than advanced individual pricing techniques.

[12] Netherlands Institute for Human Rights (2014) *Advies aan Dazure B.V. over premiedifferentiatie op basis van postcode bij de Finvita overlijdensrisicoverzekering*
[13] Zijlstra (2017)
[14] Vektis (2021) *Definitief overstappercentage komt uit op 6,5*

More advanced pricing techniques are making a gradual entry into the Dutch insurance sector. This mainly concerns pricing in which the premium is determined by the insured's behaviour and, to a lesser extent, pricing in which a premium is determined in *advance* based on big data sets and smart algorithms. This is associated with the relatively low availability of data, insurers not yet having advanced algorithms in house and the cautious use of customer data due to privacy and reputational risks.

A well-known example of behavioural pricing in the Netherlands is driving behaviour measured by the insurer. The insured installs a small tracking device inside their car or an app on their phone so that the insurer can analyse driving behaviour according to a number of programmed variables, such as speed, braking behaviour and driving through curves. The premium discount on car insurance can increase to double-digit percentages for safe driving behaviour whereas the premium may be increased for unsafe driving behaviour. Such insurance products may induce self-selection behaviour because the expectation is that safe drivers will primarily opt to have their driving behaviour measured. However, there is also a risk for the customer because the insurer is often entitled to terminate the policy unilaterally where the customer has exhibited extremely unsafe driving behaviour, such as exceeding the speed limit by more than 50 km/h. It is difficult to get a quote for a new car insurance from another insurer after that, as insurers often refuse to accept customers whose policy has been unilaterally terminated elsewhere.

Another concept used in the Netherlands is Vitality, which enables an insurer to monitor a customer's lifestyle. Vitality rewards a healthy lifestyle with a premium discount on invalidity insurance, for instance. People can also opt for a discount on products, ranging from a cinema voucher to an Apple Watch. The methods used to determine whether people have a healthy lifestyle include a questionnaire (about smoking behaviour, for instance), a health check (including a person's blood pressure) and determining the amount of physical exercise. 'Healthy living' is calculated relatively; a severely overweight person does not need to exercise as intensively for the same premium discount as a person who already is ultra-fit from the outset. Wheelchair users may also participate and receive a corresponding premium discount. Insurers can purchase the service and decide which Vitality applications they want to use. Similar to measuring driving behaviour, this clearly also induces self-selection because people who take sufficient physical exercise will apply for insurance that measures their lifestyle. For that matter, this does not alter the fact that such concepts may successfully encourage less risk-taking behaviour, partly because participation can cost money and that must be 'earned back' by the customer. The insurer therefore funds the premium discount in various ways: through the participation fees, the potentially lower claims cost and potentially induced self-selection.

In addition to behavioural pricing, determination of the premium can also be greatly refined in advance. A number of Dutch insurers use the services of external organisations to determine property values based on models, which is relevant, for instance, when determining the premium for home insurance. Traditionally, the premium for home insurance is determined on the basis of a number of 'traditional' variables (such as amount of surface area or roof type). Advanced pricing

involves making a complex calculation beforehand in an external database, which is based on numerous additional variables. Contrary to behavioural pricing, these techniques are less transparent in showing how the premium is calculated.

3.3 The future of pricing techniques

3.3.1 The possibilities are vast, use is still limited.

The question is not whether, but when more advanced pricing techniques will be more widely used to calculate the premium. Insurers can use a wealth of variables to determine a premium, such as measuring an existing or potential customer's website behaviour. An English lender, for instance, analysed how quickly a person used the slider to select a loan amount, as a creditworthiness indicator.[15] The type of browser[16] and the time at which the loan is taken out may also be taken into consideration. Such techniques could also be used by insurers.

Determining the premium based on a wide range of variables and advanced data analyses before the insurance agreement has been signed, (separate from measuring behaviour) does not yet seem to be widely applied by insurers in the Netherlands. All insurers use traditional indicators such as age, postcode, the number of kilometres driven and fuel type (for car insurance), or type of roofing (for home insurance) as input for the risk assessment. Insurers also keep a close eye on the premiums of market competitors to remain competitive. More advanced pricing techniques, such as analysing the willingness to pay of potential and existing customers, do not seem to be used yet, unlike countries such as the United Kingdom, the United States and Australia.

Behavioural pricing has made its entry into the Netherlands and may be more widely used. Measuring car speed and braking behaviour is just one aspect, but could be expanded to include where and when people drive. A person who often drives on relatively accident-prone roads, at times that are deemed relatively high risk, would pay a higher premium at the end of the month (again safe driving could imply a reduction). The same applies for measuring a person's lifestyle. An insurer can monitor the physical activities and request a person's blood pressure, but could also opt for GPS. Did a customer actually go the gym? Or does a customer often eat at a fast food restaurant? Furthermore, it is conceivable that other players, such as BigTechs and car manufacturers, will increasingly focus on accumulating data that will be used for insurance purposes.

[15] BBC (2002)
[16] CNET (2012)

3.3.2 Personalised policy conditions

An insurer generates a computerised personal set of policy conditions for every customer to create personalised policy conditions. Traditionally, and to date, one set of policy conditions is linked to an insurance product. There are variants – such as basic, plus and premium home insurances – but the policy conditions within a variant are the same for all customers. Personalised policy conditions are determined on the basis of individual customer characteristics. This does not concern financial advice on the variables that the customer can personally select, such as the waiting period for invalidity insurance, but rather a set of conditions generated by an algorithm. A person who applies for an invalidity insurance at night, for instance, might find more or fewer exclusions in their policy conditions, similar to a person who has accepted certain cookies or browses the website quickly or slowly. The AFM did not identify actual cases of the use of personalised policy conditions during this exploratory study.

Personalised policy conditions can be used in the interests of consumers, but also to boost profit. Suppose, for example, that people over 60 wear glasses relatively often, the algorithm can generate an insurance cover relatively liberally for a customer aged 62. However, the algorithm can also reduce or even eliminate the insurance cover, while a customer aged 42 will be granted more liberal cover for the same premium.

4. Effects or side effects and considerations

Personalised premiums and personalised policy conditions can have both potential benefits and potential risks. It is up to individual insurers and the insurance sector as a whole to utilise the opportunities while at the same time minimising risks. The AFM has therefore provided a number of considerations in this chapter to promote fair and transparent markets.

4.1 Potential benefits

4.1.1 Less 'subsidisation' of risk-taking behaviour

The 'subsidisation' of risk-taking behaviour will decrease with more differentiation. If everyone pays the same premium for the same car insurance, it is inevitable that risk-averse drivers will pay a share of the claims cost of high-risk drivers. If urban car owners have a higher claims cost than rural car owners, an insurer may charge urban car owners a higher premium. However, subsidisation will still occur between risk-averse and high-risk drivers, but *within* urban and rural areas. The further refined the premiums are, the less likely it is that risk-taking behaviour will be subsidised.

Some consumers will perceive individual risk-based pricing as fairer. Risk-averse behaviour is indeed rewarded whereas risk-taking behaviour is punished. Consumers find price differences more acceptable, when they have more influence on the source of differentiation[17]. Consumers also believe that if they make an effort to obtain discounts or a lower price, they are therefore entitled to them[18]. Individual pricing is in line with the social trend of individualisation and can elevate trust in the insurance sector.

4.1.2 Lower claims cost

Insurers' total claims cost can be reduced by rewarding risk-averse behaviour. A financial incentive can encourage people to adopt risk-averse behaviour, such as adopting safer driving behaviour or a healthier lifestyle. Insurers' claims cost can be reduced through prevention or by offering insight into the costs of risks, which could lead to lower insurance premiums, lower social costs and potentially to welfare gains.

4.1.3 Improved insurability at individual level

Individual pricing can change the curve for groups that have difficulties applying for insurance. Individual taxi drivers who hardly incur damage are easier to insure thanks to behavioural pricing, compared to when insurers are only willing to accept an occupational group as a whole by charging extremely high premiums (or not at all).

[17] Priester et al. (2020)
[18] Xia et al. (2010)

4.2 Potential risks

4.2.1 Uninsurability

The use of advanced pricing techniques may lead to uninsurability. Access to more data creates the opportunity to further segment on risk profiles. A shift will occur from macro to micro-segmentation, where risks can potentially be identified up to individual level. The combination of many different segmentations may also lead to customer groups that consist of one single customer. The hunt for the most profitable customers, or estimating the premium at micro-level, can severely undermine solidarity within the insurance system, as consumers will be charged for their assessed or demonstrated risks on a more individual basis. Groups with a slightly higher risk profile or individuals with a certain combination of characteristics may be confronted with higher premiums, which they are not always able to afford. The undermining of solidarity through individual pricing can lead to uninsurability.

4.2.2 Data quality and data as a means of acceptance or payment.

Consumers may be forced or feel forced to share data. Consumers are currently free to buy insurance without using behavioural pricing. However, the question is whether this will continue to be the case. In the UK, it is unaffordable for novice motorists to apply for car insurance *without* sharing driving behaviour with the insurer. Although, technically speaking, allowing the insurer to measure driving behaviour is not mandatory, that is the de facto bottom line (although it cannot be stated with certainty that novice motorists would have been granted a more affordable premium had behavioural pricing not existed). This creates a situation in which large price differences arise between insurance policies with and without behavioural or lifestyle measurements. However, this does not necessarily mean that consumers who opt to buy insurance without behavioural or lifestyle measurements actually pose a greater risk; they may also do so for privacy reasons. According to the General Data Protection Regulation (GDPR), consent as a basis for using data is only legally valid if it is provided voluntarily[19]. The question is just how free consumers are to grant consent or not for measuring their driving behaviour or lifestyle when it comes to the affordability of mandatory car insurance or any other insurance they need, such as invalidity insurance.

Data can consequently become a means of payment, with the less affluent group having no choice. Arguably, there is nothing wrong with sharing data if the consumer has granted consent. However, it may also be argued that an indirect consequence might be that affluence may create a divide. Where the financially weaker consumers may be obliged to concede privacy for a premium discount, the more affluent citizens have no need for such a discount and can freely determine what personal data they are willing to share or not.

[19] Dutch Data Protection Authority (2021)

If data or data analysis (and the algorithm) are biased, this may distort outcomes. Suppose that primarily consumers in their 50s have an insurance for which the premium is based partly on lifestyle. The results will then show that the more frequently consumers in their 50s go to the gym, the smaller their risk of falling ill or becoming unfit for work will be. The algorithm consequently learns the connection: going to the gym more frequently means a lower claims cost and justifies a lower premium. A group of 20-year-olds would then receive the same premium discount for visiting the gym, while at the same time it is possible that the effect on this group is smaller given that, by definition, they already do more physical activity or are physically fitter. These distortions may occur as a result of selective or contaminated datasets, or a selectively trained algorithm.[20]

4.2.3 Non-transparency and loss of trust

A clear comparison of insurance products for personalised policy conditions is effectively impossible. Currently, comparison sites provide a clear overview of the range of available insurance products, in terms of both conditions and price. However, when all policy conditions are compiled individually, it will become impossible for comparison websites to compare or assess products because there will no longer be standard sets of policy conditions. This means that consumers will have to compare all tailor-made policy conditions one by one. The same applies to the comparison of premiums when the premiums are only visible in insurers' own modules or are strongly behaviour-based, comparison sites will subsequently no longer be able to make any estimates.

Moreover, the question is whether an insurer will still be able to understand the origin of personalised premium or personalised policy conditions. When a number of variables are used, the premium calculation is understandable to a certain extent; once a complex algorithm calculates the premium based on a broad set of variables, explainability may decrease. This may increasingly come into play in the case of personalised policy conditions.

The socially undesirable use of pricing techniques can negatively impact consumer trust in insurers and insurance products. This will primarily occur if consumers consider pricing techniques unfair. During a study carried out on behalf of the OECD (2021)[21], a majority stated that they considered personalised pricing unfair and that it should be prohibited. One of the reasons behind insurer's cautious approach to using advanced pricing techniques on a large scale is that it may damage their reputation among consumers. However, such consumer resistance could gradually be reduced as ideas of what is fair in an individualising society change over time.

[20] For an overview of more points insurers should consider when using artificial intelligence, please refer to the report entitled *Artificial Intelligence in the Insurance sector* (2019).
[21] OECD (2021) *The effects of online disclosure about personalised pricing on consumers*

4.2.4 Creating an acceptance threshold

Even if there is full price transparency, selection can still take place through acceptance. An insurer can self-evidently decide to reject an application (except for basic health insurance). Acceptance rates vary between insurers. Even though the price may be transparent, the acceptance criteria tend to be a black box. Insurers can establish their own acceptance rules, in which they also take other aspects into consideration. No direct or indirect discrimination through price comes into play here, but the acceptance process may lead to the exclusion of certain groups. At the same time, price proposals based on willingness to pay could potentially also be used to discourage certain risk groups from applying for an insurance. Insurers can consequently de facto refuse customers that they would rather not have for whatever reason, for example, in the event of a large number of presumed future claims.

4.2.5 Competitive pressure overrides moral compass

Competition in the insurance sector may overshadow the moral framework. Insurers who use advanced techniques to attract profitable customers, for instance, automatically ensure that insurers who do not use these techniques will have more loss-making customers in their portfolio. In addition to ethical considerations, a situation may arise in which the market 'dictates' what is measured in order to remain competitive. This is the same conclusion as drawn by the FCA: insurers who were morally opposed to the loyalty penalty implemented it nevertheless to maintain or bolster their competitive position. Dutch research shows, for example, that predictable profits and losses influence health insurers' behaviour. In a competitive market, no single insurer can afford a large selective inflow of predictable loss-making insured customers, nor a large outflow of profitable insured customers. Once one insurer starts applying more advanced risk selection, other insurers cannot stay behind for competitive reasons.[22] This may also occur when a foreign insurer who uses advanced pricing techniques enters the Dutch market without abiding by the ethical standards applicable in the Netherlands.

4.3 Considerations regarding pricing techniques

The AFM recognises the advantages of pricing techniques, as outlined. At the same time, the potential attendant risks should be minimised. For this reason, considerations are provided below to alert individual insurers, the sector and policymakers to potential uninsurability, the inappropriate use of data and loss of trust in the insurance sector.

[22] van Kleef et al. (2019)

Individual insurers
1. Take into consideration how imputable and influenceable the input data used are. 2. Take the customer's interests into consideration in a balanced manner when using data to determine the premium. 3. Do not use insights derived from data for a specific insurance for the pricing of other types of insurance as well. 4. Do not make sharing of behavioural data mandatory. 5. Ensure that the data and data analysis are of high quality, so that unjustified indirect discrimination will never occur.
Sector and policymakers
6. Take both the short and long term into consideration. 7. Transparency and explicability can help raise customer awareness. 8. Safeguard customers' insurability. 9. An acceptance obligation is a means of safeguarding insurability.

Figure 4.1. Considerations by stakeholder

4.3.1 Considerations for individual insurers

Take into consideration how imputable and influenceable the input data used are. Non-imputable variables (variables 'determined' without the consumer's influence) such as genetic data, should never be used as an insurance pricing factor. Customers cannot influence their genetic profile in any way. In order to determine what exactly is imputable and influenceable, a link could be made with case law. Regularly driving through a red light is regarded as imputable behaviour and a fine will not be waived due to personal characteristics or circumstances (except for emergencies). Such behaviour should therefore be taken into account in car insurance pricing. It is up to insurers to determine whether behaviour is imputable and influenceable, and not to use the variables to which this does not apply in insurance pricing or the acceptance policy either. Should this nevertheless occur – age is an accepted non-influenceable exception, as is the health declaration for term life insurance – the insurer must be able to explain how this fits in with a balanced weighing of interests.

Weigh the customer's interests in a balanced manner when using data to determine the premium. Imputable and influenceable data can also be used contrary to customer interests. The FCA example of the loyalty penalty described earlier shows that insurers can use input variables to identify loyal customers and then punish them with a far higher premium than new customers. Product development standards require the customer's interests to be taken into consideration in

a balanced manner when developing a financial product. This ultimately is an assessment of various factors, such as the product conditions, the product information and the distribution channel. Pricing is one of the components of the KNVB criteria[23] (cost efficiency). An insurer who uses personalised pricing will have to weigh the customer's interests against pricing techniques in a balanced manner, especially when using personalised policy conditions. A loyalty penalty cannot be the logical outcome of a balanced weighing of interests.

Do not use insights derived from data for a specific type of insurance also for the pricing of other types of insurance. An undesirable example would be to refuse customers who pay a higher premium for car insurance due to high-risk driving behaviour for supplementary health insurance. Customers must be able to rely on their data being safe and that it will not be used for purposes other than those agreed in advance when purchasing a specific product. In this case too, the following applies: should this nevertheless occur, for example in insurance fraud, the insurer must be able to explain how this fits in with a balanced weighing of interests.

Refrain from making the sharing of behavioural data mandatory. At the time of writing, all the measurements of behaviour available in the market in exchange for premium discount were voluntary. Making this mandatory could be detrimental to customers who, for example, do not want to have their behaviour measured for privacy reasons. This equally applies to making this mandatory by confronting customers, who do not want to share privacy-sensitive data, with far higher, and for some unaffordable, premiums.

Ensure that the data and data analysis are of high quality, so that unjustified indirect discrimination will never occur. No party will intentionally use prohibited techniques, such as discrimination on the basis of race. However, this does not alter the fact that if a dataset is polluted or if a self-learning algorithm is not programmed with due care and attention, unintentional indirect discrimination may still occur on the basis of race using postal code areas. It is the insurer's responsibility to ensure that unlawful and/or undesirable discrimination will never occur in insurance pricing.

4.3.2 Considerations for the sector and policymakers

Take both the short and long term into consideration. If measuring behaviour prompts individual consumers to adopt healthier or less risky behaviour, this may benefit both the individual and the insurer. However, if three-quarters of the Dutch population participates in behavioural measurements, and they are relatively risk-averse consumers, consumers who do not want to have their behaviour measured for privacy reasons, may consequently automatically have to pay a higher premium. The insurer could indeed calculate that many risk-averse consumers are having their behaviour measured and that the group that does not want to use this option exhibits riskier behaviour on average. This highlights an area of tension between the short term (advantage for

[23] The KNVB criteria are: Cost-efficient, Useful, Safe, Understandable

the individual) and the long term (disadvantage for part of the group). The AFM calls on the sector to take such side effects into consideration when applying pricing techniques, even if the techniques used seem to primarily offer advantages.

Transparency and explicability can help raise customer awareness. It is conceivable that some consumers will have less trust in the insurance sector, if it is not clear what data the insurer uses to calculate the premium - especially where customers are refused or are faced with an extremely high premium. Being transparent about the variables and acceptance criteria used can help maintain trust in the sector.

Safeguard customers' insurability One of the greatest risks of pricing techniques is customers becoming uninsurable, either as a result of being rejected, or being rejected due to extremely high premiums. The AFM understands that there may be well-founded reasons for refusing customers based on imputable behaviour, for example, if insurance fraud has recently been committed. In that case, customers are forced to seek a specific insurer who is willing to accept them. Given the social importance of insurance, it is desirable from the perspective of the customer's interests that groups do not become uninsurable, without being able to do anything about it. An initiative such as the Dutch Association of Insurers' solidarity monitor[24], which aims to monitor solidarity for various types of insurance, is encouraged. The ethical framework for data applications, which was also initiated by the Dutch Association of Insurers, can also offer guidance on making the right moral choices when it comes to pricing techniques.

An acceptance obligation is a means of safeguarding insurability. To date, an acceptance obligation only applies to basic health insurance in view of the collective interests and the fact that the insurance is mandatory. This is facilitated through risk equalisation, in which health insurers who have more insured consumers with higher healthcare costs are financially compensated. Should insurability come under severe pressure for other types of insurance, an acceptance obligation is one of the means that can be used to prevent this.

[24] Dutch Association of Insurers (2020) *Solidariteitsmonitor 2020*

5. AFM mandate

If the AFM considers the consequences of certain pricing techniques undesirable, what mandate does it have? This is illustrated on the basis of five hypothetical cases. In all cases, depending on the specifics of the case, the AFM could invoke the PARP standards or the General Duty of Care. The cases are hypothetical and are provided mainly for illustrative purposes and as input for a wider discussion.

5.1 Cases

Case 1 | Higher premium for loyal customers

An insurer offers prices for a travel insurance in line with the market. The price is based on a customer risk assessment. At the end of the policy period, based on data analyses, the insurer determines which customers in its portfolio are the least inclined to switch to a competitor (similar to the FCA's example and the loyalty penalty, see Chapter 3). For this group of customers, the insurer raises the premiums disproportionately, based purely on the probability of switching. After all, those who do not switch will pay. The additional margin gained is used to reduce premiums for new customers and consequently to entice them. In the battle for new customers, other insurers are forced to use this technique as well.

Case 2 | Determining willingness to pay

An insurer has purchased a tool from an external pricing party. The tool allows the insurer to determine individual potential customers' willingness to pay. The insurer applies the tool to its existing portfolio and when potential new customers register on the insurer's website. In the latter group's case, the insurer analyses cookies, among other factors, to determine whether the consumer has already considered other parties or has searched on a comparison website. Willingness to pay is estimated in this manner. The premium can be adjusted accordingly by charging a relatively lower or higher premium.

Case 3 | Personalised policy conditions

A travel insurance provider personalises the policy conditions for every new customer. This means that there are no longer any fixed sets of policy conditions. For a customer aged 68, the compensation for a pair of glasses lost while on holiday will be reduced from 500 to 100 euros. For a customer aged 27 who takes out travel insurance at three o'clock in the morning, the cover for vehicle damage will be removed from the policy. However, if the insurance product is bought at 10 o'clock in the morning, covered vehicle damage is included in the policy conditions.

Case 4 | Discount in exchange for data

One insurer offers a discount on insurance products if customers share data with the insurer. This includes providing details of their Facebook and Instagram accounts to the insurer. A second insurer implements a 3% premium increase for all customers on the renewal date of their policy.

Customers can oppose the premium increase by sharing data. A third insurer states the sharing of data as a precondition to apply for the insurance.

Case 5 | Risk selection based on price

An insurer of life insurance keeps a close eye on the balance in its portfolio. The insurer actually aims to attract primarily low-risk customers. As soon as a potential customer registers via the website, intermediary, or comparison site, a risk assessment is generated. When an average or high-risk profile registers, the price is increased excessively, which means that the party has ostensibly priced itself out of the market and the customer will opt out. Competitors adopt this practice. This means that only low-risk profiles are offered an affordable price and higher risks can become uninsurable.

5.2 Application of AFM legal standards

The AFM's key mandate regarding pricing techniques and personalised policy conditions is the PARP standard. Pursuant to the PARP standards laid down in the Market Conduct Supervision (Financial Institutions) Decree under the Financial Supervision Act (*Besluit gedragstoezicht financiële ondernemingen onder de Wet op het Financieel Toezicht*) and furthermore for insurance products in the Insurance Distribution Directive (IDD),[25] financial product developers must ensure that the financial product is the result of a balanced weighing of interests. A target group must be identified, scenario analyses must be performed and a distribution strategy must be mapped out and shared with distributors. This must be carried out before market introduction of the product.

In cases 1 and 2 (higher premium for loyal customers and determining willingness to pay), it is highly questionable whether a balanced weighing of interests takes place. The essence is that the insurer analyses a customer's specific characteristics based on data analysis. The insurer therefore has an information advantage over the customer. The insurer knows that the customer is not inclined to switch (case 1) or is willing to pay more (case 2). On the other hand, the customer may be unaware that the insurer uses this information to charge a higher premium. A balanced weighing of interests implies, among other things, that the stronger party refrains from using the information advantage to disadvantage the weaker party. It is therefore highly questionable whether this method of ‘punishing' the customer's insufficiently critical attitude could be the result of a balanced weighing of interests.

In case 3 (personalised policy conditions), the desirability depends on how the conditions are adjusted. The insurer must ensure that the product meets the needs, characteristics and objectives of the target group. If an adjustment of the conditions is prompted from a customer's interests, there is no objection to personalising the conditions. Reducing the cover to 100 euros for a pair of glasses may be appropriate, for example, if the premium is reduced as a result and

[25] Laid down in the Commission Delegated Regulation (EU) 2017/2358 with regard to product oversight and governance requirements for insurance undertakings and insurance distributors.

the lower cover is likely to be adequate. If the reduction is only motivated by the desire to limit the claims cost without taking the customer's interests into consideration, the chances are high that a balanced weighing of interests has not taken place. The insurer actively contributes to the risk of under-insurance through this approach.

In cases 4 and 5 (discount in exchange for data, price-based risk selection), the undesirability depends strongly on the further elaboration. It is conceivable that voluntary premium discount in exchange for data sharing has been weighed in a more balanced manner than when data sharing is made mandatory. Moreover, an insurer is free to select risks, but it all hinges on the specifics. However, interests may not have been weighed in a balanced manner in these two cases either.

The cost efficiency aspect of the KNVB criteria similarly applies to the cases involving disadvantaging loyal customers (1) and personalised policy conditions (5). The insurer should be able to substantiate how the risks covered are proportionate to the premium charged or increased. Providers must ensure that the product meets the needs, characteristics and objectives of the target group. Applying the KNVB criteria is a method that can be used to meet this legal requirement.

The crux of PARP is that a balanced weighing of interests must have taken place before a product goes live. Suppose that the AFM investigates case 1 – increasing premiums for loyal customers. The insurers in question must have substantiated beforehand in their PARP policy and implementation why they believe that a balanced weighing of interests has taken place. It is emphatically inadequate to substantiate this retroactively, for example, when AFM conducts an inspection two years after the implementation of PARP. The insurer will have breached the standards if a balanced weighing of interests has not taken place beforehand.

Where the PARP standard does not suffice, the AFM can in any case examine aspects such as the General duty of Care. This standard (Section 4(24a) of the Dutch Financial Supervision Act, Wft) stipulates that a financial service provider 'shall carefully consider the legitimate interests of the consumer or beneficiary'. If differentiation of price or personalised policy conditions are evidently undesirable, but the PARP standard does not offer sufficient guidance, the AFM can in any case invoke the General duty of care.

5.3 Application of the General Data Protection Regulation

Like other businesses, insurers are bound by the rules of the General Data Protection Regulation (GDPR) for the retrieval, storage and processing of data. At the AFM's request, the Dutch Data Protection Authority (Dutch DPA) has shared its interpretation of the development of personalised pricing and policy conditions, from the perspective of the GDPR. The following interpretation is cited from the Dutch DPA (see Box 3).

Box 3 | The Dutch Data Protection Authority's interpretation of personalised pricing and policy conditions

About special personal data
Privacy legislation prohibits the processing of special personal data, such as medical data or political preference data, race or religion. Nor may these data be derived from other data. This prohibition can only be lifted based on exceptions explicitly included in the law.
[https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/algemene-informatie-avg/mag-u-persoonsgegevens-verwerken#wat-verstaat-de-avg-onder-bijzondere-persoonsgegevens-6339]

About consent
It is possible to process personal data based on the consumer's consent, provided that the insurer can demonstrate that the consent was voluntarily provided and informed unambiguous indication of the data subject's wishes for the specific purpose of the personalised pricing. Consent should be able to be withdrawn just as easily as it is given. This does not always make consent a suitable basis for jointly entering into a customer relationship, such as taking out insurance. Moreover, refusal to give (or withdrawing) consent may not have any adverse consequences for the consumer.
[EDPB Guidelines 05/2020 on consent under Regulation 2016/679]

About proportionality and subsidiarity
The processing of personal data should always be proportionate to the aim pursued (proportionality) and the method of processing should always be the least intrusive means available (subsidiarity). The question is to what extent insurance is proportional both at macro and micro level for the accumulation and processing of so much data for a perhaps trivial profit or only to achieve the objective of maximising profit. The fundamental right to data protection cannot be taken up lightly.

6. Dialogue with all stakeholders

The complexity of the topic requires strong collaboration, and frameworks may even need to be tightened. Pricing techniques and personalised policy conditions touch on the mandate of several national supervisory authorities. In addition to that of the AFM, it also touches on the mandate of the Netherlands Authority for Consumers & Markets (ACM), the Dutch Data Protection Authority, and the Dutch Central Bank (De Nederlandsche Bank, DNB) from a prudential perspective. The AFM is in close contact with these supervisory authorities for the purpose of sharing its views. Further collaboration may be desirable in due course.

The AFM has conducted this exploratory study with the aim of laying the foundations for a dialogue with all stakeholders involved. In this exploratory study, the AFM has outlined the types of pricing techniques insurers use and may still start using. Given the limited consumer resistance and the potentially fierce competitive pressure, the moral compass of insurers is more important than ever. The considerations outlined can contribute to this. The speed at which the techniques outlined are developing, the potential impact on financial consumers and the potential wider social impact call for a proactive dialogue in addition to monitoring. The AFM would like to engage in this dialogue with the sector and stakeholders involved.

7. Bibliography

Australian Securities and Investments Commission / Dutch Authority for the Financial Markets (2019) *Disclosure, why it shouldn't be the default*. https://www.afm.nl/en/nieuws/2019/okt/onderzoek-verplichte-informatie-afm-asic

The Netherlands Authority for Consumers & Markets (2018) *Beter kiezen op de polismarkt*. https://www.acm.nl/sites/default/files/documents/2018-07/acm-nza-rapport-beter-kiezen-op-de-polismarkt.pdf

Dutch Authority for the Financial Markets / De Nederlandsche Bank (2019) *Artificial Intelligence in the Insurance sector.* https://www.afm.nl/en/nieuws/2019/jul/verkenning-ai-verzekeringssector

Dutch Authority for the Financial Markets (2020 *) Trend Monitor 2021*. https://www.afm.nl/en/nieuws/2020/november/trendzicht-2021

Dutch Data Protection Authority (2021) *Mag u persoonsgegevens verwerken? Vragen over de 6 grondslagen* https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/algemene-informatie-avg/mag-u-persoonsgegevens-verwerken#wanneer-mag-u-zich-baseren-op-de-grondslag-toestemming-6331

BBC (2002) *Wonga: What makes money lender tick?* https://www.bbc.com/news/business-18019272

Central Bank of Ireland (2020) *Review of Differential Pricing in the Private Car and Home Insurance Markets - Interim Report*. https://www.centralbank.ie/news/article/press-release-interim-report-of-differential-pricing-review-14-december-2020

Cnet (2012) *Mac users pay more than PC users, says Orbitz.* https://www.cnet.com/news/mac-users-pay-more-than-pc-users-says-orbitz/

Netherlands Institute for Human Rights (2014) *Advies aan Dazure B.V. over premiedifferentiatie op basis van postcode bij de Finvita overlijdensrisicoverzekering.* https://mensenrechten.nl/nl/publicatie/19173

European Commission (2018) *Consumer market study on online market segmentation through personalised pricing/offers in the European Union.* https://op.europa.eu/en/publication-detail/-/publication/ed9ce056-c2cf-11e8-9424-01aa75ed71a1/language-en

Financial Conduct Authority (2020) *MS18/1.3: General insurance pricing practices market study.* https://www.fca.org.uk/publication/market-studies/ms18-1-3.pdf

Kleef, R. van, van Vliet, R., Eijkenaar, F., & van de Ven, W. (2019) *Compenseer zorgverzekeraars beter voor verlies op chronisch zieken. Economisch Statistische Berichten*. https://esb.nu/esb/20053094/compenseer-zorgverzekeraars-beter-voor-verlies-op-chronisch-zieken

National Association of Insurance Commissioners (2015) *Price Optimization White Paper.* https://www.naic.org/documents/committees_c_catf_related_price_optimization_white_paper.pdf

Organisation for Economic Cooperation and Development (2018) *Personalised pricing in the digital era*. https://www.oecd.org/competition/personalised-pricing-in-the-digital-era.htm

Organisation for Economic Cooperation and Development (2021) *The effects of online disclosure about personalised pricing on consumers. Results from a lab experiment in Ireland and Chile*. https://www.oecd-ilibrary.org/science-and-technology/the-effects-of-online-disclosure-about-personalised-pricing-on-consumers_1ce1de63-en

Priester, A., Robbert, T., & Roth, S. (2020) *A special price just for you: effects of personalized dynamic pricing on consumer fairness perceptions*. Journal of Revenue and Pricing Management, 1-14.

Rest, J. P. I. van der, Sears, A. M., Miao, L., & Wang, L. (2020) *A note on the future of personalized pricing: cause for concern*. Journal of Revenue and Pricing Management, *19*(2), 113-118.

Tuinstra, A. & Van der Noll, R. (2020) *Kwetsbare consumenten gebaat bij betere marktwerking*. https://esb.nu/blog/20058094/kwetsbare-consumenten-gebaat-bij-betere-marktwerking

Vektis (2021) *Definitief overstappercentage komt uit op 6,5.* https://www.vektis.nl/intelligence/publicaties/definitief-overstappercentage-komt-uit-op-6-5

Dutch Association of Insurers (2020) *Solidariteitsmonitor 2020* https://www.verzekeraars.nl/publicaties/actueel/solidariteitsmonitor-2020-laat-divers-beeld-zien

Xia, L., Kukar-Kinney, M., & Monroe, K. B. (2010) *Effects of consumers' efforts on price and promotion fairness perceptions*. Journal of Retailing, 86(1), 1-10

Zijlstra, W.G. (2017) *Overstappen van autoverzekering*. ESB 102(4747) p.130

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