

To get the right price – A decision support method to optimize managerial decisions on public funding price to apply for

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Background

Price is one of the most important factors influencing a decision on reimbursement. It has to be high enough to make the pharmaceutical business profitable but also it can not be too high to get accepted by a public payer. In challenging economic times public funding decision makers are getting even tougher, so the managers have to be smarter to choose the right price and optimally justify it.

Psychologists say „You are defined by your decisions“. When a company looks for reasons to justify its price proposition, to limit itself solely to elementary cost items is a risky strategy – we recommend to use other decisions of the decision maker as a benchmark to justify the price proposition. Consistency is one of the most powerful requirements one can effectively demand from a public funding decision maker anywhere in the world.

Objectives

The objective is to present our method which rationally supports managerial decisions on pricing in public funding processes with special attention on referencing to the previous reimbursement decisions.

Methods

The decision support method is aimed to recognize price levels which locally have the best relationship between decrease of probability of price acceptance and price increase – the smaller the decrease of probability resulting from increase of price the better. The method involves operational use of arguments which could be used to justify the different price levels.

The analysis can be used to support managerial decisions on price in different situations, i. a.:

- what price to include in the application for reimbursement
- what price increase to apply for the already funded medicine
- to recognize arguments for the negotiations with a decision maker who demands price decrease.

The following case study is a real-life example. To fulfill Client's requirements formal changes of price levels of the drug and the name „New Medicine“ have been applied.

In the presented case a pharmaceutical company considered a price level of its „New Medicine“ to be proposed to the Minister of Health in the reimbursement application. Their first choice without any analytical support was 275.15 PLN and equaled the price in previous unresolved submission over a year ago. Having taken into account the results of our decision support analysis they have chosen 389.96 PLN with confidence of being able to rationally justify it.

The decision support analysis on optimal price of „New Medicine“ consists of following steps:

1. Identification of arguments relevant to potential prices of „New Medicine“

- previous decisions of the Minister of Health
 - in situations similar to the current one (relation of accepted price of the drug to price limit in the group)
 - and for medicines similar to „New Medicine“ (therapeutic indication, public funding conditions and package characteristics)
- prices of „New Medicine“ in other countries;
- change in Euro (EUR) to Zloty (PLN) exchange rate since time of previous submission.

Altogether 386 price arguments were identified.

2. Calculation of potential price levels of „New Medicine“ based on identified arguments

In case of arguments referencing to prices of „New Medicine“ abroad, new potential prices of „New Medicine“ have been calculated simply converting the price at which the medicines are reimbursed in a given country to Polish currency (PLN), using the current exchange rate.

In case of arguments referencing to previous decisions of Minister of Health potential prices of „New Medicine“ have been calculated using the price to limit ratio for identified similar medicines and the limit of reimbursement in „New Medicine“ target therapeutic group, according to following formula:

$$PP_{NM} = LR_{NM} * OP_{SM} / LR_{SM}$$

where:

- PP_{NM} – potential price of „New Medicine“
- LR_{NM} – limit of reimbursement in the „New Medicine“ target therapeutic group
- OP_{SM} – official (accepted by the Ministry of Health) price of similar medicine
- LR_{SM} – limit of reimbursement in similar medicine therapeutic group.

To calculate a potential new price of „New Medicine“ in the current application due to change in EUR/PLN exchange rate the price submitted in previous application has been used. That previous price was arrived at by the Client using the price in Euro in chosen other countries and exchange rate at that time. Knowing that EUR/PLN exchange rate has altered significantly during the last 1.5 years, a new price has been calculated more adequate to current economic situation.

3. Sorting of arguments in maximum justifiable price ascending order

For each of the 386 arguments a potential new price that may be justified with that argument has been calculated. These new prices represent the maximum level of price that may be justified with a given argument – any lower price may also benefit from all the arguments for higher price levels.

Then the arguments were sorted in maximum justifiable price ascending order.

4. Ranking of arguments in a pairwise manner against their impact on probability of public funding acceptance

Depending on the number of arguments and their complexity the pairwise comparison can be performed in three different ways:

- comparison of all identified arguments one against another – for relatively small number of different arguments;
- comparison of groups of different types of arguments – for moderate number of arguments, which can be grouped into few groups of arguments of similar type;
- comparison of main groups of different types of arguments and all possible variants (subgroups) within each main group – for large number of arguments which can be grouped into few main groups and subgroups.

In the presented example the third method of comparison has been used. The arguments have been assigned to separate main groups depending on their type. The classification of types of arguments is shown on Figure 1.

The comparison and ranking have been made between main groups and between different subgroups (variants) within each main group, as shown on Figure 2.

Regardless of the method of ranking the comparison in pairs is performed using Likert scale:

[price argument in the row] have much smaller (1) / smaller (2) / similar (3) / larger (4) / much larger (5) impact on probability of positive reimbursement decision than [price argument in the column]

The rows and columns refer to the tables shown on Figure 2.

To conclude ranking the ranked impact of probability for each argument is calculated using the formula provided in Figure 3.

5. Plot all arguments on a graph with price level on X axis and cumulative impact on probability of acceptance on Y axis

This stage is illustrated on Figure 4 with a subset of price levels within the declared scope of Client's interest on Figure 5.

6. Calculate first derivative to identify local maxima

Figure 6 is a graphical representation of that stage of the presented decision support analysis.

Figure 1. Classification of arguments

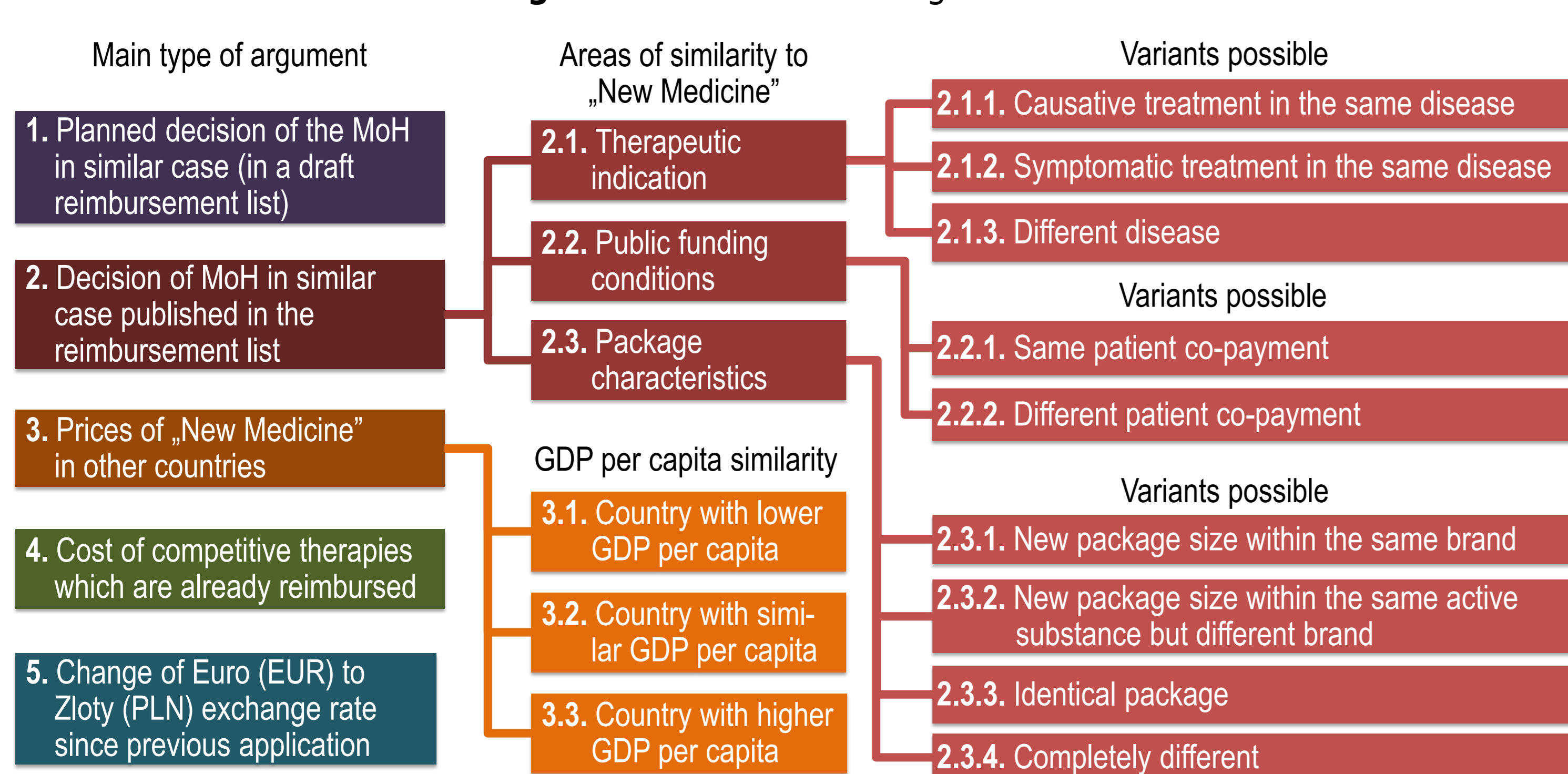


Figure 2. Pairwise comparison of different types of arguments

Figure 2 shows pairwise comparison matrices for different argument types. For example, for 'Therapeutic indication', the matrix compares 2.1.1, 2.1.2, and 2.1.3 variants. For 'GDP per capita similarity', it compares 3.1, 3.2, and 3.3. Each matrix shows the number of arguments in each cell, with 'X' indicating a comparison. Summary rows show the total number of comparisons for each variant.

Figure 3. Calculation of ranked impact on probability of exemplary argument for selected price level

Price level	Impact on probability	Price argument ranks		
		Main type of argument	Areas of similarity to the „New Medicine“	Variants possible within areas of similarity
389.96	$0.65 \times (44.4\% \times 0.78 + 38.9\% \times 1.00 + 16.7\% \times 0.57) = 0.54$	2. Decision of MoH in similar case published in the reimbursement list 11 / 17 (max) = 0.65	2.1. Therapeutic indication: 8 / 18 (sum) = 0.444 = 44.4% 2.2. Public funding conditions: 7 / 18 (sum) = 0.389 = 38.9% 2.3. Package characteristics: 3 / 18 (sum) = 0.167 = 16.7%	2.1.2. Symptomatic treatment in the same disease: 7 / 9 (max) = 0.78 2.2.1. Same patient co-payment: 5 / 5 (max) = 1.00 2.3.3. Identical package: 8 / 14 (max) = 0.57

Figure 4. Cumulative ranked impact on probability of price acceptance

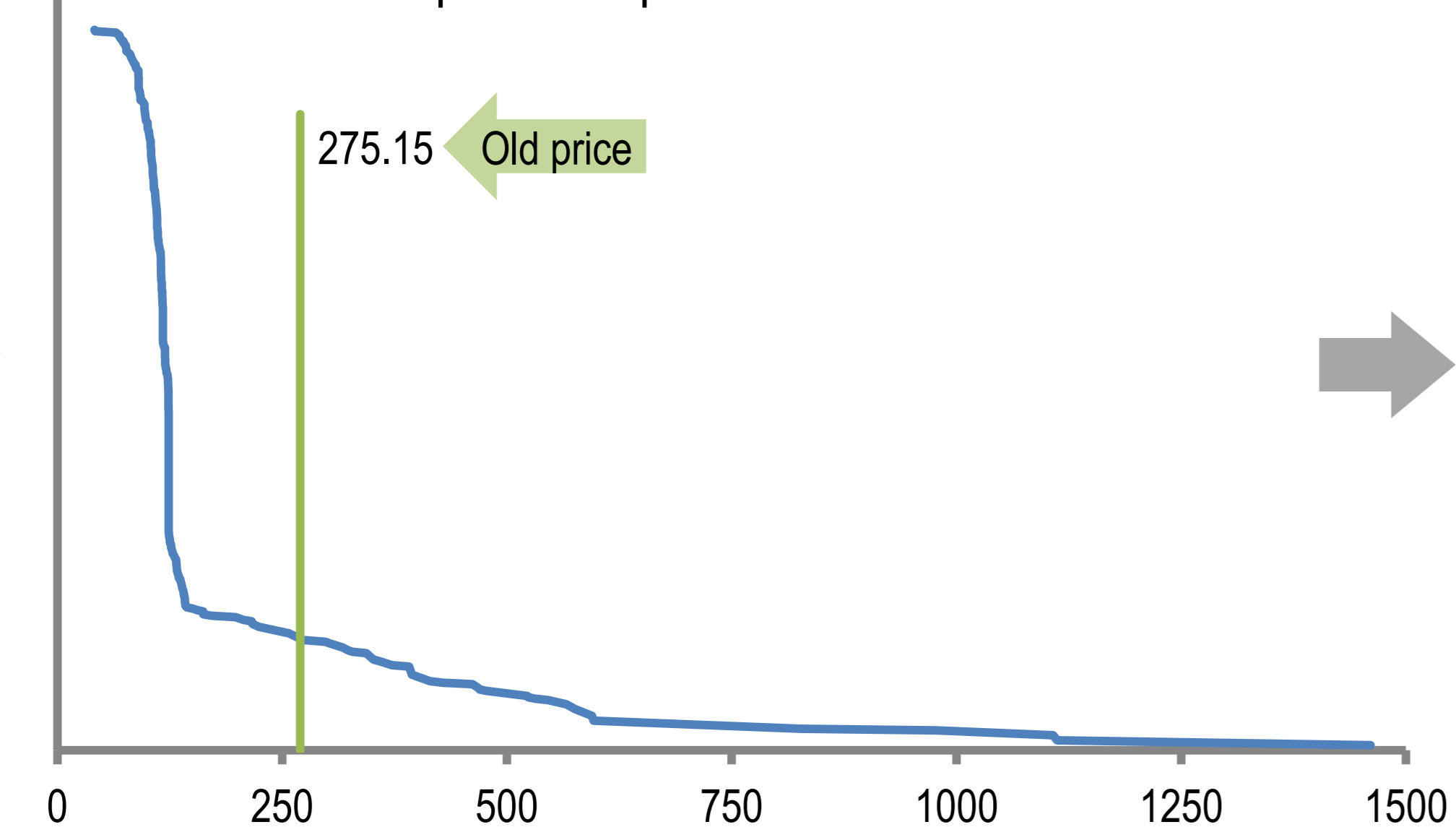


Figure 5. Cumulative ranked impact on probability of price acceptance [price range 200-600 PLN]

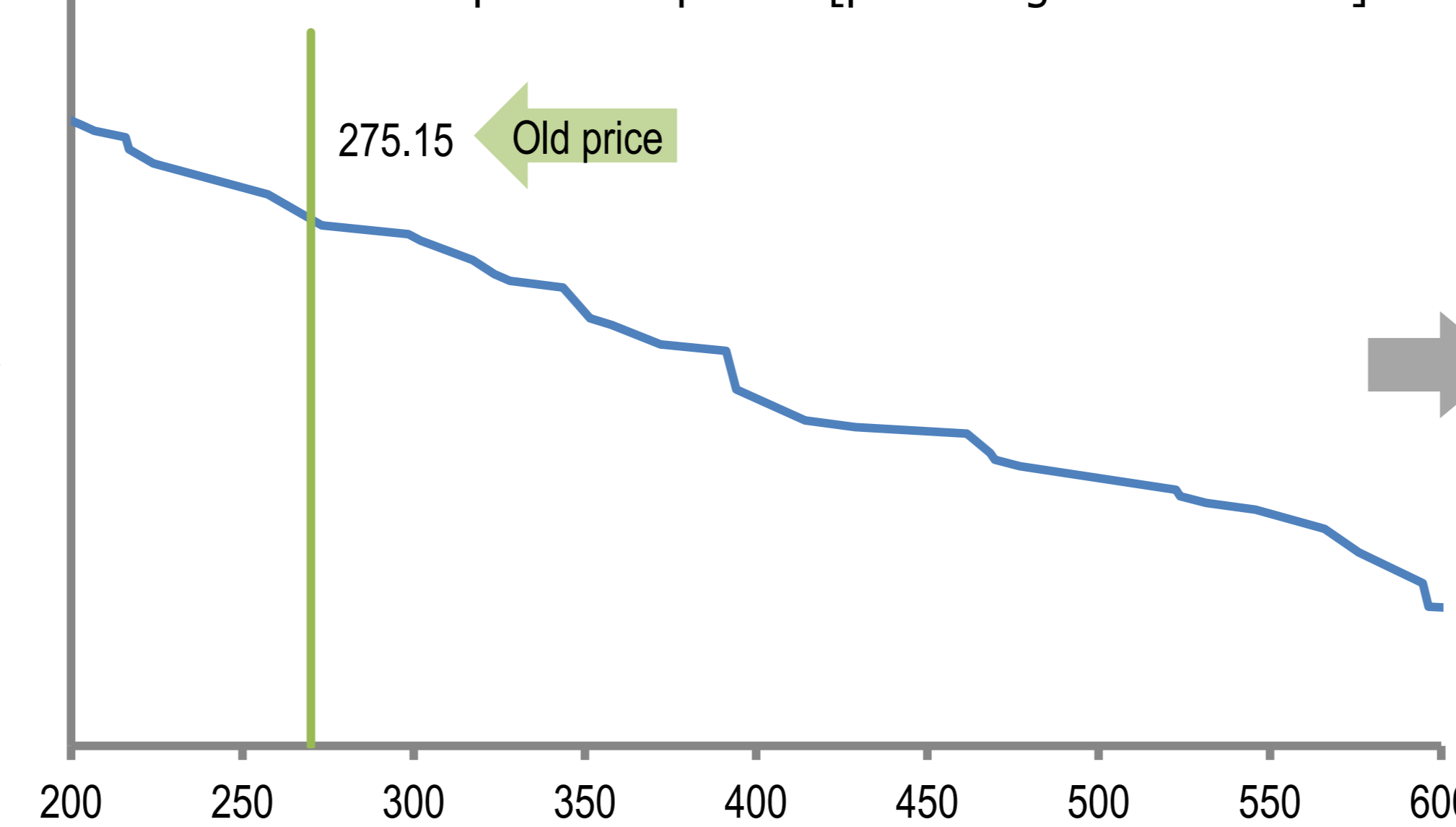
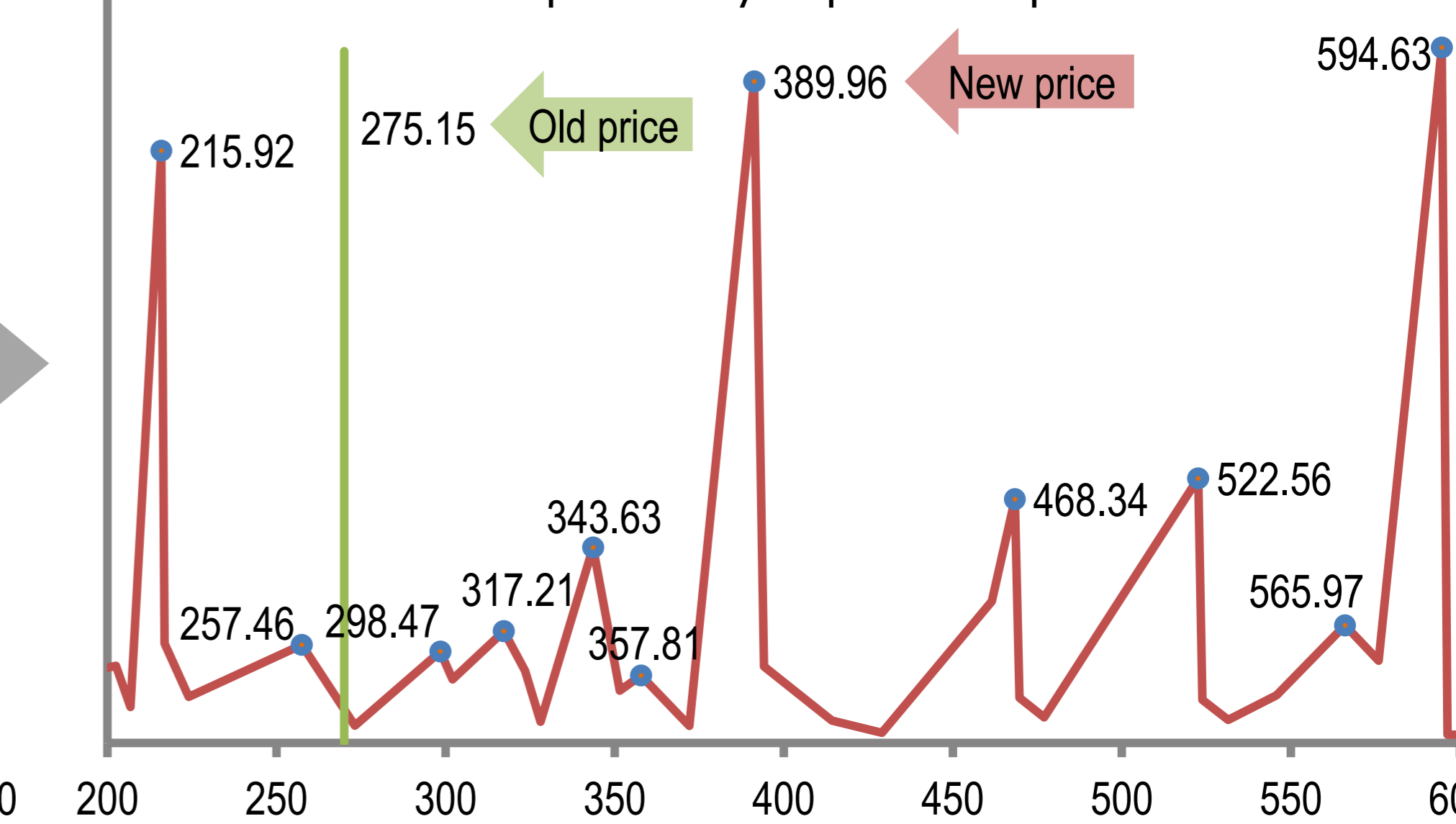


Figure 6. First derivative of cumulative ranked impact on probability of price acceptance



In all graphs there are potential new prices of „New Medicine“ [PLN] on X axis

Results

The decision support analysis results in a subset of 11 price levels that the Client is recommended to make the choice from. The final managerial decision may depend on Client's acceptance/avoidance of risk or necessity to achieve a specific turnover.

In the presented case the Client decided to submit a new price for its „New Medicine“ – 389.96 PLN instead of 275.15 PLN. All arguments that were taken into account within the decision support analysis located to the right of the chosen price level in Figure 6 may be used to justify this price to public funding decision makers.

Conclusions

To ensure a pricing success to their companies and their own career development Market Access managers should use the presented decision support method to make possibly best informed choices concerning official prices of their drugs.

In the presented case the method was used to support the decision on price to apply for in a reimbursement application. However that type of decision support analysis is multi-purpose and versatile – it can also be used to identify price levels with best arguments for any price negotiations with a public funding decision-maker or for a decision on price increase of already reimbursed drugs.