

**EX-ANTE ASSESSMENT OF THE WELFARE GAINS ACHIEVED BY THE GVH  
(EX-ANTE IMPACT ASSESSMENT)<sup>a</sup>**

**Cases involving anticompetitive practices and mergers,  
2009-2014**

**HUNGARIAN COMPETITION AUTHORITY**

**31.01.2015**

1. By protecting competition, the Hungarian Competition Authority (Gazdasági Versenyhivatal, GVH) creates financial benefits for consumers, which can be at least partially quantified. This quantification is carried out via a so-called *ex-ante* impact assessment, which relies on easy-to-use but comprehensive methods to arrive at approximate results which are, in aggregate, not exaggerated. This document and its annexes describe the *ex-ante* impact assessment performed by the GVH as well as the results of the exercise.
2. The GVH partially quantified the direct benefits derived from its cases closed in the 2009-2014 period related to anticompetitive practices and mergers. The exercise revealed that **in the aforementioned period, consumers saved at least 97 billion forints<sup>b</sup> as a result of the work of the GVH.**
3. This figure is a conservative estimate relying on the assumption that in the absence of the intervention of the GVH, that is, if the infringements had continued or the mergers substantially lessening competition had gone ahead, the goods and services affected would have been 'only' 10% and 5% more expensive, respectively, for 'only' two years compared to the baseline. Furthermore, due to methodological constraints, this figure only covers some of the GVH's activities and only some of the resulting benefits: it excludes, inter alia, benefits arising from consumer protection activities, deterrence, or more general gains such as the competitiveness-enhancing effects of competition. Consequently, the **actual gain** is likely to be **in excess of the level quantified**; indeed, it may be several times higher.
4. **The quantified gain is more than four times the total budget of the GVH** (in the same period).<sup>c</sup> In other words, social expenditure on the GVH in this time period was recovered several

---

<sup>\*</sup> The original document: A GVH működéséből származó jóléti haszon mértékéről (*ex-ante impact assessment*) – Versenykorlátozó megállapodásokkal, erőfölényes visszaélésekkel, valamint fúziókkal foglalkozó eljárások, 2009-2014, GVH, 2015.01.31.

This translation was commissioned and reviewed by the GVH. Only the Hungarian text is authentic.

<sup>a</sup> This document and its annexes are free to be cited and referred to on the condition that the source is acknowledged. [*Ex-ante* assessment of welfare gains achieved by the GVH (*ex-ante* impact assessment) – Cases involving anticompetitive practices and mergers, 2009-2014, Hungarian Competition Authority, 31 January 2015]

<sup>b</sup> HUF 97 334 million at 2015 prices (EUR 314 million, USD 348 million), rounded to the nearest million (amount per year: HUF 16 222 million, EUR 52.3 million, USD 58 million).

As of 31.01.2015 (Annex (A) paragraph A.65).

The result is approximate and it relates to the lower bound of the expected benefit.

<sup>c</sup> HUF 20 243 million at 2015 prices for 2009–2014 in aggregate (EUR 65 million, USD 72 million), rounded to the nearest million (based on the reports of the GVH to Parliament) (amount per year: HUF 3 374 million, EUR 10.9 million, USD 12.1 million).

The result of the calculation: 4.81.

times over through such proceedings alone. This corresponds to an annual rate of return of 119%, that is, the taxes spent on the operation of the GVH yielded an annual ‘interest’ of 119% for consumers. Considering that the quantified gain is smaller than the gain actually obtained, the ‘rate of return’ of the GVH that benefited consumers is even higher.

5. The GVH used the framework devised and employed by other leading competition authorities for the quantification. The quantification is based on the premise that more vigorous competition generally results in lower equilibrium prices, therefore any practice unduly restricting competition or any merger leading to a substantial lessening of competition would mean higher prices for consumers, which would cause them a loss. If, on the other hand, the GVH’s intervention frustrates such practices and mergers, the aforementioned harm will no longer be present. Thus the value of the gain achieved as a result of the activities of the GVH is identical to the value of the harm prevented had the intervention of the GVH not taken place.<sup>d</sup> The method of quantification is explained in detail in Annex (A), the procedures relevant for the calculation are listed in Annex (B), while a comparison with the GVH’s budget can be found in Annex (C).

6. The GVH is under no statutory obligation to quantify the financial gain resulting from its activities. Nevertheless, the GVH strives to adopt the best practices of the leading competition authorities of the world. One example is the GVH’s endeavour to supplement the traditional, so-called output-type indicators typically used by competition authorities with an outcome-type indicator through the *ex-ante* impact assessment. The former category, such as the number of proceedings or the size of fines, indicates what the competition authority *did* to protect competition. In contrast, the latter attempts to capture, even if imperfectly, what the competition authority *achieved* in terms of the protection of competition and consumer welfare, which is the ultimate objective of its operation. The relevant OECD Guide also recommends the quantification of welfare gains; the GVH relied on the Guide when fine-tuning its own methodology.<sup>e</sup>

7. When interpreting the results, the fact that they originate from an *ex-ante* impact assessment must be taken into account. Consequently, the mere **purpose of the quantification is to indicate the magnitude of the financial gain benefiting consumers due to the work of the GVH** relative to a situation without the GVH. **The applied methodology has been devised accordingly. For methodological reasons, the results are not suitable for use for any other purpose.** For instance, they are not appropriate for demonstrating the absence, existence or magnitude of any competitive effect or civil law damage in an individual case, for assessing the effectiveness and efficiency of the GVH or the professional quality of its work, its priorities or the analytical methods and remedy toolkit applied, and they cannot be used for comparisons over time or with indicators from other authorities.<sup>f</sup>

---

<sup>d</sup> Just as the gain from the work of the fire brigade can be equated to the value of (additional) losses that would occur in a world devoid of a fire service.

<sup>e</sup> Guide for helping competition authorities assess the expected impact of their activities, OECD, April 2014.

<sup>f</sup> Cf. Annex (A) paragraphs A.68-70.

**ANNEX (A)**

**METHOD OF QUANTIFICATION**

**31.01.2015**

**Contents**

<b>1. Introduction.....</b>	<b>2</b>
<b>2. Methodological framework.....</b>	<b>2</b>
<b>3. Assumptions and rules of thumb .....</b>	<b>5</b>
<b>3.1. Definition of the elements in the formula .....</b>	<b>5</b>
<b>3.2. Applicability of the formula.....</b>	<b>10</b>
<b>3.3. The design of the formula .....</b>	<b>15</b>
<b>3.4. Application of the formula.....</b>	<b>16</b>
<b>4. Fundamental characteristics.....</b>	<b>20</b>
<b>References .....</b>	<b>23</b>
<b>Appendix: Hypothetical example for the calculation relating to proceedings – the <i>Mynorca</i> cartel .....</b>	<b>25</b>

## 1. Introduction

A.1 By protecting competition, the Hungarian Competition Authority (Gazdasági Versenyhivatal, GVH) creates financial benefits for consumers. The purpose of the quantification of the welfare gains arising from the activities of the GVH (*ex-ante* impact assessment) is to provide visibility to that financial benefit. This paper/annex explains the methodology of the partial quantification used by the GVH as well as the way its results are presented.

A.2. The method described captures the direct financial gain arising from cases involving restrictive agreements, abuse of dominant position and mergers that were closed in a particular period.<sup>1</sup> The methodology of quantification was designed with a view to (i) ease of use, (ii) comprehensive coverage, (iii) the resulting necessity of simplification and (iv) a conservative approach;<sup>2</sup> furthermore, (v) the GVH relied heavily on the methods applied by the competition authorities of other countries.<sup>3</sup> The purpose of the detailed presentation of the calculation method and the underlying considerations is to assure the transparency of the *ex-ante* impact assessment performed by the GVH and to thereby reinforce its credibility.

A.3. The next chapter discusses the broader framework, including the foundations and the key principles of the method as well as the basic formula of the calculation. The third chapter describes the assumptions and rules of thumb that transform the framework into specifics, while the fourth chapter summarises the fundamental characteristics of the method.

## 2. Methodological framework

A.4. The restriction of competition, including any market practice or merger unduly restricting competition, causes a loss to consumers. If such actions are frustrated through the intervention of the GVH, the resulting loss will not materialise. The loss thus prevented is the consumers' gain from the activities of the GVH, which would not exist without the work of the GVH. This insight is the corner stone of the methodology.

A.5. The calculation takes into account those procedures in which the GVH prevented or interrupted the restriction of competition. These are the cases where the GVH intervened and where it can be assumed that in the absence of this intervention, consumers would have suffered (further) financial losses due to the higher prices resulting from reduced competition.

A.6. The formula for the quantification of the gains arising from interventions:

$$\begin{aligned} \text{Direct benefit} &= \\ &= \text{Prevented harm} = \\ &= \text{Relevant turnover} \times \text{Price difference} \times \text{Expected duration} \end{aligned}$$

Where:

'Relevant turnover' is the turnover affected by the infringement, i.e., the turnover which would be affected by the restriction of competition (in the absence of the intervention)

<sup>1</sup> These are proceedings conducted pursuant to Chapters IV to VI of the Competition Act (Act LVII of 1996 on the Prohibition of Unfair and Restrictive Market Practices).

<sup>2</sup> To put it simply: the result is conservative if it is smaller, rather than greater, than the gain actually achieved. With conservative estimates, the quantified gain is unlikely to be unreasonably high. The conservativeness of the method lies in the fact that where several equally sound calculation methodologies are available, the option leading to a smaller gain is chosen (cf. footnote 86).

<sup>3</sup> More information on this subject is available in Chapter 4. *Fundamental characteristics*.

of the GVH). In the case of mergers, it is the turnover relating to the competitive concern leading to the intervention.

'Price difference' is the price increase resulting from the infringement or merger (which would lead to higher prices in the absence of the intervention of the GVH).

'Expected duration' is the expected length of the (continuation of the) infringement, that is, the time for which the higher price would have (presumably) prevailed (in the absence of the intervention of the GVH). Experience shows that such conduct would not continue indefinitely (for instance, a cartel may break down). In the case of mergers, 'expected duration' is the time elapsed before the market is expected to self-correct the competitive anomaly (for instance through new entry).

A.7. Accordingly, the direct benefit from a proceeding depends on the amount of the price increase that would have resulted from the competitive restriction had the intervention of the GVH not taken place, the duration of this increase, and the volume of the turnover affected. The benefit is expressed in monetary terms.

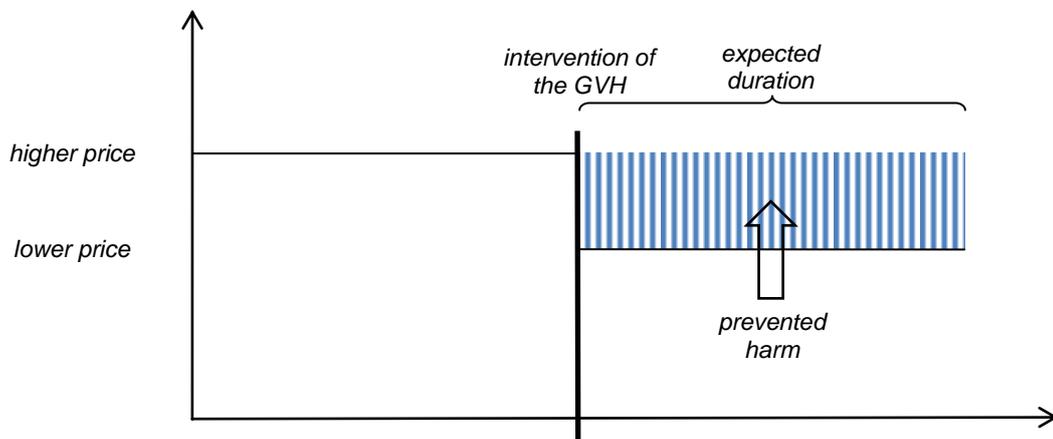


Figure 1: Prevented consumer harm  
(Eliminated conduct – expected price decrease.)<sup>4</sup>

<sup>4</sup> The figures in the document/annex are schematic: they illustrate only the main points rather than showing the whole complexity of the issues.

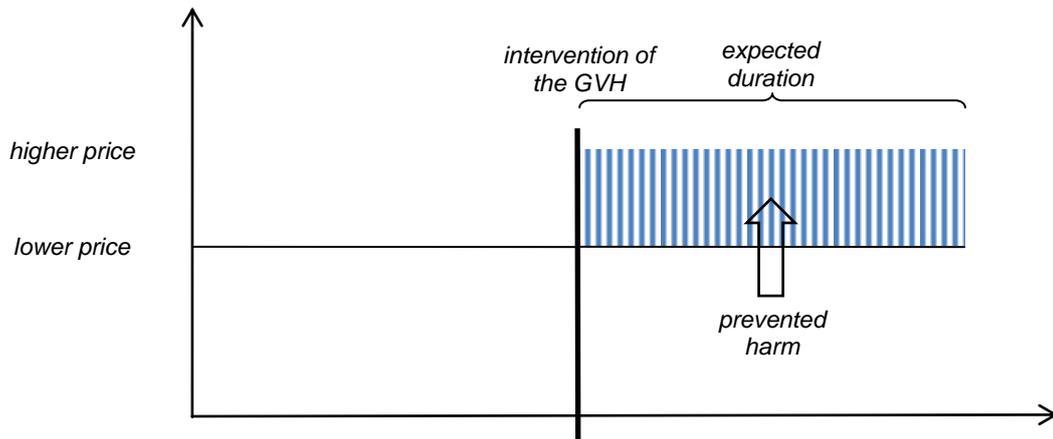


Figure 2: Prevented consumer harm  
(Practices not started – price increase avoided.)

A.8. Thus the results represent the direct and static financial gain arising from the proceedings of the GVH relating to restrictive agreements, abuse of dominance cases and mergers closed in a particular period.<sup>5</sup>

A.9. The quantified gain is compared to the budget of the GVH in the same period. (The budget of the GVH can be considered as a cost incurred or investment made by taxpayers to achieve the quantified gain.)<sup>6</sup> This is a conservative comparison as it has the total budget of the GVH on one side and the quantified gain on the other side, which is only part of the actual benefit and results from only some of the activities of the GVH.

A.10. The ratio of the benefit quantified for a particular period to the budget of the GVH is also presented on an annual basis (annual rate of return). This shows, from the perspective of consumers, the annual 'interest' earned on the taxes spent on the GVH and, with certain constraints, it can be compared to other annual rates of return (for instance, government securities yields or banks' interest rates).

<sup>5</sup> The GVH deals with other types of cases (such as consumer protection proceedings) and engages in other activities (including competition advocacy) as well. At present, the GVH has no appropriate method for quantifying the welfare gains resulting from such activities.

The direct benefit arises as firms involved in a particular proceeding alter the practice found to be in violation of competition rules in the proceeding. Indirect benefits may occur in the context of market participants or practices *not* involved in the proceeding. For instance, if other market participants abandon their comparable practices, or refrain from inappropriate practices altogether, or if the market participants subject to the proceeding abandon additional anticompetitive practices. At present, the GVH has no appropriate method for quantifying such indirect gains.

Static benefits emerge through effects on prices while dynamic benefits result from effects on quality, innovation and productivity. Dynamic effects, and thus dynamic benefits, are difficult if not impossible to quantify. Cf. paragraph A.47.

Also, at present the GVH has no appropriate method for quantifying more general benefits such as the broader positive economic impacts (such as concerning efficiency and competitiveness, economic growth and employment), or legal certainty (which is reinforced by all proceedings, not only by the ones resulting in intervention).

At present, no competition authority in the world has the ability to quantify all effects. As their *ex-ante* impact assessment methods have evolved, some competition authorities have made – partly successful – attempts to quantify the gains arising from consumer protection proceedings or indirect benefits.

<sup>6</sup> As the calculation focuses on benefits (and costs) to consumers; other costs – such as those incurred by companies pursuant to the proceedings of the GVH or through complying with competition law requirements – are not taken into account. (The Competition and Markets Authority (CMA) (formerly Office of Fair Trading (OFT)) adopts the same approach (OFT (2010), p. 8, (2.5)).)

### 3. Assumptions and rules of thumb

A.11. The calculation method contains a number of simplifications and rules of thumb that must be taken into account when applying the above-mentioned considerations to specific cases.

#### 3.1. Definition of the elements in the formula

##### 3.1.1. Relevant turnover

A.12. Relevant turnover means the net sales figures. It can be argued that gross sales figures, inclusive of value added tax, would more accurately reflect the actual expenditures incurred by consumers. The methodology disregards this, considering that the quantified gain is compared to the budget of the GVH, which is financed from tax revenues.

A.13. In the case of proceedings addressing restrictive agreements and abuses of dominance, the combined (relevant) turnover of the firms exhibiting the infringing conduct is taken into consideration by default because their consumers would have been certain to encounter higher prices. The conduct may have a broader impact – a cartel, for instance, holds a ‘price umbrella’ over non-participant firms as well, who may also set higher prices. The methodology does not take this into consideration (except where an expressly opposite conclusion is derived from the information available), which is a conservative feature.

A.14. In the case of mergers, the combined (relevant) turnover of all the market participants is considered.<sup>7</sup> Every merger eliminates competition between the merging parties; however, the GVH only intervenes if this results in a substantial lessening of competition in the relevant market itself.

A.15. In cases involving anticompetitive practices, the average annual turnover from the total duration of the infringement is used by default. If this cannot be established (for instance due to lack of data) or if it does not describe the subsequent period with sufficient accuracy (for instance if there is a trend in the turnover data), the most appropriate available alternative is used (for instance, the turnover from the last year of the infringement).

A.16. For mergers, we use the turnover of the last year by default because in this type of case there is no period that could be linked to an infringement. If this does not describe the subsequent period with sufficient accuracy (for instance if there is a significant fluctuation of turnover from year to year), the most reasonable available alternative is used (for instance, the average annual turnover of a period considered appropriate).

A.17. If an infringement or merger affects more than one level of the value chain (vertical cases) and turnover data are available for more than one level of the chain, we use the turnover of the relevant level where the competitive restriction is present or where it first has its impact felt. If this cannot be established, we use the smallest of the turnovers of the different levels (which is a conservative feature).

A.18. If the information available does not contain the required turnover data, an estimation of the relevant turnover from the information available is made using simple methods. If even such a simple estimation is impossible to perform with reasonable confidence, the proceeding in question is excluded from the calculation (which is a conservative feature).

<sup>7</sup>

The Autoriteit Consument & Markt (ACM) (formerly Nederlandse Mededingingsautoriteit (NMa)) and the CMA adopt the same approach; furthermore, the OECD Guide also recommends this procedure (ICN (2011) p. 53, OFT (2010) pp. 16, 19, (3.7, 4.3), OECD (2014b), p. 4. (3.2)).

A.19. In the case of more than one participant, the availability of information may vary from party to party, and so will our ability to determine the relevant turnover of a particular party. Consequently, the relevant turnover used in the calculation for a certain proceeding may be incomplete.

### 3.1.2. Price difference and expected duration

A.20. The price difference and the expected duration are determined based on the information available. In the absence of sufficient case-specific information, we use default values. In this case it is assumed that the price difference and expected duration are identical with the default values.<sup>8</sup>

A.21. The default value of the price difference is 10% for cases involving anticompetitive practices and 5% for mergers. The default value for expected duration is 2 years for all types of cases. These are conservative values based on international examples and empirical research.<sup>9</sup>

A.22. Uniform default values are applied to all types of restrictive agreements and abuse of dominance cases (10%, 2 years).<sup>10</sup> Uniform default values are used for all merger-related competitive concerns as well (5%, 2 years).<sup>11</sup> This is helpful when dealing with proceedings where several types of practices/competitive concerns are involved.

<sup>8</sup> This is in line with the recommendations in the OECD Guide (OECD (2014b), pp. 2, 4 (2.i., 3.2)).

<sup>9</sup> Empirical research puts the average cartel surcharge in the 8-49% range and the typical cartel surcharge in the 8-44% range (Connor (2005), pp. 2, 23-26). For the purposes of *ex-ante* impact assessments, foreign competition authorities typically use a 10% or higher price difference for cases involving anticompetitive practices (Davies (2010), pp. 25-28, 52-54. (5.23-32, B2-3, B5, B8, B12)).

The US Department of Justice (DOJ) used simple methods to analyse mergers and found that the expected price increase was around 10%. The US Federal Trade Commission (FTC) reckons with a 1% default price difference from mergers, which is a highly conservative figure (Nelson, Sun (2002), pp. 930, 943-944). In those merger cases where the CMA used simulation methods, the average price increase was found to be 8%, while its typical value was 7% (Davies (2010), pp. 17-18, (5.3-5.4)).

Competition authorities performing *ex-ante* impact assessments typically reckon with an expected duration or correction time of two years, or sometimes one year, which they consider to be a conservative estimate (Davies (2010), pp. 20, 22-23, 52-53 (5.8, 5.15-16, B2-B6), ICN (2011), p. 56).

The OECD Guide recommends the use of the following default values (while considering higher and lower values also acceptable): cartels – 10% price difference and 3-year expected duration; abuses of dominant position – 5% price difference and 3-year expected duration; mergers – 3% price difference and 2-year expected duration (OECD (2014b) pp. 4-5. (3.2)).

The Guide does not discuss resale price maintenance, other vertical restraints or non-cartel horizontal restraints. For these categories, depending on their characteristics, the default values defined for other types of cases may be applied, for instance: the default values recommended for cartels or abuses of dominance in case of resale price maintenance; the default values recommended for abuses of dominance or mergers in case of other vertical restraints; and the default values recommended for mergers in case of non-cartel horizontal restraints.

Some of the default values recommended in the Guide are higher than those used in the present calculations of the GVH while others are lower. If these values are used, the lower bound estimate of the welfare gain from the work of the GVH, depending on the treatment of the types of cases not specifically mentioned in the Guide, is HUF 126–131 billion (EUR 407–423 million, USD 451–469 million; annual amount: HUF 21 billion, EUR 67.9–70.6 million, USD 75.3–78.3 million), which is 6.24–6.49 times the budget of the of GVH in the same period. This is a significantly greater gain, and ratio relative to the budget of the GVH, than originally quantified (cf. footnotes b and c).

Furthermore, cf. paragraph A.67.

<sup>10</sup> These can be different types of cartels, other horizontal agreements, vertical restraints or exclusionary abuses of dominant positions.

<sup>11</sup> Competitive concerns in merger cases may involve horizontal non-coordinative effects, horizontal coordinative effects, vertical effects or portfolio effects.

	Agreements restricting competition	Exclusionary abuse of dominant position	Mergers
Price difference	10%	10%	5%
Expected duration	2 years	2 years	2 years

Figure3: Default values for the price difference and expected duration

A.23. In contrast, there is no default price difference value for exploitative abuses of dominant positions.<sup>12</sup> We have found no foreign examples or empirical research relating to such values; furthermore, due to the nature of exploitation, the level of harm caused to consumers will vary considerably from case to case. Consequently, exploitative abuses may be integrated in the calculation only if there is case-specific information available on the level of the price difference.<sup>13</sup>

A.24. If the observed price is from the period affected by the infringement (or following a merger that reduced competition), it already has the price difference built into it. The ratio of the price difference is smaller relative to this higher price than relative to the 'original' price, which does not contain the price difference.<sup>14</sup> In our calculations we treat every case as if the price observed was the increased price, which is a conservative feature.<sup>15</sup>

<sup>12</sup> In the event of an exploitative abuse, the dominant firm does not restrict competition as such; instead, it reallocates income from consumers to itself directly.

<sup>13</sup> Consider an excessive pricing case where the 'right price' is determined together with a range within which the price is still not regarded as unfair. In this case, the difference between the top of that range and the actual price could be considered to be a conservative estimate of the price difference.

<sup>14</sup> This is generally not the case with mergers because, due to the *ex-ante* nature of the GVH's merger control, the observed price is generally either from the period before the merger or from the period after the intervention. In contrast, such a case may arise in the event of agreements and abuses of dominance, depending on whether they had any actual effect and if so, when that effect arose.

<sup>15</sup> If the observed price and turnover is from before the price increase, not only would the price increase relative to the observed price but (*ceteris paribus*) the volume of demand would also decrease relative to the observed values (due to the increased price). The calculation does not necessarily reckon with that phenomenon (depending on the turnover figures used). If we only have turnover figures available from the period before the price increase, then in order to determine the level of decrease in demand we would also need to know the price sensitivity of demand, that is, the own price elasticity of the demand curve. Failing that, the calculation cannot reflect the degree of the demand decrease. This is not a conservative feature, which can, however, be compensated (and certainly mitigated) by a number of other, conservative elements of the method and by the fact that the calculation regards every case as if the observed price were from after the price increase.

It is easy to see that if the calculation uses the (higher) turnover figure belonging to the lower price and disregards the own price elasticity of the demand curve, its result will include the deadweight loss even if otherwise the quantification does not cover the deadweight loss (cf. paragraph A.47.).

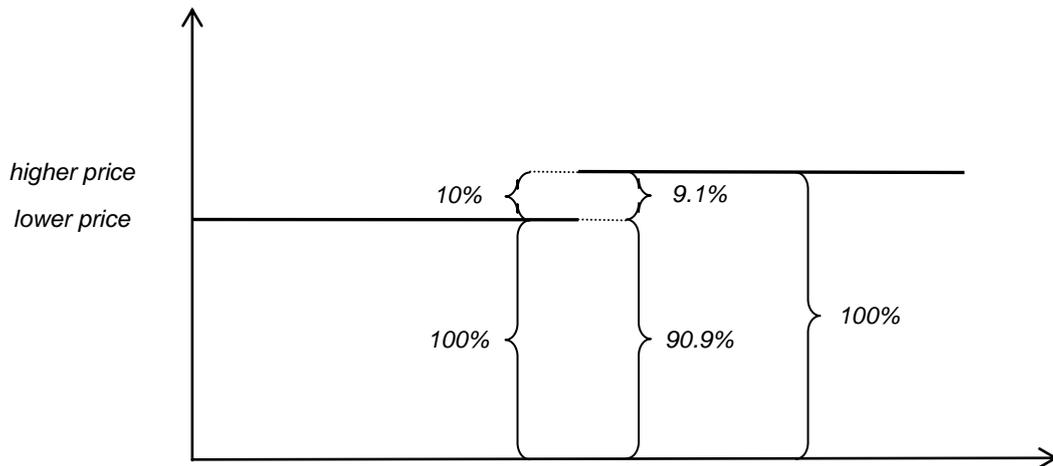


Figure 4: Ratio of the price difference relative to the higher and lower price  
(The ratio of the price difference is smaller relative to the increased price.)

A.25. In complex cases the elements of the formula may vary. For instance, if a practice affects more than one product, price differences may vary from product to product. In such cases the relevant turnover is broken down (in this example by product). If such a breakdown is not feasible for some reason, a conservative simplification is employed (in the above example the smallest price difference for each product would be used).

\*

A.26. The results are obtained in HUF at the prices relevant for the year of calculation. Consequently, figures originally expressed in different currencies are converted into HUF using the annual average exchange rate of the National Bank of Hungary (Magyar Nemzeti Bank, MNB) for the year concerned. The figures expressed in prices from years prior to the year of calculation are adjusted for inflation using the annual average consumer price index published by the MNB. Data pertaining to periods different from the year of calculation are adjusted with an annual social discount rate of 3.5%.<sup>16</sup>

#### Hypothetical example for the calculation relating to proceedings – the *Gerappa* cartel<sup>17 18</sup>

##### Information

In 2014 the GVH found that two producers of *gerappa* had been allocating markets since early 2013. The turnover of the two companies from the sale of *gerappa* in 2013 was as follows (HUF million, at current prices):

EastJames	WestBrown	EastJames + WestBrown
10 000	8 000	18 000

<sup>16</sup> The social discount rate expresses the expected return on the use of public funds as well as the fact that society places a lower value on future benefits and costs than on their counterparts in the present even if there is no inflation. A previous calculation relating to the 2008–2012 period applied a different discount rate and used a different methodology (GVH (2013), p. 5 (A.24)). The use of the 3.5% annual social discount rate was recommended to the GVH by Muraközy, Valentiny (2014) based on public finance literature (Muraközy, Valentiny (2014) pp. 4, 21-22, 26. (Sections 15, 120-127 and 154)).

<sup>17</sup> The numerical example is for illustrative purposes only; any resemblance with real life is purely coincidental.

<sup>18</sup> A more complex computation is attached in the appendix to this document/annex.

The year of calculation is 2015.

### Calculation

The basic formula to be applied:<sup>19</sup>

$$\text{Direct benefit} = \text{Relevant turnover} \times \text{Price difference} \times \text{Expected duration}$$

As this case involves an agreement, the **relevant turnover** is the combined turnover of the two companies from the sale of *gerappa* in 2013 (the annual turnover is identical with this figure as a single year is covered).<sup>20</sup>

To determine the amount, first the turnover figures of 2013 must be adjusted for inflation and with the social discount rate of 3.5%.<sup>21</sup>

$$\text{The 2013 turnover at 2015 prices (HUF m)} = 18\,000 \times 1.0328 \times 1.0529 =^{22} 19\,574$$

Considering that no specific information is available for the **price difference** and the **expected duration**, the calculation uses the default values of **10%** and **2 years**.<sup>23</sup> The observed price/turnover is from the period of the infringement, thus the price difference will be **9.09%** of the observed price.<sup>24</sup> The calculation considers 2015 to be the first year and 2016 to be the second year of the prevented harm.<sup>25</sup> The benefit will arise in the future relative to the intervention, therefore the 3.5% social discount rate must be applied.

In view of the above, the benefit at 2015 prices (HUF million):

2015	$(19\,574 \times 0.0909) / 1.035 =$	1 719
2016	$(19\,574 \times 0.0909) / 1.035^2 =$	1 661
Combined		<b><u>3 380</u></b>

This, together with the amounts calculated with a similar methodology relating to proceedings closed in the period concerned, yields the amount of the direct benefit for the period.

A.27. For the adjustment we start from the assumption that the first year when the prevented harm or the benefit from the activity of the GVH arises is the year directly following the GVH's intervention, its second year is the subsequent year, and so on. As a default, the year of intervention is considered the year when the decision of the GVH is adopted, which may change based on the available information (the earliest possible time is the start of the activity of the GVH (cf. paragraph A.32.)). In case of doubt, we use the later point in time, which is a conservative feature.

A.28. The GVH budget figures are also adjusted for inflation and the social discount rate to facilitate comparison with the quantified gain. The comparison of the quantified gain with the GVH's budget relies on the assumption that the costs relating to proceedings closed in a particular period arose in

<sup>19</sup> Cf. paragraph A.6.

<sup>20</sup> Cf. paragraph A.13.

<sup>21</sup> Cf. paragraph A.26.

<sup>22</sup> The various multipliers are generated from the annual consumer price index and the social discount rate. For instance, in 2013 the consumer price index was 1.73%, therefore the multiplier for 2013 is  $1.0173 \times 1.035 = 1.0529$ .

<sup>23</sup> Cf. paragraphs A.20-21.

<sup>24</sup> Cf. paragraphs A.24.

<sup>25</sup> Cf. paragraph A.27.

that period. This (fictitious) assumption makes the comparison somewhat rough-and-ready but workable and it eliminates double counting.

A.29. For the calculation of the annual rate of return, we consider investment to be the aggregate budget of the GVH over the period and income to be the benefit quantified for the period. Investment period is the weighted average of the expected duration belonging to the various proceedings, where the weights are the average (discounted) relevant annual turnovers associated with the various proceedings. The annual rate of return is the annual interest rate that would have been needed to achieve the revenue from a particular size of investment, with compound interest, during the period thus specified.<sup>26</sup>

### 3.2. Applicability of the formula

#### 3.2.1. Purely *ex-post* intervention<sup>27</sup>

A.30. If a practice has ended, there is no longer any harm that can be prevented by the intervention of the GVH.<sup>28</sup> Such cases of purely *ex-post* intervention result in no direct welfare benefit and are therefore excluded from the calculation of such benefit.<sup>29</sup> (Naturally, such cases may still yield indirect benefits).

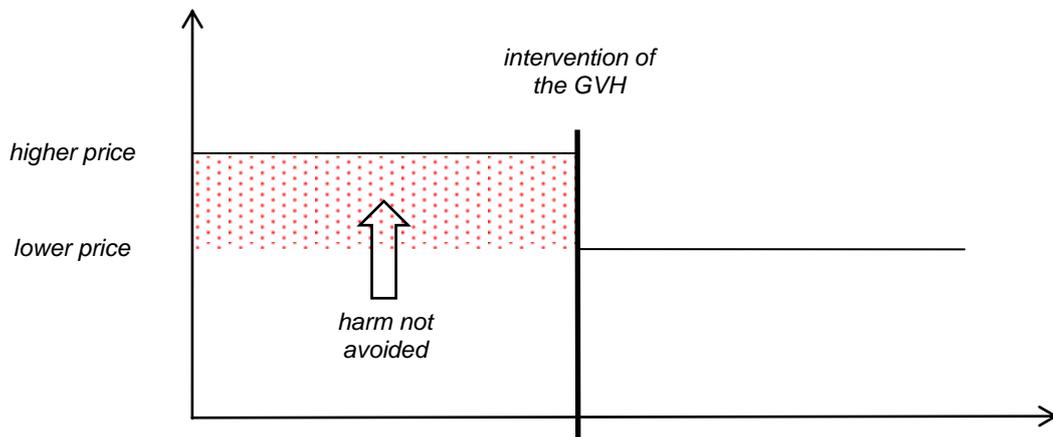


Figure 5: Purely *ex-post* intervention  
(The practice has ended – no prevented harm.)

A.31. As a starting point, we assume that the practice has not ended yet; however, this assumption can be refuted in light of the information obtained.

A.32. A conduct of a non-discrete nature is considered to have ended if we have reliable information that the conduct was terminated before the GVH started to take action. For the purposes of the calculation, the start of the activity of the GVH is the time when the entities engaging in the conduct under investigation noted that the GVH had noticed or would be certain to notice their conduct. This is typically the commencement of the proceedings but it may occur earlier or later. Examples for the former include the date of request for information from the party complained against in the course of the investigation of a complaint, the date of filing of a leniency application submitted to the GVH before

<sup>26</sup> The comparison of the benefit quantified for the 2009–2014 period with the GVH's budget, including the calculation of the annual rate of return, is shown in Annex (C).

<sup>27</sup> This scenario is unlikely in merger cases due to the *ex-ante* nature of the GVH's merger control.

<sup>28</sup> In other words, these cases do not meet the criteria set out in paragraph A.5.

<sup>29</sup> In this case, the formula would also yield a zero result as the value of the expected duration would be zero.

the commencement of proceedings<sup>30</sup> or the date of commencement of a previous proceeding into the conduct concerned which was eventually terminated.<sup>31</sup> A conduct is also considered to have ended if it is terminated during the proceeding but there must be reliable information that this occurred for reasons unrelated to the proceeding.

A.33. In the case of discrete practices it is not always clear whether the practice has ended and if so, when. For instance, in the case of a cartel not manifested in a formal contract, meetings and actions of coordination do not happen every minute or even every day; also, bid rigging may be sustained for a length of time even if bids are invited and related acts of coordination occur only periodically. Months or even years may pass in between such events without the practice being interrupted or terminated.<sup>32</sup> For this reason, a discrete practice is considered to have ended if (i) there is definitive information that the practice has been terminated (for instance, the parties have explicitly decided not to operate the cartel anymore), or (ii) in the three years preceding the start of the GVH's activity there was no known event (e.g. cartel meeting) in connection with the practice in question.<sup>33</sup>

### 3.2.2. Practices not started / purely anticipatory intervention<sup>34</sup>

A.34. If the intervention of the GVH preceded the practice, which did not occur at all as a result, it could not have had any actual harmful effect (yet). However, no real/actual effect is required for the prevention of harm to occur, as without the intervention of the GVH the practice could have been commenced and it could have exerted an effect. Such cases are included in the calculation (unless they are excluded for other reasons).<sup>35</sup>

<sup>30</sup> Deterrence may be conducive to the submission of a leniency application. Furthermore, the cause of the proceeding started upon a leniency application is (*per definitionem*) the leniency application; when this is submitted, the applicant must, by default, terminate the conduct. Thus, in theory, one could have two objections regarding the inclusion of such cases in the calculation: firstly, that the benefit arising from such cases results from deterrence, therefore it is an indirect rather than direct benefit, and secondly, that the termination of the conduct is not the result of the proceeding.

In such cases, however, the deterrence did not render a GVH proceeding of some kind unnecessary due to the absence or discontinuation of the infringement. Furthermore, proceedings started pursuant to a leniency application put an end not only to the conduct of the applicant but also to the operation of the entire cartel. This is known to the applicant and it affects its decision concerning the submission of the leniency application – that is, the leniency application is not only a cause and the subsequent proceeding is not only an effect. Because of all this, the submission of the leniency application and the termination of the conduct of the applicant is not regarded as being independent of the subsequent GVH proceeding. For the same reason, the benefit arising from such cases and quantified with this calculation methodology is regarded as a direct benefit rather than an indirect benefit (arising from deterrence).

<sup>31</sup> If the start of the activity of the GVH is associated with some other proceeding, then, in order to prevent double counting, we make sure that the quantified benefit or a part thereof has not been taken into consideration already in the context of another proceeding.

<sup>32</sup> In other words, a discrete practice may nevertheless constitute conduct performed continuously within the meaning of Section 67(4)(a) of the Competition Act.

<sup>33</sup> In case (ii), when determining the relevant annual turnover, we also take into account the period between the start of the GVH's activity and the event relating to the infringement.

<sup>34</sup> This is the typical scenario in merger cases.

<sup>35</sup> One such reason may be the case of a 'practice with no effect', or where the GVH intervenes ineffectively (Parts 3.2.3. *Practices with no effect* and 3.2.4. *Ineffective intervention by the GVH*).

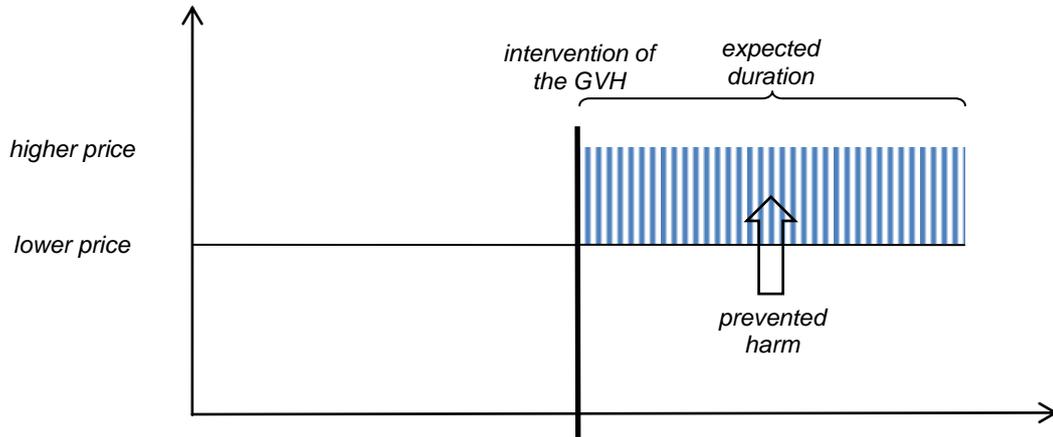


Figure 6: Prevented consumer harm<sup>36</sup>  
(Practices not started – price increase avoided.)

### 3.2.3. Practices with no effect

A.35. If a practice has no effect whatsoever (even without the GVH's intervention), it cannot lead to a price increase and there will be no harm from the continuation of the practice that could be prevented.<sup>37</sup> Such cases involving practices with no effect result in no direct welfare benefit and are therefore excluded from the calculation of such benefit.<sup>38</sup> (Naturally, such cases may still yield indirect benefits).

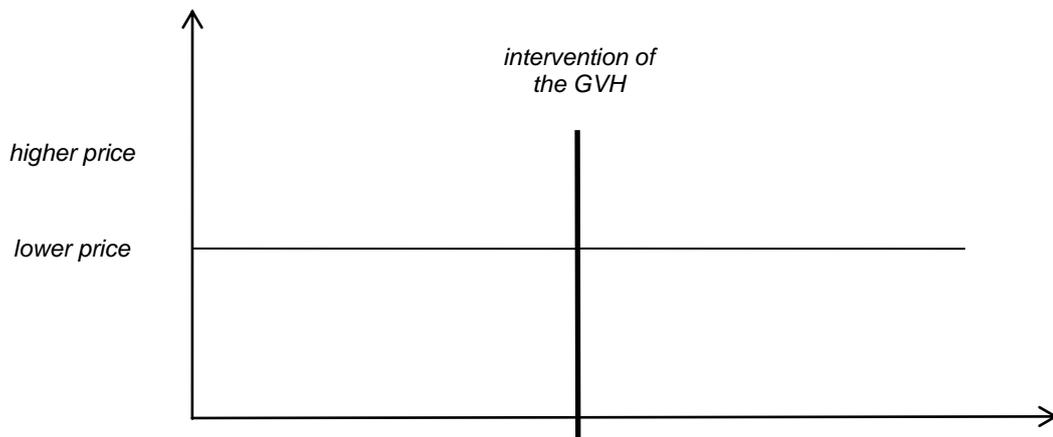


Figure 7: Practices with no effect  
(No consumer harm would have occurred in the absence of the intervention of the GVH – no prevented harm.)

A.36. As a starting point, we assume that we are not dealing with a practice with no effect; however this assumption can be refuted in light of the information available.

A.37. For the purposes of the calculation, a practice is considered to have no effect if, based on the information available, any effect on prices can be ruled out. The mere absence of information on the

<sup>36</sup> Same as Figure 2.

<sup>37</sup> In other words, these cases do not meet the criteria set out in paragraph A.5.

<sup>38</sup> In this case, the formula would also yield a zero result as the value of the price difference would be zero.

existence of effects is not sufficient (in such cases the default values would be used); instead, explicit information on the absence of an effect is required.

A.38. This may occur only in exceptional cases because some sort of effect of a practice is a precondition for the intervention of the GVH.<sup>39</sup> In theory, however, we can envisage a case where the GVH intervenes but the existence of effects relevant for the calculation can still be ruled out based on the information available – this is possible because the calculation reckons only with price effects<sup>40</sup> and the time of the calculation may be later than the date of the proceeding or the exhibition of the conduct.<sup>41</sup>

### 3.2.4. Ineffective intervention by the GVH

A.39. If the practice continues after the intervention of the GVH as if no intervention had occurred, no harm will have been prevented.<sup>42</sup> Proceedings with 'ineffective' GVH intervention result in no direct welfare benefit and are therefore excluded from the calculation of such benefit.<sup>43 44</sup> (Such cases may lead to indirect benefits, though even deterrence is questionable in these cases.)

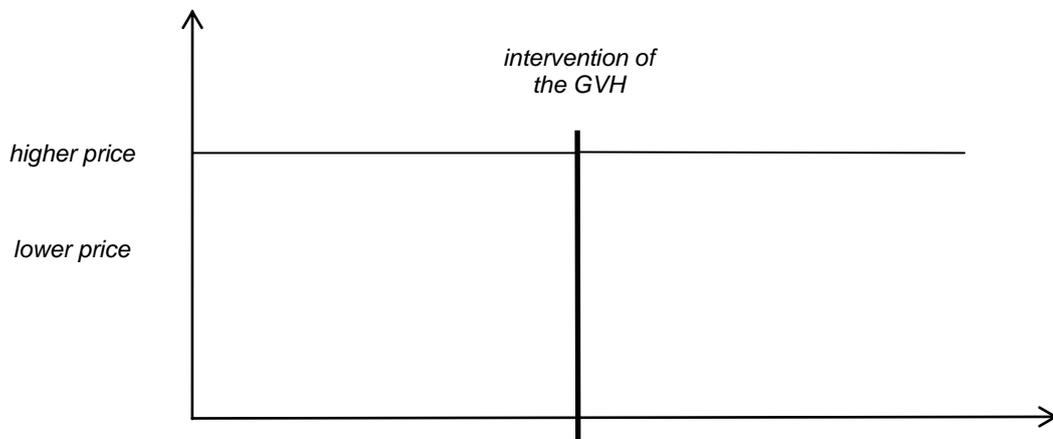


Figure 8: Ineffective intervention by the GVH  
(The intervention by the GVH brings no change – no direct harm is prevented.)

A.40. As a starting point, it is assumed that the intervention has been effective; however, this assumption can be refuted light of the information available.

<sup>39</sup> In the case of mergers, the existence of an expected effect on competition is a precondition of intervention, and an actual or potential effect is also a requirement of the GVH's action in the case of 'soft' agreements and abuse of dominance cases. In the case of cartels the intervention may be based on the anticompetitive object of the agreement; however, the term 'object' does not refer to the intention of the parties to the agreement but rather to the fact that the agreement is by its very nature capable of having restrictive effects (that is, the potential effect can be deemed certain) and therefore it is unnecessary to specifically demonstrate its effects.

<sup>40</sup> Cf. paragraph A.47.

<sup>41</sup> Consider a case where a certain market has regulated prices, and the lifting of this regulation is proposed. If market participants were to agree on prices to be employed after the end of the price regulation but the regulation would still remain in place for a length of time, the absence of an actual effect would not prevent the GVH from intervening (even *ex-post*). However, for the purposes of the quantification of the price effect, it would be problematic to identify a price effect as it cannot possibly have occurred (as known in retrospect) because the agreement could not become operative (independent of the will of the parties or the intervention of the GVH).

<sup>42</sup> In other words, these cases do not meet the criteria set out in paragraph A.5.

<sup>43</sup> The Autoridade da Concorrência adopts a similar approach (Mateus, Gonçalves, Rodrigues (2008) p. 43, para 21).

<sup>44</sup> This case is not related to any special value of some of the parameters in the formula. Rather, for the purposes of calculation, ineffective intervention should be treated as if no intervention had occurred, thus the formula cannot be applied.

A.41. A GVH intervention is deemed ineffective<sup>45</sup> if

- i. the GVH established (generally in the course of a post-investigation or when handling either formal or informal complaints) that the obligations imposed by the GVH had not been fulfilled or alternatively, if the GVH officials handling the case came to this conclusion on the basis of the information available, or
- ii. the GVH established (generally in the course of a post-investigation or when handling either formal or informal complaints) that the practice continued unabated or alternatively, if the GVH officials handling the case came to this conclusion on the basis of the information available, except if there is reason to believe that without the GVH's intervention the practice would have intensified, or
- iii. the court reviewing the decision of the GVH suspended the implementation of the part of the GVH's decision that imposes an obligation to perform a particular act, exhibit or refrain from a certain practice, and the suspension is still in force at the time of the calculation, or
- iv. such suspension is no longer in force at the time of the calculation, but for some other specific reasons known to the GVH the concept of the prevention of harm is no longer applicable after the suspension (for instance, the service/product that the obligation concerns is no longer offered for other reasons).

### 3.2.5. Commitments and analogous cases

A.42. The acceptance of commitments by the GVH is one of the possible forms of intervention. In the context of merger control we start from the premise that commitments are accepted if the merger would not otherwise be eligible for authorisation. This means that the facts of the case are investigated and analysed in full before the commitment decision is made, and the GVH concludes that the merger would lead to a substantial lessening of competition (without offsetting efficiency gains from the merger), that is, in its original form the merger would have harmful effects. Thus, the idea that harm is prevented through the intervention of the GVH is a valid one concerning merger remedies. Accordingly, such cases are included in the calculation (unless they are excluded for other reasons). In exceptional cases where the (text of) the decision closing the merger proceeding raises express concerns whether in the absence of a commitment the Competition Council would have prohibited the merger, and this is supported by other documents (e.g. the preliminary position of the Competition Council), we do not consider the existence of the prevented harm to be certain, therefore such proceedings are included in the calculation only partially.

A.43. In the case of non-merger cases, if the GVH accepts a commitment, it terminates the case without concluding whether the original conduct was unlawful. More importantly, in these cases the facts of the case are not investigated and analysed in full by the GVH. By accepting the commitment the GVH intervenes; however, as explained above, it remains open as to whether the investigated practice was restrictive and had any harmful effects. Therefore, in such cases one cannot talk about harmful effects or effects arising from the infringement, or about their prevention.<sup>46</sup> Consequently, one cannot reach the conclusion, with reasonable confidence, that such proceedings yield any direct welfare benefit and as a result they are excluded from the calculation of such benefit.<sup>47 48</sup> (Naturally,

<sup>45</sup> Naturally, this type of ineffectiveness in itself does not mean that the proceeding in question would have been unnecessary, pointless or incorrect.

<sup>46</sup> In other words, these cases do not necessarily meet the criteria set out in paragraph A.5.

<sup>47</sup> This case is not related to any special value of some of the parameters in the formula. Rather, the situation does not lend itself to the application of the formula.

such cases may still yield indirect benefits and potentially even direct gains, but this is uncertain. Thus, excluding them entirely is a conservative feature.)

A.44. The same applies to (i) cases where the GVH has terminated the proceeding because the practice has been discontinued, (ii) merger cases where the parties withdrew their application for authorisation,<sup>49</sup> (iii) cases where the intervention of the GVH is not based on its competitive analysis but on other public policy objectives,<sup>50</sup> and (iv) cases where the merger was later dropped by the merging parties for reasons unrelated to the intervention of the GVH.<sup>51</sup>

### 3.2.6. Partial applicability of the above scenarios

A.45. In complex cases the above scenarios may only be partially applicable. For instance, in a case involving several market practices, one practice may have ended while others may still be ongoing.<sup>52</sup> In such cases we break down the relevant turnover (in this example by market practice). If such a breakdown is not feasible for some reason, we employ a conservative simplification; consequently, such cases are generally excluded from the calculation.

A.46. Some of the above scenarios may be partially applicable even in non-complex practices. For instance, the intervention of the GVH may be partially effective in respect of a certain activity (and the related turnover) if the obligations imposed are complied with only in part. In such cases the quantified gain is reduced proportionately.

## 3.3. The design of the formula

A.47. The design of the formula also relies on simplifications and assumptions. The formula does not reckon with the fact that the competitive restraints may have a negative effect not only on prices but also on quality, the range of choice available to consumers, and innovation;<sup>53</sup> furthermore, it disregards deadweight loss.<sup>54 55</sup>

A.48. The formula is based on the turnover affected by the practice as well as the related price difference and expected duration that direct buyers face. However, what is relevant for the

<sup>48</sup> The ACM uses a similar approach: they only consider infringement decisions in respect of restrictive practices while commitment decisions are also included in respect of mergers (ICN (2011), p. 54). The same approach is recommended in the OECD Guide (OECD (2014b), p. 1 (1.i.)).

<sup>49</sup> This is slightly more conservative than the practice of the CMA and the ACM. In certain cases the CMA and the ACM include mergers where the application had been withdrawn or the parties did not pursue the merger anymore (OFT (2010 p. 13, p. 27, (Figure 2.1. 4.27-28), OFT (2013) pp. 11.12 (2.12), ICN (2011) p. 54., ACM (2014) P. 76). However, the OECD Guide does not specifically mention applications withdrawn even though, according to its annual report on 2013, the ACM considers its practice to be in line with the OECD Guide (ACM (2014) p. 17).

<sup>50</sup> One such case is where the GVH must not authorise a merger if the National Media and Telecommunications Authority (Nemzeti Média- és Hírközlési Hatóság) refuses its approval to the proposed merger for reasons related to the plurality of the media.

<sup>51</sup> In cases (i) and (ii) there is no formal GVH intervention (GVH decision intervening in market processes) but the commencement of the proceeding and its development may lead to a change in the conduct and may therefore be considered as an intervention for the purposes of the calculation.

<sup>52</sup> In certain cases this can be interpreted as an example of the variation of certain parameters of the formula, as some of the above scenarios can also be understood as if those parameters were equal with certain values (cf. paragraphs A.25. and footnotes 29 and 38).

<sup>53</sup> The OECD Guide also recommends the inclusion of these so-called dynamic effects only as an option (OECD (2014b) pp. 2, 4 (2.iii., 3.)).

<sup>54</sup> Deadweight loss occurs because higher prices result in a decline in the demand for the product or service concerned. Thus the lost demand could be satisfied, without any social loss, at the original, more competitive price, but this does not happen in the new situation. The deadweight loss means the suboptimal allocation of social resources.

<sup>55</sup> Nevertheless, because of the constraints of the calculation method, in certain cases the quantified gain also contains the deadweight loss (cf. footnote 15).

identification of consumer welfare gains is the harm to final consumers, and the final consumer is not necessarily the direct consumer, as it may be located lower in the value chain. The formula assumes that the entire (measured) effect of the practice on the direct consumer would be passed on to the final consumer in some form.<sup>56</sup>

### 3.4. Application of the formula

A.49. The formula is applied separately for the different cases and the results are then added together. The calculation for a particular period covers the cases closed in that period. This is because the gain captured by the calculation relates to the interventions of the GVH, and the interventions are tied to the closure of the proceedings, that is, to the decisions of the GVH.<sup>57</sup>

A.50. The distribution of the proceedings affecting the value of the results over time is necessarily uneven, their numbers varying from year to year, which is magnified by the small size of the Hungarian economy. Thus, if the aggregation were to be done annually, the results for different years would fluctuate significantly. To mitigate this fluctuation, the calculation relies on proceedings closed in a six-year period (2009-2014) rather than in a single year.<sup>58</sup> The longer period also mitigates the rough-and-ready nature indicated in paragraph A.28 resulting from the simplification regarding the allocation of costs over time.<sup>59</sup>

A.51. Only the aggregated results are published.<sup>60</sup> Firstly, the publication of the results obtained for individual proceedings is prevented for reasons related to the protection of individual data, or rather the requirement that the published results should not make it possible to trace back individual data, in particular trade secrets. Secondly, the results obtained for individual proceedings are significantly less accurate than the aggregated results as, due to the simplifications applied, the values calculated for individual cases may be significantly different from the real figures, whereas if a large enough number of cases is covered, some of the divergences are 'averaged out'. Thirdly, only the aggregated results are relevant for the purpose of quantification. (The list of proceedings included in the calculation is published but not the individual values belonging to them.)<sup>61</sup>

A.52. For similar reasons, the calculation is performed and the results are published every two years.<sup>62</sup> Accordingly, every two years the GVH quantifies and publishes the direct benefit arising from the proceedings of the previous six years.<sup>63</sup>

<sup>56</sup> The ACM and the CMA adopt the same approach (ICN (2011) p. 55., OFT (2010) 2010, p. 10. (Section 2.10), and this is equivalent with the recommendations of the OECD Guide (OECD (2014b), p. 2. (1.iii)).

<sup>57</sup> However, the calculation of the benefit takes into account the fact that the intervention, after which the benefit may arise, does not necessarily coincide with the adoption of the decision of the GVH (cf. paragraphs A.26-27).

<sup>58</sup> This is in compliance with the recommendations of the OECD Guide and those made by Muraközy, Valentiny Pál (2014) to the GVH (OECD (2014b) p. 2 (1.ii.), Muraközy, Valentiny (2014), pp. 4., 23, 26 (paragraphs 12, 129, 151)). The ACM adopts the same approach (ICN (2011), p. 55).

<sup>59</sup> Nevertheless, the ratio of the quantified benefit to costs is more illustrative than an exact indicator.

<sup>60</sup> The CMA adopts a similar approach (OFT (2005), p. 18 (Section 3.3) and the OFT (2010) p. 10 (section 2.13)). Neither the DOJ nor the FTC allows the replication of the entire calculation, for reasons related to the protection of trade secrets (Nelson, Sun (2002), p. 935.). According to the OECD Guide, the presentation of results in aggregate form may be justified by the protection of confidential information, while the need for a breakdown by proceedings does not even arise in the recommendations put forward in the Guide (OECD (2014b), p. 3 (2.vi.)).

<sup>61</sup> Annex (B).

This list also shows the proceedings included in the calculations and the ones dropped for substantive reasons or insufficiency of data. This is a more extensive disclosure than that was offered in the document explaining the quantification method for the 2008–2012 period (GVH (2013)). The more extensive disclosure was made possible by the system of bi-annual quantification used for the six-year period (cf. paragraph A.52).

<sup>62</sup> The bi-annual quantification and publication is in line with the recommendations in the OECD Guide (OECD (2014b), pp. 2, 3 (1.ii., 2.v.)).

A.53. When using the formula, the decisions of the GVH are relied upon unless a subsequent judicial review resulted in a different outcome (in which case the outcome of the judicial review is taken as the starting point).<sup>64</sup>

A.54. As a result of the judicial review, the court in its final judgment may amend the decision of the GVH or annul it, requiring the GVH to reopen and reinvestigate the case. If the court in its final judgment changes the decision of the GVH, the changed version is relevant for the calculation.<sup>65</sup>

A.55. If the court in its final judgment annulled the GVH's decision and required the case to be reopened, the GVH must start a new proceeding. The new proceeding may cover the period investigated in the original proceeding (proceeding with retrospective coverage) or the time up to the repeated proceeding (proceeding with current coverage).<sup>66</sup> Due to their nature, reopened proceedings relating to restrictive agreements or abuse of dominance are typically retrospective while merger cases tend to have current coverage.<sup>67 68</sup> Decisions adopted in reopened proceedings (or at the end of judicial reviews) affect the quantification of the direct benefit relating to the period to which the reopened proceedings pertain.

A.56. In the case of proceedings with retrospective coverage, if the original cases were included in the calculation, they are removed (at least temporarily) if the decisions are annulled. In retrospective cases, the decisions adopted in the reopened proceedings replace the original GVH decisions for the purposes of the calculation, which may affect the result obtained for the original period.<sup>69 70</sup>

A.57. In the case of proceedings with current coverage, if the original cases were included in the calculation, the proceedings are definitively removed from the calculation pertaining to the original time

<sup>63</sup> The same pattern is found to be the most appropriate by Muraközi, Valentiny (2014) (pp. 4, 23, 26. (paragraphs 12,129,151)).

<sup>64</sup> This is in line with the recommendations in the OECD Guide (OECD (2014b), pp. 2, 4 (1.ii., 2.ii)). The CMA (OFT (2010) p. 10 (section 2.11) adopted the same approach.

<sup>65</sup> As the results of the judicial reviews, whether overturning the GVH's decisions or requiring the cases to be reopened, may alter the size of the direct benefit calculated for the period concerned, the result for a particular period may change over time, and it may be necessary to update these figures (Cf. paragraph A.65.).

<sup>66</sup> In the case of forward-looking analyses, covering mergers for instance, the period directly following the reopening of the case is also included.

<sup>67</sup> In respect of mergers, this approach is reflected in the judgments in the course of the judicial review of the GVH decision in the Matel/Vidanet case (Vj/158/2008) as well as in the guidance concerning the subject of the reopened case (2.K.31.748/2011/220, p. 17, paragraph 2, 2.Kf.27.604/2011/7, p. 10. paragraph 2).

<sup>68</sup> However, the main consideration is not the type of case but the actual period covered by the proceeding: it is possible that both scenarios apply in a complex case if for instance the proceeding covers more than one practice and/or period.

<sup>69</sup> Whether a case is eventually included in the calculation (and if so, how) also depends on other considerations. For instance, if the practice remained unchanged after the original proceeding, then the result of the subsequent proceeding is not necessarily relevant for the calculation.

<sup>70</sup> For instance, in the E.ON TITÁSZ case involving street lighting (Vj/175/2001) in 2002, the practice under investigation was found to be unlawful by the GVH. Thus the proceeding would have been included in a calculation for the year 2002 (or a period including the year 2002).

A judicial review followed, ending in the decision being overturned and in the GVH being required to reopen the case because the court found the reasoning of the decision and the investigation to be insufficiently sound. As a result, the proceeding would have been removed from the calculation during an update of the calculation relating to 2002 because, after the court decision, it would no longer have satisfied the requirement that the GVH intervened because of an unreasonable restriction of competition.

In the reopened proceeding (Vj/074/2008), in line with the court decision, the GVH investigated again whether the conduct examined in the original proceeding was legitimate in the period covered in the original proceeding. At the end of the investigation, the GVH found the same infringement as in the original proceeding. At this point, after the repeated investigation, the year 2002 intervention of the GVH could again be regarded as an intervention that prevented the continuation of an undue restriction of competition. Therefore, in another update of the calculation for 2002, the case would have been re-incorporated in the calculation in accordance with the findings of the new proceeding (which, in this case, were identical with the findings of the original proceeding). Even though the new proceeding was closed in 2011, its result would have affected the calculation relating to 2002 rather than to 2011.

period. In current cases, the GVH's decisions adopted in the reopened proceedings exert their impact in the period of the new proceedings, and direct benefits may be derived in that period, therefore they may have an effect on the results for that period.<sup>71 72</sup>

A.58. Bid rigging is treated analogously with other types of cartels and collusion. In the case of bid rigging, the relevant turnover is the value of the tender subject to the collusion (generally only the value of successful bids, or their sum in the case of multiple bids). For the purposes of the calculation, bid rigging is not automatically considered to be a one off practice (that has necessarily ended); instead, it is treated as part of a process, which may be shorter or longer, or which may have already ended.

A.59. Collusion in a single tender is by default treated as a special case of longer-term collusion: the tender in question is considered to be the 'last year', while in other respects we proceed as we generally would.

A.60. Potentially all those cases may be included in the calculation that were closed by the GVH in the period concerned, ended with an intervention<sup>73</sup> and belong to one of the types of cases covered by the calculation. However, in practice only those cases are included in the calculation that are not excluded for any of the substantive reasons discussed above or due to any data issue that would render the calculation impossible. Thus, for all the proceedings included in the calculation, the harm prevented by the intervention of the GVH can be defined and its amount can be quantified, at least in part.

---

<sup>71</sup> Whether a case is eventually included in the calculation (and if so, how) also depends on other considerations.

<sup>72</sup> For instance, the GVH disallowed the Ringier/Népszabadság merger (Vj/059/2003) in 2003, thus the proceeding would have been included in a calculation for the year 2003.

A judicial review followed, ending in the decision being overturned and in the GVH being required to reopen the case because the court found the reasoning of the decision and the investigation to be insufficiently sound in some respects. As a result, the proceeding would have been removed from the calculation during an update of the calculation relating to 2003 because, after the court decision, it would no longer have satisfied the requirement that the GVH prevented a merger that would have led to a substantial lessening of competition without any offsetting positive effects).

Considering that the merger did not go through as a result of the GVH's intervention in 2003, in the reopened proceeding (Vj/169/2004) the GVH decided whether to allow the merger at that time. Thus the result of the reopened proceeding would have had no effect on the year 2003 calculation. It would have, however, affected the calculation for 2004 because the reopened case ended in 2004 with the GVH authorising the merger *with remedies*.

<sup>73</sup> Cf. also footnotes 51 and 85.

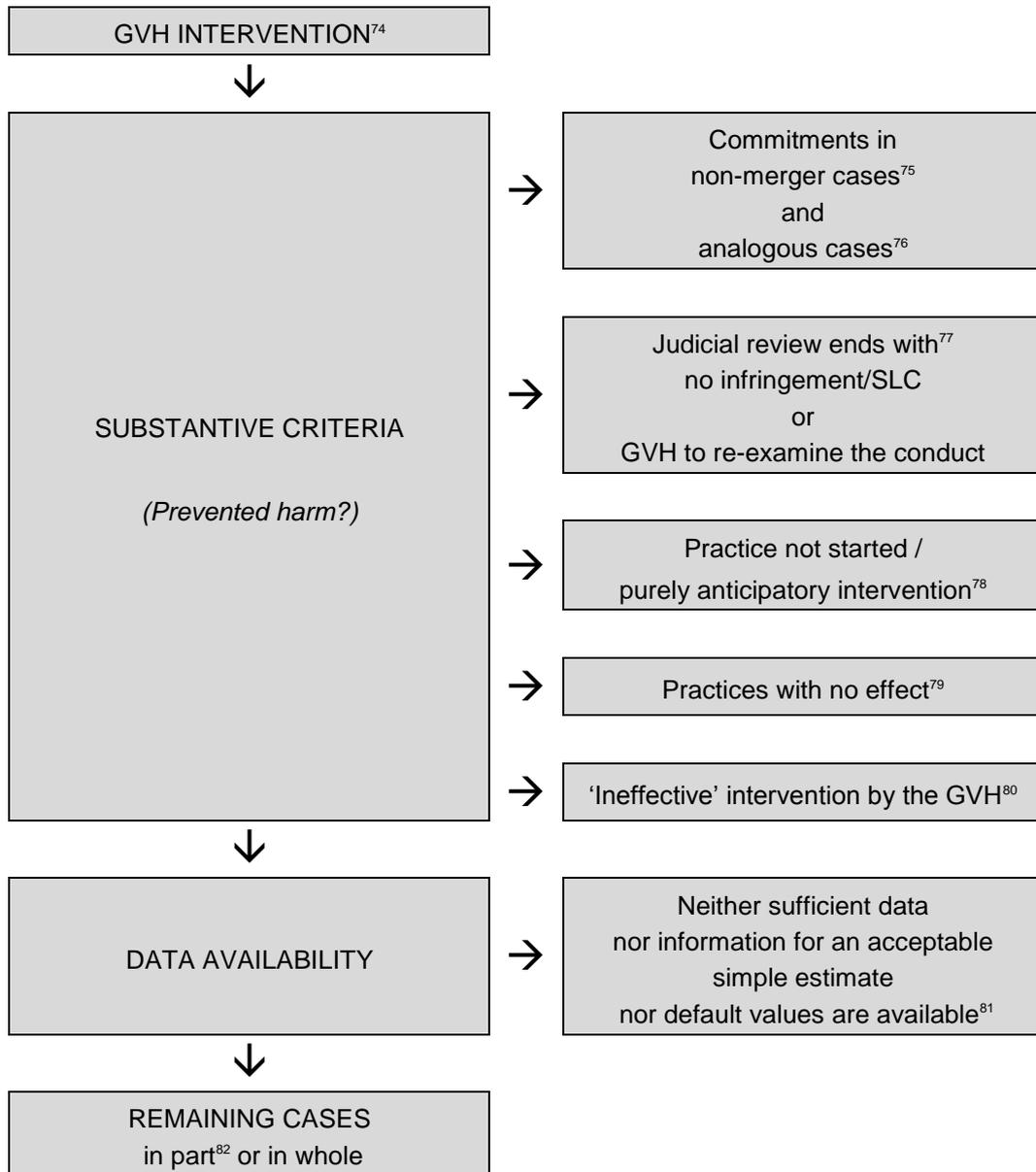


Figure9: Filtering cases

(Not all proceedings resulting in the intervention of the GVH are included in the calculation.)

<sup>74</sup> Cf. also footnotes 51 and 85.

<sup>75</sup> Cf. paragraph A.43.

<sup>76</sup> Cf. paragraph A.44.

<sup>77</sup> Cf. paragraphs A.53-57.

<sup>78</sup> Cf. 3.2.1. *Purely ex-post intervention.*

<sup>79</sup> Cf. 3.2.3. *Practices with no effect.*

<sup>80</sup> Cf. 3.2.4. *Ineffective intervention by the GVH.*

<sup>81</sup> Cf. paragraphs A.18. and A.23.

<sup>82</sup> Cf. paragraphs A.19 and A.45-46.

#### 4. Fundamental characteristics

A.61. This chapter gives an overview of the fundamental characteristics of the method of calculation. These characteristics are interrelated with one another as well as with the purpose and framework of the methodology.

A.62. The calculation method described only captures part of the total gain from the activities of the GVH. It disregards gains which are not primarily financial in nature, such as legal certainty, as well as economic benefits in the broader sense such as the increased competitiveness of firms as a result of competition.<sup>83</sup> As regards financial gain in the narrow sense, it does not reckon with indirect benefits, direct non-price effects or the deadweight loss; furthermore, it does not encompass the GVH's activities other than the ones relating to mergers and anticompetitive practices.<sup>84</sup> In addition, cases examined by the GVH but not closed by the GVH are left out of the calculation;<sup>85</sup> furthermore, proceedings may be left out of the calculation due to incomplete data or their calculation may be incomplete. The overwhelming majority of simplifications used in the calculation are conservative.<sup>86</sup> All of this means that the actual benefit from the work of the GVH is almost certainly (perhaps significantly) greater than the quantified gain.

A.63. The calculation relies on information that is either readily available to the GVH,<sup>87</sup> or that can be obtained with a reasonable amount of research, as well as on simple estimations based on this information. It also relies on a number of simplifications as described above. Thus the calculations have limited data requirements and they are not complex, which contributes to the relative ease of use of the method.

A.64. The method is *ex-ante* in nature as the calculation relies fundamentally (though not exclusively) on pre-existing or contemporaneous information rather than on information reflecting the development of the market in the years since the events that would facilitate more detailed and in-

---

<sup>83</sup> The economic literature on economic benefits in the broader sense, including empirical literature, is reviewed in GVH (2007) and OECD (2014a).

<sup>84</sup> This does not mean that these effects and activities are not important or significant (they are important, and probably significant); all this means is currently the GVH has no appropriate method for the general quantification of the level of benefit relating to these factors.

Cf. footnote 5 and paragraph A.47.

Indirect benefits may arise from proceedings that yield no direct benefits. Examples include proceedings addressing practices that have been discontinued or practices with no effect (Sections 3.2.1. *Purely ex-post intervention* and 3.2.3. *Practices with no effect*).

Indirect benefits may be several times greater than direct ones. In a piece of research conducted for the OFT (the predecessor of CMA), the indirect benefits were found to be 4 to 7 times higher than the direct benefits, depending on the type of case (Deloitte (2007) pp. 6, 8). In a subsequent research also conducted for the OFT, the indirect benefit was found to be 12 to 40 times greater than the direct benefit (OFT (2013), p. 10 (section 3.6)). A piece of research undertaken for the NMa (the predecessor of the ACM) found that the indirect benefits were 5 times the direct benefits in the case of restrictive practices and they were also greater than the direct benefits in the case of mergers (Van der Noll, Baarsma, Rosenboom and Weda (2011), p. i).

<sup>85</sup> It may happen that a case started by the GVH pursuant to EU competition law is taken over by the Directorate General for Competition of the European Commission (the competition authority of the EU) at a later stage of the proceeding and concluded with an intervention. As these cases are not concluded with an intervention of the GVH, they are not included in the calculation even though the work of the GVH played a significant part in the realisation of the benefit arising from these proceedings. (An example for the proportionate allocation of the benefit from proceedings conducted by more than one authorities between the authorities is described in OFT (2010) (pp. 12-13, 27, 29, 30-31, paragraphs 2.19-2.20, 4.27-4.28, 5.3, 5.9-5.10).)

In the 2009–2014 period there was no such proceeding which was started and examined on its merits by the GVH but concluded with the intervention of another authority.

<sup>86</sup> Cf. paragraphs A.9., A.13, A.17-18, A.21, A.24-25, A.27, A.43-45. and footnote 2.

<sup>87</sup> This means mostly information obtained in the proceeding concerned and in subsequent related proceedings (e.g., post-investigations) or through the judicial review process, as well as the knowledge of GVH officials handling the cases.

depth *ex-post* evaluation. This is true even though the effects are quantified *ex-post* in the sense that the various cases are added to the calculation in the period following their closure.

A.65. The results obtained for a particular period may change over time, as, for instance, certain problems associated with acquiring data may be eliminated or as a result of the judicial review of the decisions of the GVH. Thus the results also depend on the timing of the calculation, and due to its dynamic nature, the timing of the calculation should be noted and the calculation may need to be updated over time.

A.66. The calculation methodology was designed using international examples, in particular the publicly available information on the practices and experiences of the Competition and Markets Authority (CMA) in the United Kingdom,<sup>88</sup> the Dutch Autoriteit Consument & Markt (ACM),<sup>89</sup> the Portuguese Autoridade da Concorrência, the US Department of Justice (DOJ) and the US Federal Trade Commission (FTC). The purpose, general framework and fundamental characteristics of the calculation are in line with international practices. The details of the methodology overlap with foreign examples on a number of points.<sup>90</sup> The methodology is in compliance with the OECD Guide, which relies on international best practices.<sup>91</sup> Accordingly, this method is in compliance with international practice.<sup>92</sup>

A.67. The calculation method<sup>93</sup> used in 2013 was assessed by independent experts. They concluded that the calculation methodology used by the GVH and its particular application was in line with international best practices and that, based on the empirical literature available regarding Hungary, there was no Hungarian peculiarity that would justify a departure from those methods.<sup>94</sup>

A.68. The purpose of the calculation is to visibly demonstrate the existence of the financial benefit resulting from the work of the GVH and to indicate its magnitude.<sup>95</sup> In this context it does not matter that the method only produces a rough-and-ready picture: it is only the aggregated results that matter and the actual gain is almost certain to be greater. The existence of the numerous assumptions and simplifications can be seen as an advantage, as no results could be obtained without them.<sup>96</sup>

A.69. However, these results are not suitable for use for any other purpose. For instance, they are inappropriate for demonstrating the absence, existence or magnitude of any competitive effect or civil law damage in an individual case. For example, just because a practice has 'no effect' under the

<sup>88</sup> Before 1 April 2014, the Office of Fair Trading (OFT).

<sup>89</sup> Before 1 April 2013, the Nederlandse Mededingingsautoriteit (NMa).

<sup>90</sup> International examples are reviewed by Davies, Ormosi (2010) and OECD (2013).

<sup>91</sup> OECD (2014b).

<sup>92</sup> The gradual approach of the *ex-ante* impact assessment programme of the GVH also follows international examples. Other competition authorities also adopt a gradual approach to the inclusion of types of cases, activities and types of benefits in the calculation as well as to the methods applied. Cf. footnote 5, in particular the last paragraph.

<sup>93</sup> GVH (2013).

<sup>94</sup> Muraközy, Valentiny (2014), 3-4, as well as pp. 12, 18, 25 (paragraphs 4-5, 10, and 60, 99-103, 149).

The assessment also contained recommendations as to the regular performance and publication of the calculation of consumer benefits (and its manner) as well as the potential fine-tuning and expansion of the calculation methodology. Pursuant to these recommendations, the methodology of quantification and its presentation were modified at some points. The most significant change, which also has an effect on the results, is the use of the 3.5% social discount rate (cf. footnote 16).

<sup>95</sup> The comparison of the quantified benefit with the GVH budget fits into this context (cf. paragraphs A.9-A.10).

<sup>96</sup> Naturally, for the appropriate interpretation of the results we must consider what exactly the calculation relates to and how it was performed. For instance, as the quantification takes into account both inflation and the 3.5% social discount rate, the quantified benefit can be compared only to similarly adjusted data (cf. paragraphs A.26. and A.28.). The comparison of the ratio of the quantified benefit to the GVH budget with other ratios is less difficult (cf. Annex (C)). Even though the annual rate of return is a less relevant indicator, it can be compared with other return indicators with certain constraints (cf. paragraphs A.10. and A. 29).

methodology, it does not necessarily lack an effect in the sense of competition law by the standards applied in proceedings conducted by the GVH or the courts. Similarly, the absence of a 'no effect' in this calculation cannot be taken as proof of any effect for the purposes of competition law. Furthermore, the argumentation and conclusions presented in this paper/annex are not necessarily valid outside the framework of the methodology.

A.70. The results are also inappropriate for assessing the effectiveness and efficiency of the GVH or the professional quality of its work, its priorities or the analytical methods and remedy toolkit applied. The reasons for this include in addition to those explained above, the fact that in the course of calculation we assume that the decisions of the GVH, or the respective end-results of the judicial reviews correcting the decisions of the GVH, are correct.<sup>97</sup> Furthermore, the results show the level of the benefit achieved, rather than whether a greater benefit (or the same benefit at a lower cost) could have been achieved and if so, how; the calculation methodology compares the actual situation to a 'no GVH' scenario rather than comparing situations in which the GVH exists but operates differently.<sup>98</sup> Also importantly, as the method does not quantify each and every type of benefit, it is not only those activities and proceedings the benefits of which are quantified with this method that have a value or yield benefits. Consequently, the results can be compared over time or between institutions for purposes of assessment only with severe limitations.<sup>99</sup>

---

<sup>97</sup> Cf. paragraph A.53.

<sup>98</sup> Thus the method is blind to considerations as to whether the GVH is fast or slow (or faster or slower than necessary) in authorising mergers not resulting in a substantial lessening of competition even though this may also have effects on welfare: with faster authorisation, the potential welfare gains arising from the mergers may materialise sooner, while decisions adopted 'too fast' may prove to be wrong. Still, the results are suitable for their original purpose – raising awareness of the usefulness of the GVH and of competition law and enhancing their acceptance – but their use for evaluation purposes is significantly compromised.

<sup>99</sup> For instance, because a more efficient authority may achieve greater deterrence, it may encounter less infringements and therefore show less direct benefit than it previously did or than that shown by a less efficient authority. Therefore, the lower level (or decrease) of the measured benefit may be linked to the higher level (or increase) of the non-measured benefit. However, this correlation is not necessarily true, thus the size (or trend) of the measured benefit does not necessarily lend itself to conclusions about the size (or trend) of the non-measured benefit.

A comparison between institutions would be made more difficult by the fact that the various authorities use somewhat different methods or default values for quantification (cf. footnote 9). Furthermore, the result and its trend are also affected by a number of factors independent of the activities and performance of the authority.

## References

ACM (2014)

2013 Annual Report, The Netherlands Authority for Consumers and Markets.

Connor (2005)

John M. Connor: Price-Fixing Overcharges: Legal and Economic Evidence, Purdue University Staff Paper No. 04-17.

Davies (2010)

Stephen Davies: A Review of OFT's Impact Estimation Methods, Office of Fair Trading, January, (OFT1164).

Davies, Ormosi (2010)

Stephen Davies, Peter Ormosi: Assessing Competition Policy: Methodologies, Gaps and Agenda for Future Research, CCP Working Paper 10-19, November

Deloitte (2007)

The deterrent effect of competition enforcement by the OFT: A report prepared for the OFT by Deloitte, Office of Fair Trading, November (OFT962).

GVH (2007)

Verseny és termelékenység – Irodalmi áttekintés, Gazdasági Versenyhivatal, 12 June 2017.

GVH (2013)

*Ex-ante* assessment of welfare gains achieved by the GVH (*ex-ante* impact assessment) – Cases involving anticompetitive practices and mergers, 2008-2012. Hungarian Competition Authority, 10 May 2013.

ICN (2011)

Competition Enforcement and Consumer Welfare: Setting the Agenda, International Competition Network.

Nelson, Sun (2002)

Philip Nelson and Su Sun: Consumer Savings from Merger Enforcement: A Review of the Antitrust Agencies' Estimates, Antitrust Law Journal, Vol. 69, pp. 921-960.

Mateus, Gonçalves, Rodrigues (2008)

Abel Mateus, Paulo Gonçalves, Jorge Rodrigues: Performance of national competition authorities: A method for assessment (Concurrences, No 3, pp. 40-54).

Muraközy, Valentiny (2014)

Balázs Muraközy and Pál Valentiny: Review of the "Ex-ante assessment of the welfare gains achieved by the GVH", MTA KRTK KTI, February 2014.

OECD (2013)

Evaluation of Competition Enforcement and Advocacy Activities: The Results of an OECD Survey (OECD, 20 February, DAF/COMP/WP2(2012)/7/FINAL)

OECD (2014a)

Factsheet on how competition policy affects macro-economic outcomes, OECD, October 2014.

OECD (2014b)

Guide for helping competition authorities assess the expected impact of their activities, OECD, April 2014.

OFT (2005)

Positive impact: An initial evaluation of the effect of the competition enforcement work conducted by the OFT, December, (OFT827).

OFT (2010)

A guide to OFT's Impact Estimation methods, Office of Fair Trading, July (OFT1250).

OFT (2013)

Positive impact 12/13:??? Consumer benefits from the OFT's work, Office of Fair Trading, June (OFT1493).

Van der Noll, Baarsma, Rosenboom and Weda (2011)

Rob van der Noll, Barbara Baarsma, Nicole Rosenboom and Jarst Weda: Anticipating cartel and merger control, SEO Economisch Onderzoek, Amsterdam (SEO-Report Nr. 2010-076a).

## Appendix:

### Hypothetical example for the calculation relating to proceedings – the *Mynorca* cartel<sup>100</sup>

This numerical example illustrates some potential problems and their treatment.

#### Information

Early in 2014 the GVH found that two producers of *mynorca* had been coordinating their prices for the sale of *mynorca* since mid-2011.

The turnover of the two companies from the sale of *mynorca* was as follows (HUF million, at current prices):\*

	<i>FYI</i>	<i>TBA</i>	<i>FYI + TBA</i>
2011	15 000	10 000	25 000
2012	13 000	at least 9 000 **	at least 22 000 **

\* *There are no data available on 2013 yet but there is nothing to indicate that they would be significantly different from the data of previous years.*

\*\* *Exact figures are unknown.*

The correspondence between *FYI* and *TBA*, as found by the GVH, referred on numerous occasions to the fact that the objective was to achieve 15–20% higher prices, and that the firms considered that this objective was essentially achieved.

The year of calculation is 2015.

#### Calculation

The basic formula to be applied:<sup>101</sup>

$$\text{Direct benefit} = \text{Relevant turnover} \times \text{Price difference} \times \text{Expected duration}$$

The calculation of the **relevant turnover** is made more complicated relative to the calculations relating to the *Gerappa* cartel<sup>102</sup> by a number of circumstances. The period of the infringement was mid-2011 to end-2013. This is not a one-year period, therefore the turnover per year must be calculated.<sup>103</sup> There is no separate figure available for the second half of 2011; therefore, we replaced it with the time-proportionate part of the annual turnover (giving a 1/2 weight to the 2011 turnover).

For 2012 the calculation uses the lower end of the annual turnover (only a range is available). This does not compromise the conservative nature of the calculation (indeed, it even strengthens it).

No figures are available for 2013. However, 2013 can be considered as an average year; consequently, its omission does not affect the end result.

<sup>100</sup> The numerical example is for illustrative purposes only; any resemblance with real life is purely coincidental.

<sup>101</sup> Cf. paragraph A.6.

<sup>102</sup> Cf. box (page 8).

<sup>103</sup> Cf. paragraph A.15.

In view of the above, the relevant turnover of the various years at 2015 prices (HUF million):

2011	$25\,000 \times 1.0328 \times 1.0529 \times 1.0937 \times 1.0758 =^{104}$	31 987
2012	$22\,000 \times 1.0328 \times 1.0529 \times 1.0937 =$	26 165
Per year	$[(\text{HUF } 31\,987 / 2) + 26\,165] / 1.5 =$	<b>28 106</b>

Unlike in the calculations for the *Gerappa* cartel, there is specific information about the **price difference**. This yields a price range; due to our conservative approach we calculate with its lower end (15%). The observed price/turnover is from the period of the infringement, thus the price difference will be **13.043%** of the observed price.<sup>105</sup>

As **expected duration** the default **2 years** is used in the absence of any specific information. As the proceeding ended in 2014, the calculation considers 2015 to be the first year and 2016 to be the second year of the prevented harm.

The direct benefit of the case is, at 2015 prices, similarly to the calculations performed in the *Gerappa* cartel case (HUF million):

2015	$(28\,106 \times 0.13043) / 1.035 =$	3 542
2016	$(28\,106 \times 0.13043) / 1.035^2 =$	3 422
Combined		<b><u>6 964</u></b>

This, together with the amounts calculated using a similar methodology relating to proceedings closed in the period concerned, yields the amount of the direct benefit for the period.

---

<sup>104</sup> Cf. footnote 22.

<sup>105</sup> Cf. paragraph A.24.

## ANNEX (B)

### PROCEEDINGS RELEVANT FOR QUANTIFICATION<sup>1</sup>

Proceeding	Year of Competition Council decision	Category
Vj/130/2006 Heves county road construction cartel (HE-DO)	2009	included
Vj/166/2006 LCP Systems, Mitac agreement	2009	included
Vj/057/2007 Association of Bakers cartel	2009	included
Vj/084/2007 Békés County Bar Association	2009	excluded
Vj/007/2008 Castrol distribution	2009	data issue
Vj/018/2008 MIF (multilateral interchange fee)	2009	included
Vj/051/2008 Craftsmen's trade association – dental technicians self-regulation	2009	data issue
Vj/063/2008 Raiffeisen Bank unilateral amendment of contracts	2009	excluded
Vj/146/2008 Strabag/Cemex merger	2009	excluded
Vj/155/2008 Ringier / Híd Rádió merger (Blikk/Bors)	2009	excluded
Vj/158/2008 Magyar Telekom / Vidanet merger	2009	excluded
Vj/174/2007 Railway construction cartel	2010	included
Vj/181/2007 CIB Bank unilateral amendment of contracts	2010	excluded
Vj/195/2007 Newspaper distribution, market sharing	2010	included
Vj/016/2008 K&H Bank unilateral amendment of contracts	2010	excluded
Vj/022/2008 OTP Jelzálogbank unilateral amendment of contracts	2010	excluded
Vj/069/2008 Mill cartel	2010	included
Vj/143/2008 Chamber of Phytochemicals Professionals self-regulation	2010	data issue
Vj/061/2009 Gekko franchise	2010	included
Vj/146/2009 Primagáz/Intergas merger	2010	data issue
Vj/153/2009 Holcim/VSH merger	2010	included

<sup>1</sup> The proceedings to which the calculation method was applied (51 cases). In some cases no quantified benefits could be calculated either due to substantive considerations (22 cases) or due to data constraints (4 cases) (cf. Annex (A) paragraph A.60)).

Thus the calculation yields some values for 25 proceedings but there may be welfare gains not quantified here arising from the other proceedings as well because the method of quantification captures only part of the benefit (cf. Annex (A) paragraph A.62).

The values pertaining to the individual proceedings are not disclosed for methodological reasons and for reasons relating to the protection of trade secrets (cf. Annex (A) paragraphs A.49-51).

<b>Proceeding</b>	<b>Year of Competition Council decision</b>	<b>Category</b>
Vj/117/2010 Invitel/Fibernet merger	2010	included
Vj/029/2008 Taxi cartel	2011	included
Vj/074/2008 E.On TITÁSZ street lighting	2011	excluded
Vj/134/2008 Mill cartel 2	2011	included
Vj/212/2009 Invitel tariff packages	2011	excluded
Vj/136/2009 Mosonmagyaróvár funeral services	2011	included
Vj/042/2010 Axel Springer / Ringier merger	2011	excluded
Vj/003/2008 GYSEV / MÁV Cargo cartel	2012	excluded
Vj/096/2009 Book selling agreements	2013	included
Vj/151/2009 Contract templates of cable associations	2013	included
Vj/115/2010 Distribution of dental devices	2013	included
Vj/016/2011 OTP Jelzálogbank unilateral amendment of contracts	2013	excluded
Vj/043/2011 Stationery cartel(s)	2013	included
Vj/074/2011 Mortgage early repayment refinancing cartel	2013	excluded
Vj/043/2012 Érd waterworks water meter sealing	2013	excluded
Vj/052/2013 Libri/Shoptline merger	2013	included
Vj/045/2008 CRT monitor cartel	2014	excluded
Vj/002/2010 Car painting	2014	included
Vj/050/2010 MOL Fuel price	2014	excluded
Vj/096/2010 Contact lens distribution information exchange	2014	included
Vj/023/2011 County newspaper publishing cartel	2014	included
Vj/029/2011 Concrete cartel (ready-mixed concrete)	2014	excluded
Vj/097/2011 EON Hungária street lighting (DÉDÁSZ, ÉDÁSZ, TITÁSZ, EH-SZER)	2014	excluded
Vj/098/2011 Fővárosi Vízművek pricing (network development contribution)	2014	excluded
Vj/099/2011 Fővárosi Csatornázási Művek pricing (network development contribution)	2014	excluded
Vj/065/2012 Éter-1 et al. (energy performance of buildings tenders)	2014	included
Vj/066/2012 Geophysical measurements cartel	2014	included
Vj/072/2012 Magyar Telecom / ViDaNet merger	2014	excluded
Vj/040/2013 Driving schools in Győr	2014	included

<b>Proceeding</b>	<b>Year of Competition Council decision</b>	<b>Category</b>
Vj/048/2013 ÉMOP road tenders (Út-Garantor et al.)	2014	included

## ANNEX (C)

### COMPARISON OF THE QUANTIFIED BENEFIT WITH THE GVH BUDGET<sup>1</sup>

#### Calculation of the ratio to the GVH's budget

For the 2009–2014 period the quantified direct benefit is HUF 97 334 million (at 2015 prices).

In the same period the (total) budget of the GVH is presented in the table below (at current prices).

Year	2009	2010	2011	2012	2013	2014
GVH budget (HUF m)	2 121	2 466	2 328	3 062	3 293	3 328

To aggregate the data relating to the GVH's budget and compare them with the quantified gain, they must first be adjusted for inflation and with the social discount rate of 3.5%.

The (total) budget of the GVH at 2015 prices (HUF million):

2009	$2\,121 \times 1.0328 \times 1.0529 \times 1.0937 \times 1.0758 \times 1.0856 \times 1.0785 =^2$	3 178
2010	$2\,466 \times 1.0327 \times 1.0529 \times 1.0937 \times 1.0758 \times 1.0856 =$	3 425
2011	$2\,328 \times 1.0328 \times 1.0529 \times 1.0937 \times 1.0758 =$	2 979
2012	$3\,062 \times 1.0328 \times 1.0529 \times 1.0937 =$	3 642
2013	$3\,293 \times 1.0328 \times 1.0529 =$	3 581
2014	$3\,328 \times 1.0329 =$	3 438
<b>Combined</b>		<b>20 243</b>

Comparison of the benefit thus quantified with the (total) GVH budget:

$$\text{HUF 97 334 million} / \text{HUF 20 243 million} = \mathbf{4.81} \text{ (or 481\%)}$$

Thus the quantified gain is more than four times the (total) GVH budget calculated with the same method for the same period.

#### Calculation of the annual rate of return

The calculation of the annual rate of return, in addition to the ratio of the quantified gain, requires knowledge of the weighted average of the expected durations belonging to the proceedings included in the calculation. In our case it is **2**.

From this, based on the calculation of the compound interest rate:  $4.81^{-2} - 1 = 1.19 = \mathbf{119\%}$

This is the 'interest' earned on the money 'spent' on the GVH each year. In other words, if the public had deposited the amount corresponding to these six years of the GVH budget in a bank instead, the bank would have had to pay an annual compound interest rate of 119% on this deposit for two years for the public to receive the same amount as the direct benefit from spending this sum on the operation of the GVH.

<sup>1</sup> This section presents the actual calculation, however, it includes roundings.

<sup>2</sup> Cf. footnote 22.