Take one for the team!

Do you remember the substitution of Jasper Cillessen, goalkeeper of the Dutch national football team, during the quarterfinal of the World Championship 2014 against Costa Rica? Coach Van Gaal decided not to inform Cillessen of the plan, but after the match he agreed and was happy to take one for the team. Did I rewatch the highlights of the match again when writing this article? Yes. But the more relevant questions from an actuarial point of view are: 'Are we willing to take one for the team when buying an insurance policy?'

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DATA VOLUMES FEED PERSONALISATION

The utilisation of data enables businesses to effectively identify the unique preferences and behaviours of each consumer. This trend is also evident in the insurance industry, where an increasing volume of data is employed to target new customers, and, more importantly, enhance risk classification.

The increase in available data has allowed for the inclusion of more variables in pricing models, resulting in unique quotes for each individual. For consumers, this development seems promising, as it enables rewards for low-risk behaviour and ensures that individuals are not subsidising the risks of others. However, the increased availability of data raises significant concerns regarding data privacy and ethical use, as the more data is utilised, the greater the risk of misuse or breaches. Furthermore, while personalised pricing may enhance the retention of low-risk profiles for insurers, it ultimately undermines the critical concept of pooling of risks, where the risks of a few are shared among many. The loss of solidarity not only threatens this support system but also risks leaving out individuals who may feel excluded from coverage because of their higher risk profiles. This observation is not new, nor are the concerns raised in the media (van der Vught, 2014, Cornelissen, 2020, and Isidore, 2025).

ORGANIZING SOLIDARITY

De Bruin & Karssing (2017) defined possible solutions to organise solidarity and mitigate the risk of an uninsured population:

1 **Governments organise solidarity**: The government implements a model where solidarity is mandatory, similar to the Dutch health insurance system, where standard coverage is compulsory for all, with minor premium differentiations among providers.

2 **Insurers organise solidarity**: Insurers are responsible for organizing solidarity by defining homogeneous risk groups and implementing appropriate underwriting conditions. These groups may be based on data; however, a solution must be defined for consumers in the uninsurable or extremely high premium categories.

3 **Consumers organise solidarity**: Consumers can also demonstrate solidarity. If low-risk individuals accept slightly higher premiums, this can create a stronger sense of solidarity between low- and high-risk individuals.

Each of these options requires time and has its limitations. Moreover, changing behaviour—whether among insurers or consumers—is not a quick and straightforward task.

MEASURING SOLIDARITY

The insurance sector has long been familiar with financial key performance indicators (KPIs). More recently, non-financial KPIs have been introduced, such as carbon emission reduction targets and gender pay gap analyses. Introducing a non-financial KPI for solidarity helps to get a better understanding of the current premium differentiation and level of solidarity.

Not all insurance products are in immediate need for measuring solidarity. The need is low for products where solidarity is already present (health insurance) or where insurance coverage is strongly segregated (travel insurance). The need for measuring solidarity is high for insurance products where pricing is heavily influenced by personal data, for instance term life insurance, or where catastrophic losses could occur, for instance floods, storms or wildfires.

The Dutch Association of Insurers is already publishing a 'Solidarity monitor' on a bi-annual basis for the Dutch insurance sector based on a straw-man analysis (Verbond van Verzekeraars, 2023). The report concludes that no clear trend in decreasing solidarity has been observed (p. 5). However, for home and content insurance specifically, the report (p. 14 and 16) indicates increasing differentiation in premiums and a rise in rejections. If this trend continues, solidarity will definitely be reduced.

Initial requirements for a solidarity KPI are:

- The KPI can only be defined for homogeneous risk groups.
- The KPI should not expose any confidential information, meaning it should be designed to prevent the derivation of premium information from competitors.
- The KPI must consider the spread or deviation in premiums within each homogeneous risk group on an annual basis.
- The KPI should account for both accepted and rejected profiles.
- The KPI must be adjusted for the sum insured, which is unavoidably a differentiator in premium calculations.

An example for a solidarity metric fulfilling these requirements is:

$$Solidarity = \frac{max(P_{adj}) - min(P_{adj})}{mean(P_{adj})}, \text{ with } P_{adj} > 0$$

The adjusted premium (P_{adj}) refers to premiums adjusted for the sum insured. If we apply this formula on synthetic data set where a premium is linearly derived from the sum insured in combination with a risk differentiation factor based on 3 levels (high, medium and low), we get to the following results:

Solidarity metric	Risk differentiation			Premium measures			Solidarity
	Low	*Medium*	*High*	*Min*	*Max*	*Mean*	
Perfect solidarity	1.00	1.00	1.00	4,910	4,910	4,910	0.00
Low risk differentiation	0.95	1.00	1.10	4,664	5,401	4,935	0.15
Medium risk differentiation	0.70	1.00	1.20	3,437	5,892	4,625	0.53
High risk differentiation	0.30	1.00	1.50	1,473	7,365	4,282	1.38

The metric successfully shows that the solidarity measure moves towards perfect solidarity when risk differentiation decreases.

CONCLUSION

The increasing availability of data and the trend toward personalised insurance products significantly enhance insurers' ability to classify risk and differentiate premiums. However, this heightened differentiation poses a serious threat to the principle of solidarity within the insurance sector. As recognised by the Dutch Association of Insurers in their strategy for 2025-2027, titled 'Together for Solidarity', and echoed by EIOPA's establishment of a Consultative Expert Group on data use in insurance, there is an urgent need to address these challenges.

To prevent a scenario where high-risk individuals are perpetually left uninsured, insurers must take one for the team by actively measuring and promoting solidarity. This can be achieved by developing and implementing a solidarity KPI that encourages transparency and accountability in premium pricing. Additionally, insurers should engage consumers in a dialogue about the importance of collective responsibility, fostering a culture where low-risk individuals are willing to accept slightly higher premiums to support their higher-risk counterparts. As Jasper Cillessen can confirm, taking one for the team will result in success for the group.

The implications of decreasing solidarity extend beyond the insurance industry; they can affect public health, economic stability, and social cohesion. A fragmented insurance landscape could lead to increased financial strain on vulnerable populations, ultimately undermining the very foundation of mutual support that insurance is built upon. By taking proactive steps to safeguard solidarity, the insurance system remains equitable and sustainable for all, reinforcing the idea that we are indeed 'in this together'. ■

References:

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3 Isidore, C. (2025, January 17). California fire costs insurance premium hike. CNN.

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5 Verbond van Verzekeraars, Data Analytics Centre (2023). Solidariteitsmonitor 2023. *Verbond van Verzekeraars.*