

# Reasonableness of the costs of multi-peril crop insurance (MPCI) in the Netherlands

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## 1. Introduction

Multi-peril crop insurance (MPCI) in the Netherlands was introduced in 2010 and was enabled by the new opportunities of subsidising premiums opened under the European Union (EU) Common Agricultural Policy (CAP) framework. Several crop insurance schemes in France, Italy and the Netherlands were the only ones implemented under Article 70 of Regulation (EU) No 73/2009. Currently, subsidised insurance contracts under Article 37 of Regulation (EU) No 1305/2013<sup>1</sup> (repealing Regulation No 73/2009) are implemented in more than 10 Member States.<sup>2</sup>

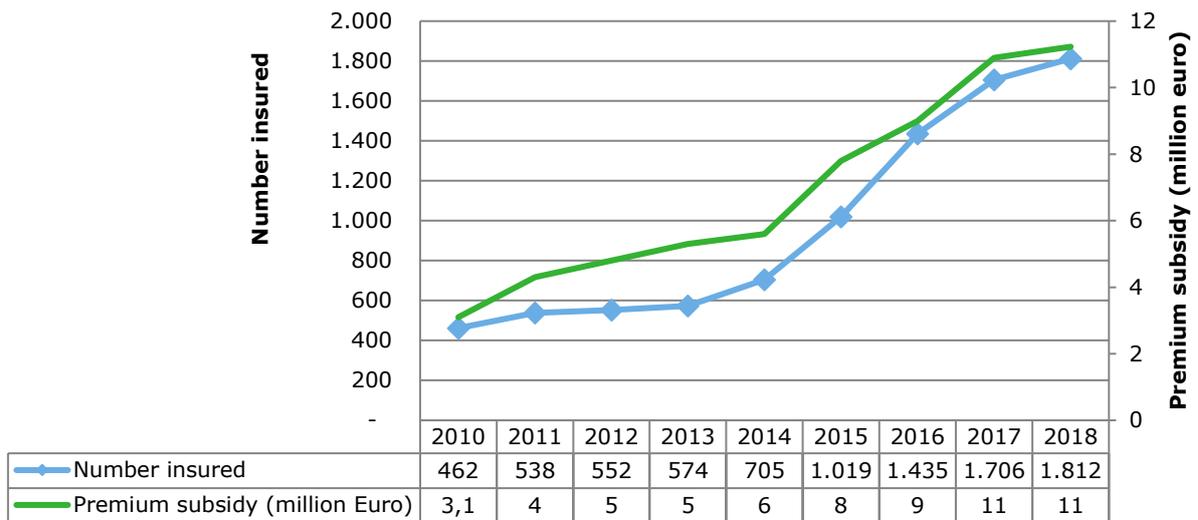
The Commission Implementing Regulation (EU) No 809/2014<sup>3</sup> lays down the rules for the application of Regulation (EU) No 1306/2013<sup>4</sup> of the European Parliament and of the Council with regard to the integrated administration and control system, rural development measures and cross compliance. Article 48(2)(e) lays down that for costs, excluding contributions in kind and depreciation, a verification of the reasonableness of the costs (interpreted as costs incurred in a competitive market) should be submitted. The costs shall be evaluated using a suitable evaluation system, such as reference costs, a comparison of different offers or an evaluation committee.

The Dutch Ministry of Agriculture, Nature and Food Quality has contracted Wageningen Economic Research to provide a memorandum on how the reasonableness of the MPCI costs can be analysed and evaluated. This research follows up the request from the Directorate-General for Agriculture and Rural Development (DG Agri) to the Dutch Ministry of Agriculture, Nature and Food Quality.

## 2. Background MPCI in the Netherlands

Since the start of the Dutch MPCI scheme, the adoption has been growing steadily up to 1,812 insured in 2018, with a total premium subsidy amounting approximately 11 million euros (Figure 1). The scheme has evolved over time. Since farmers were particularly interested to insure only a portion of the crops tilled (for example root crops on arable farms), the option to insure only specific crops became feasible in 2012 (initially insurers indicated that insurance at farm level was desired to prevent adverse selection). In addition, farmers were required to pay upfront the full amount of the premium. The subsidy is directly paid from 2014 onwards to the insurer instead of to the farmer concerned. Further adjustments are likely in the near future (e.g. omnibus regulation).

As in most other Member States, the Dutch crop insurance market is concentrated, with only a limited number of market players dominating the national market. Three insurers (Agriver,<sup>5</sup> BFAO<sup>6</sup> and Vereingte Hagel<sup>7</sup>) are likely to continue offering MPCI in 2019. Initially five insurers launched MPCI in 2010, but two insurers (subsidiaries) will withdraw again from the market because of, among others, lagging demand and inherent risk exposure. Market shares are not publically reported because of a concentrated and competitive agricultural insurance market in the Netherlands. The insurers offering MPCI in 2019 offer several special, targeted mono-line coverages for farmers. In comparison to the other insurers, Vereingte Hagel operates more in an international EU setting.



**Figure 1** Total number insured and total premium subsidy of multi-peril crop insurance in the Netherlands. Source: Netherlands Enterprise Agency.

### 3. Reasonableness of the costs

The initial MPCCI insurance scheme was collectively designed by farmers' organisations and insurers and supported by an independent research institute (Institute for Risk Management in Agriculture – Wageningen University and Research). It is a traditional indemnity-based crop insurance but some elements of a weather index insurance are embedded. Two triggers must be present for the farmer to become eligible for an indemnity payment. First, a specified adverse climatic event must be observed (for example threshold in x mm rainfall in x days to declare it as an excessive rainfall event). Second, the actual crop damages must be at least 30% compared to the reference output, as required by the EU regulation. Based on climate data to determine the return period of an event together with crop growth modelling, the climatic threshold levels per crop and soil type were set. For example, excessive rainfall was defined as more than 50 mm in 24 hours, or 85 mm in 48 hours, or 110 mm in 96 hours, or 240 mm in 28 days. Drought was defined as a shortage of 250 mm negative water balance in the growing season (Van Asseldonk et al., 2018). After the collective design phase each insurer adjusted the design to a limited extent, priced and started marketing MPCCI in 2010 according to their preferences.

Since the introduction of the MPCCI, each insurer separately has refined the design and price over time based on their claim and sales statistics. Competition is not only on premium levels but also on terms and conditions of the contract (e.g. thresholds and deductibles) and (limited) liability.

All current operating insurers underwriting MPCCI are mutual based. Mutual insurers are typically low-cost, non-profit organisations in which members (i.e. farmers) play a decisive role (i.e. insured and insurer owner simultaneously). This stimulates a focus on good farming practices during underwriting and loss adjustment, as well as provides a stimulus to minimise transaction costs.<sup>8</sup>

The Dutch Association of Insurers does not monitor and report statistics with respect to (subsidised) MPCCI. This is in line with the fact that also statistics of private hail insurance are not monitored anymore from approximately 2002 onwards (in the past for example aggregated premiums and indemnities were reported). Given the oligopoly market structure, in which a few insurers dominate the market, branch aggregated statistics could be too easily converted to individual company statistics (and thus not facilitated by the Dutch Association of Insurers).<sup>9</sup>

In summary, to keep administrative burden at the launch of MPCCI in 2010 to a minimum, claim statistics were not disclosed by the participating insurers, nor centrally monitored by the Dutch Association of Insurers, the national regulator or the competent authority handling subsidies. This was in line with ongoing

practices of private agricultural insurance schemes. Moreover, it was expected that, given a competitive oligopoly market structure, (mutual) insurers would likely change their prices according to their competitors. Under this assumption of (almost) perfect competition the long-run equilibrium would result in all insurers receiving normal profits (and rent-seeking of subsidies were assumed to be unlikely).

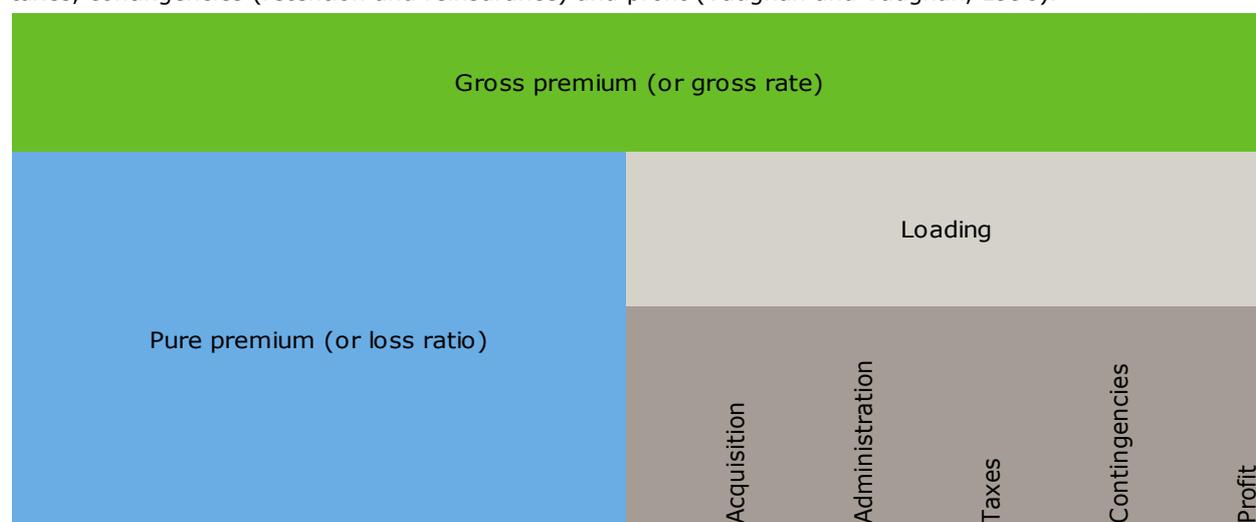
### 3.1 Measure to determine reasonableness of the costs

The relevant regulation states that the costs needs to be evaluated using a suitable evaluation system, such as reference costs, a comparison of different offers or an evaluation committee (Article 48(2)(e), Regulation (EU) No 809/2014).

A recent comparison of premiums between insurers indicated that it cannot be proven that MPCCI premiums are unreasonable. The average premium subsidy in 2018 amounted approximately 6,200 euro per farm (as can be inferred from Figure 1), while the majority farms pay a gross premium far below 25,000 euros per farm.<sup>10</sup> Given the Dutch MPCCI market structure, a methodology based on comparing premiums between insurers to determine the reasonableness of the costs is imperfect. As described in the previous section, competition is not only on premium levels but also on flexibility of the contract (e.g. thresholds and deductibles) and (limited) liability. For example, over time specified climatic threshold levels in the terms and conditions (per peril, crop and soil type) increasingly differ between insurers. Moreover, the deductible is either fixed at a level of 30% of the insured amount or the deductible depends on the peril with a 'floating' deductible, whereby the actual deductible depends on the relative loss incurred. The deductible then decreases if losses are more excessive to a minimum level of 0% if losses are 100%.<sup>11</sup> Under Dutch regulation mutual insurers can offer a limited liability coverage. If the total amount of premiums, complemented with retention and reinsurance, is insufficient to cover losses, a mutual insurer is allowed to cut back indemnity payments. Since the use of this limited liability option differs between mutual insurers, comparing premiums is misleading to a certain extent. Also the portfolio of underwritten (regional) exposures differs between insurers (e.g. crops with different risk profiles and insured values). In summary, comparing average premiums between insurers to determine reasonableness of the costs is hampered because of heterogeneous products on offer.

### 3.2 Loss ratios as a measure to determine reasonableness of the costs

Regardless of the type of insurance, the premium income must be sufficient to cover losses and expenses. To derive this premium, the insurer estimates projected claims and expenses. The final premium farmers pay is referred to as the gross premium (Figure 2). The gross premium accounts for the payment of losses and a loading to cover the expenses of operation. That part of the rate that is intended to cover losses is referred to as pure premium when expressed in euros, and as loss ratio when expressed as a fraction (or percentage). The components of the loading are primarily a matter of cost accounting, and the various classes of expenses for which provision must be made, and typically include acquisition, administration, taxes, contingencies (retention and reinsurance) and profit (Vaughan and Vaughan, 1996).



**Figure 2** Basic concept underlying insurance rate making.  
Source: Vaughan and Vaughan, 1996.<sup>12</sup>

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Thus a loss ratio equals payments made on crop insurance policies divided by a total premium paid for crop insurance policies. Given the high correlation of losses across crop insurance policies in a year, variability in aggregate loss ratios will occur from year to year. Especially for insured systemic risks (e.g. drought), in contrast to more idiosyncratic risks (e.g. hail), the loss rate varies enormously from year to year. Therefore, analyses should be based on the loss ratio expressed as the proportion between indemnities for a series of years and premiums paid during that period (i.e. cumulative loss ratio). A loss ratio of 1.00 means that crop insurance payments equal total premium. Ratios above 1.00 indicate that payments exceed premium, which occurs with some frequency. On the other hand, loss ratios below 1.00 indicate that payments are less than premium.

A loss ratio is a key performance indicator to measure how viable an insurer is. Because the focus is not a yearly loss ratio, but a long-term average, for an insurance system to be 'actuarially sound', the average loss ratios should be lower than 1.00 over time, so that the premiums would be greater than the indemnities in a quantity enough to pay for the loading.

Low loss ratios signal unreasonable costs for farmers, but the threshold level is arbitrary. Cost for acquisition and administration of implemented insurance schemes can be inferred partially from long-term loss ratios. Note that the sub-indicator acquisition costs is more or less stable over time, while the loss appraisal costs as part of the sub-indicator administration costs depend on the number of payments in a given year.

### **3.3 Benchmarking MPCCI loss ratios**

MPCI is available in the majority of the EU Member States, while in a few Member States only standard hail coverage is available. Differences across Member States in the availability and take-up of MPCCI can be partly explained by differences in the availability and conditions of public support (under State Aid or CAP). The average loss ratios for crop insurance in Europe, published in 2006 and computed from the longest timetable available in each Member State, are mostly within the range of 0.60-0.70. The administrative costs (mainly adjustment costs) amounted 20-25% of the premiums.<sup>13</sup> A more recent EU wide inventory of loss ratios for crop insurance in Europe are unknown to the author. Yet, since most insurance markets are competitive, updated loss ratio information is not necessarily publically available (even for those insurance schemes operating under Article 37).<sup>14</sup> Some Member States, insurance associations and insurers do annually report loss ratios.

Also the federal government in the United States subsidises crop insurance premiums and reports also loss ratios as a key performance indicator. The Risk Management Agency (RMA) of the United States Department of Agriculture (USDA) provides a Crop Business Report which is publically available.<sup>15</sup> Besides loss ratio also other key performance indicators are reported (e.g. number of policies, net acres insured, liability, total premium, subsidy and indemnity). From 1989 onwards, loss ratio averaged 0.83 for all crop insurance policies enrolling in the Federal crop insurance programme (and in the last ten years the highest loss ratio of 2.74 occurred in the 2012 drought year).<sup>16</sup>

Note that benchmarking to international standards is of interest for all stakeholders (i.e. farmers, Member States and EU) but requires standardised loss ratios. For example, one should take into account differences in public support beyond premium subsidies. On the one hand public support for administrative and operating (A&O) costs and public reinsurance (which are both not available in the Netherlands) will increase loss ratios since a larger proportion of premiums can be used for indemnity payments. On the other hand, value added tax will reduce loss ratios (which currently amounts to 21% in the Netherlands).

### **3.4 Advice implementation MPCCI loss ratios**

The Netherlands Enterprise Agency, which operates under the auspices of the Ministry of Economic Affairs and Climate Policy, provides the MPCCI subsidies and executes the CAP required administrative tasks. It is involved in the provision of multiple subsidies and payments to farmers resulting from national and EU regulation. The Netherlands Enterprise Agency is therefore the logical entity to monitor loss ratios. Reported loss ratios should also be audited and part of the existing audit procedure.

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Given the inherent volatility of loss ratios, the individual result in a given year should not be the basis for evaluating the reasonableness of the MPCCI costs, and an analysis must be made of much broader historical series if valid conclusions are to be drawn. What in summary is important is the long-term trend. Therefore, each year all insurers shall provide the consolidated loss of previous year. When monitoring is initiated also annual historic MPCCI loss from 2010-2018 should be disclosed. Since the Netherlands Enterprise Agency already receives information on premium payments it can therefore calculate loss ratios per year per insurer.

The evaluation of reported loss ratios could be carried out by an evaluation committee whose objective is to recommend the Ministry of Agriculture, Nature and Food Quality on the reasonableness of the costs. The members of the evaluation committee should not have a potential conflict of interest and outcomes should be kept confidential. To determine whether loss ratios are reasonable or have become unreasonable, the evaluation committee must apply prior defined criteria or rules (e.g. minimum threshold level of cumulative loss ratio based on good practices with respect to expenses for acquisition, administration and contingencies).

#### 4. Concluding remarks

The key performance indicator loss ratio is an appropriate measure, and internationally accepted and common in insurance, to determine the reasonableness of the MPCCI costs since it quantifies whether the insurance scheme is 'actuarially sound' (meaning funding is sufficient to pay for losses and expenses: loss ratio < 1.00). Low loss ratios signal unreasonable costs for farmers, but the threshold level is arbitrary (however most long-running insurance schemes have a loss ratio within the range of 0.60-0.70).

Loss ratios can be calculated and monitored by the Netherlands Enterprise Agency. Each year all insurers have to provide the consolidated losses in addition to received premiums of previous year, and when monitoring is initiated also annual historic losses from 2010-2018 should be ascertained.

The evaluation of reported loss ratios could be carried out by an evaluation committee whose objective is to recommend the Ministry of Agriculture, Nature and Food Quality on the reasonableness of the costs (e.g. minimum threshold level of cumulative loss ratio based on good practices with respect to expenses for acquisition, administration and contingencies).

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1305&from=EN>

<sup>2</sup> <https://publications.europa.eu/en/publication-detail/-/publication/5a935010-af78-11e8-99ee-01aa75ed71a1/language-en/format-PDF>

<sup>3</sup> <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32014R0809>

<sup>4</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=en>

<sup>5</sup> <https://www.agriver.com>.

<sup>6</sup> <https://www.bfao.nl/>

<sup>7</sup> <https://www.verenigte-hagel.net/nl/start/>

<sup>8</sup> Meuwissen, M., Assefa, T., Van Asseldonk, M., 2013. Supporting insurance in European agriculture; experience of mutuals in the Netherlands. *EuroChoices*, 12, 10-16.

<sup>9</sup> Berkhout, P., Van Asseldonk, M., van der Meer, R., Van der Meulen H. en Silvis, H., 2016. Evaluatie Regeling brede weersverzekering. Wageningen, Wageningen Economic Research, Rapport 2016-070.

<sup>10</sup> Deskanalyse Brede weersverzekering 2017 / 2018. RVO.nl.

<sup>11</sup> Van Asseldonk, M., Van der Meulen, H., Van der Meer, R., Silvis, H., and Berkhout, P., 2018. Does subsidized MPCCI crowds out traditional market-based hail insurance in the Netherlands? *Agricultural Finance Review*, 78, 262-274.

<sup>12</sup> Vaughan, E. and T. Vaughan, 1996. *Fundamentals of risk and insurance*. John Wiley & Sons, Inc, New York.

<sup>13</sup> [https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2006/insurance/full-report-rev\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2006/insurance/full-report-rev_en.pdf)

<sup>14</sup> <https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2017-risk-management/report-study-on-risk-management-eu-agri.pdf>

<sup>15</sup> <https://www.rma.usda.gov/SummaryOfBusiness>

<sup>16</sup> Schnitkey, G., 2017. Crop Insurance Performance: A Very Low Loss Year. *Farmdoc daily*, 7, 90.

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