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MORAL HAZARD AND ITS IMPLICATIONS ON HEALTH INSURANCE SECTOR – OVERVIEW OF THE IMPACT OF THE COVID-19 PANDEMIC¹

Summary

Kenneth J. Arrow's disruptive work, 'Medical Uncertainty and Welfare Economics', published in 1963, was one of the first studies investigating the effects of moral hazard on the healthcare sector. Since then, countless works exploring that subject have been published. The history of research on moral hazard in medical insurance shows that this concept is defined differently in other areas of the economy than healthcare.

Purpose – The proposed work is an attempt to understand and conceptualize the moral hazard in health insurance. As uncommon circumstances marked 2020, we now consider health insurance through the impact of the SARS-CoV-2 pandemic. This work discusses the results of an investigation of the impact of moral hazard and its implications on the health insurance sector during COVID-19.

Research method – The author designed and conducted a study that presented several metrics involving the distribution of medical expenditures, the effect of price on medical care consumption, the PLS (profit and loss sharing) concept, and their mediating and moderating effect on moral hazard in the insurance sector.

Results – There is a statistically significant and very strong relationship with a positive sign ($\beta = 0.79$; $p < 0.001$) between the price effect and the moral hazard. The analyses show also that the price effect coexists statistically with the PLS, and the relationship between these variables is moderately strong and positive ($\beta = 0.79$; $p < 0.001$).

Originality – Insignificant relationship between the PLS and the moral hazard can be seen while the price is entered into the model ($\beta = 0.03$; $p = 0.450$). The lack of mediation could confirm that the price effect plays a major role in a moral hazard.

Key words: moral hazard, health insurance, COVID-19

JEL classification: D91

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1. Introduction

One of the specific characteristics of health care is uncertainty. Uncertain conditions are related to the timing of the onset of the disease and the cost of recovery. The cost of treatment often exceeds the patient's financial capacity. It entails allocating most of the income for this purpose with limited working capacity [Morris et al., 2011, p. 177]. To some extent, health insurance can mitigate the effects of uncertainty. Its essence is distributing the financial consequences of events related to the loss of health into two dimensions: over time (due to insurance premiums) and cumulatively. The consequences of the loss or deterioration of health are distributed subjectively between individual insured persons [Laskowska, 2015, p. 59]. However, the health insurance market, especially that of a voluntary nature, has irregularities that limit its ability to cope with uncertainties. Health insurance can change the economic incentives for consumers and healthcare producers. One of the resulting primary irregularities, next to the so-called negative selection, is a temptation to abuse [Morris et al., 2011, p. 187], which may entail negative consequences for the functioning of the health care system and its participants. In light of the crisis caused by the SARS-CoV-2 pandemic, the specific topic of moral hazard, on which there is a large body of literature that also includes a range of empirical approaches, has been explored with particular interest. In health insurance, the term "moral hazard" is widely used to capture the notion that insurance coverage can increase the use of health care by lowering the marginal cost of care for an individual [Pauly, 1968].

First, the subject of interest was defined: what "moral hazard" means in the context of health insurance and why it interests economists. Then, empirical work on insurance moral hazard issues is discussed. It describes studies that check whether moral hazard in insurance exists. Subsequently, a critical analysis of the papers attempting to assess the nature of consumer responses was carried out. Finally, a proprietary study is described that tries to predict the impact of each determinant on the moral hazard level represented and the potential overall impact on the insurance sector.

All considerations are placed in the context of changes caused by the dynamic development and progress of the COVID-19 pandemic.

2. The definition of moral hazard

The moral hazard is a derivative of the asymmetry of information, typical of health insurance markets, accompanying the relationship between the insured (patient), the insurer (payer) and the service provider [Arrow, 1963 after: Hammer et al., 2020]. This article follows decades of literature on health insurance and the term "moral hazard" (Table 1) to address the relationship between healthcare expenditure and insurance coverage. In this context, the use of the term dates back at least to Kenneth J. Arrow's disruptive work, 'Medical Uncertainty and Welfare Economics',

published in 1963. Under the concept of an implicit act usually associated with the term “moral hazard”, it has been assumed that health insurance may encourage individuals to make less (unobserved) effort to maintain health.

Arrow defines moral hazard as a practical constraint on insurance, which we would now describe as a market failure in the sense that individuals cannot obtain something (full insurance) for which they would be willing to pay. Due to moral hazard, full coverage is not being sold; the policies include co-insurance.

TABLE 1**Definitions of moral hazard**

Autor/Source	Definition
K. J. Arrow	1. Characterize the fact that the insured use more health care services to treat a given illness than the uninsured; 2. “(...) practical limitation on the use of insurance” [Arrow, 1963, p. 961]
M. V. Pauly	1. “(T)he response of seeking more medical care with insurance than in its absence is a result not of moral perfidy, but of rational economic behavior. Since the cost of the individual’s excess usage is spread over all other purchasers of that insurance, the individual is not prompted to restrain his usage of care...It is possible to conclude that even if all individuals are risk-aversers, some uncertain medical care expenses will not and should not be insured in an optimal situation” [Pauly, 1968]. 2. “Moral hazard in insurance occurs when the expected loss from an adverse event increases as insurance coverage increases” [Pauly, 2007].
J.A. Noyman	“ (...) moral hazard is actually efficient. When the care that was deemed to be welfare-decreasing is reclassified as welfare-increasing, health insurance becomes much more valuable to consumers than health economists have hitherto thought it was. As a result, there is a new argument for national health insurance: efficiency” [Nyman, 2004, p. 194].
I. Laskowska	Excessive, medically unjustified use of medical services [Laskowska, 2015, p. 60].

Source: author’s own work.

Pauly [1968] can be understood as rejecting the idea of market failure in health insurance due to moral hazard. As insurance generates the loss of prosperity due to moral hazard, it increases the cost of insurance; thus, some people prefer not to buy insurance. There is no market failure as individuals “rationally” choose not to buy insurance, given the premium offered. Therefore, we can interpret Arrow as describing market failure (even if he does not use the term), while Pauly argues that the market provides precisely what people want.

Therefore, the difference in the acceptable alternative scenarios stems from a more fundamental difference in their views on healthcare needs. Pauly’s adoption

of demand-side cost-sharing to control the use is in line with the notion that medical care is no different from common goods: price and quantity are solely needed to understand usage. When considering prepayment, Arrow brings physicians and related professions (i.e., the supply side) closer and shifts the burden of moral hazard to the supply side of healthcare. From this point of view, the critical problem of moral hazard is the physicians' agency, the way physicians provide care and design therapies for their patients. As a result, Arrow views the moral hazard on the demand side as a practical constraint that the physician can control. The other definitions cited are based on the two described.

In general, moral hazard means "any change in behaviour resulting from the terms of the contract (here: insurance decision)" [Folland et al., 2011, p. 290]. In other ways, the moral hazard associated with health insurance, as defined by P. Zweifel and W. Manning, refers to this term as "changes in health behaviour and consumption of health care caused by the fact of insurance" [Zweifel, Manning, 2000]. S. Folland, A.C. Goodman and M. Stano also define the moral hazard as an increase in the consumption of services in a situation where the distribution of risk leads to a decrease in the marginal costs of these services [Folland et al., 2011, p. 291]. Most generally, moral hazard means excessive, medically unjustified use of medical services. This phenomenon is observed in many markets where the functions of the beneficiary and the payer are separated.

Another breakthrough in defining moral hazard is Nyman's health insurance demand theory, according to which people buy insurance to protect themselves from the loss of income rather than uncertainty per se, which has substantial normative implications for understanding moral hazard.

Overall, positions on defining moral hazard in health insurance can be mapped along two axes of opposition: the first pivot opposes welfarists, who believe that the normative assessment of use should be based on the conventional economic welfare framework and that patients are well informed about the quality of care services (goods related to experience or reputation). It is in opposition to extra-welfarists rejecting the notion that the value of health care is reflected in the willingness to pay. The latter camp follows the institutionalist tradition explained by Arrow in 1963. In contrast, welfarists are divided into those who see risk avoidance as the primary motive for buying insurance and those who follow Nyman's analysis and see income transfer as the primary insurance buying motive. Both of these welfare groups believe that the willingness to pay is the same as the value of healthcare used, but use different demand curves (this is the second axis of opposition): conventional theory sees insurance income transfer as exogenous, while Nyman's Theory views it as endogenous and argues that the marginal utility of income is state-dependent. Hence, three schools of thought fulfil these two axes: the conventional mainstream approach, which sees moral hazard as a feature of good "health insurance", partially explaining why rational consumers do not buy health insurance; in Nyman's approach, moral hazard includes a favourable income transfer and an overt loss because income transfer is achieved by lowering the price of health care (this is a transaction cost: it is impossible to transfer income in health care insurance with-

out generating a substitution effect because a pure contract for contingent claims is unenforceable). The third school, following Arrow's institutionalist approach, complies with Nyman's view that transaction costs are responsible for the lack of coverage but views moral hazard as largely independent of these transaction costs and as of little practical constraint.

The RAND experiment conducted in the United States in the 1970s, aimed at studying the impact of health insurance on the demand for medical care, is considered one of the most critical research on moral hazard. The scale of the differences observed was significant. Fully insured persons consumed about 40% more medical care than patients paying for their treatment [Morris, Devlin, Parkin, 2011, p. 192].

It has long been interested in how people respond to the generosity of their health insurance plans. The RAND Health Insurance Experiment estimates [Manning, Marquis, 1989] are still widely regarded as the standard in this literature, although the reliability of the results from the 1970s with respect to the healthcare system today is questionable. More recent studies have also estimated the relationship between sharing insurance costs and healthcare consumption (Table 2). However, there is disagreement on how to parameterise the health insurance plan. RAND estimates assume that individuals will only respond to the spot price - the same fraction of the next \$1 of medical care consumed. More recent studies assume that people respond to a measure of the expected year-end price [Finkelstein, 2007] or the actual year-end marginal price [Kowalski, 2016]. The latter studies assume that individuals have excellent predictions and will only respond to the last-dollar cost-sharing ratio of healthcare spending.

The results of analyses for European countries conducted in recent years do not provide such clear evidence of the moral hazard associated with the possession of additional voluntary insurance. J. Bolhaar, M. Lindeboom, and B. van der Klaauw [2012], in their research on moral hazard associated with supplementary insurance, did not find a significant impact of having additional health insurance on increasing the consumption of benefits (the hypothesis of moral hazard was not confirmed using panel data). C.E. Van Dijk et al. [2013] – based on research for the Netherlands – observed an increase in consumption of benefits, which will appear after the abolition of the rate. This phenomenon concerned only older patients. Among younger age groups, the effect of moral hazard was small. Independent studies by I. Laskowska [2015], J. Einav and A. Finkelstein [2018] [Boudreaux et al., 2016] show that access to health insurance causes an increase in the use of health services.

In the theory of normative economics of the health care sector [Hurley, 2000], there is a view that moral hazard can have both positive and negative effects on the health insurance system. Positive effects arise from the increase in the most effective medical services – from the cost-effectiveness point of view. The negative impact of moral hazard is associated with increasing the amount of the insurance premium for all policyholders, regardless of whether the person becomes prone to abuse or not [Suchecka, Szmigiel, 2003].

The importance of moral hazard can be considered both from the perspective of the insured and the service provider.

An insured person who does not pay the total cost of treatment may require more health services, thus increasing health care expenses. This behaviour may lead to higher totals if not insured. Also, medical service providers, knowing that the insured patients do not bear the total cost of the service, may increase the number of procedures and the scope of their services.

TABLE 2**Research review**

Research	Conclusions
A dynamic analysis of the demand for health insurance and health care	<p>“The estimates for care utilization indicate that moral hazard is not important.</p> <p>Higher educated are more likely to insure, are in better health and also have fewer GP visits. Similarly we find that those with higher income, better health and healthier behavior (non-smokers) are also more likely to take supplementary private health insurance. The income effect is sizeable, but what is most surprising is the strong independent effect of education.” [Bolhaar et al., 2012]</p>
Moral hazard and supplier-induced demand: empirical evidence in general practice	<p>“Abolition of cost sharing led to a higher increase in patient-initiated utilisation for privately insured consumers in persons aged 65 and older. Introduction of fee-for-service for socially insured consumers led to a higher increase in physician-initiated utilisation. This was most apparent in persons aged 25 to 54. Differences in the trend in physician-initiated utilisation point to an effect of supplier-induced demand. Differences in patient-initiated utilisation indicate limited evidence for moral hazard.” [van Dijk et al., 2013].</p>
Private health insurance and the problem of moral hazard	<p>“The cited data indicate that medical advice (especially specialist) is used more frequently by people with additional health protection, especially as part of an outpatient subscription.” [Laskowska, 2015]</p>
Moral Hazard in Health Insurance: What We Know and How We Know It	<p>“The reduced form evidence tells us unambiguously that health insurance increases health care utilization and spending. Moral hazard, in other words, irrefutably exists.” [Einav, Finkelstein, 2018].</p>
The long-term impacts of Medicaid exposure in early childhood: Evidence from the program’s origin	<p>“Using separate data we find evidence of two mechanisms that could plausibly link Medicaid’s introduction to long-term outcomes: contemporaneous increases in health services utilization for children and reductions in family medical debt.” [Boudreaux et al, 2016].</p>

Source: author’s own work.

In the interpretation and analysis of the results of research on moral hazard caused by the possession of private, additional health insurance, caution is advised in the interpretation and analysis of the results, rising from the unique nature of each health care system, different institutional environment, as well as the diversified insurance offer in individual countries. While remaining in line with the classical theory of the demand for health insurance, the increase in welfare resulting from medical care consumption without the need for insurance should always be analysed considering the structure of consumption of other goods and services.

3. SARS-CoV-2 pandemic impact

World

The novel coronavirus outbreak began in late 2019, but the World Health Organization did not characterise it as a pandemic until March 11, 2020. Many governments and regulators worldwide have taken various measures to control the spread of the virus, including travel restrictions, quarantines, restrictions on the activities of companies and other public institutions or access to specific areas. These measures affect the global supply chain and the demand for goods and services and will significantly impact global economic growth. At the same time, individual countries eased their fiscal and monetary policies to support the economy. While government responses and related impacts continue to evolve, uncertainty remains about the scale and extent of the damage to the economy, both locally and globally.

The turmoil in the financial markets adversely affected the solvency ratios of insurers. Focusing on European insurers under Solvency II, Deutsche Bank [2020] claims that this is the most volatile quarter in history – it estimates that market movements in Q1 20 cost the sector approx. 18 pp in total, driven by lower bond yields (-8 pp), wider credit spreads, and a decline in stock markets (-6 pp each) as Covid-19 spreads worldwide. Deutsche Bank's estimates are in the middle of the analysts' range for the impact on the financial market, with UBS [2020] reaching -16pp and JPM [2020] -25 pp impact on the solvency ratios of European insurers under Solvency II (excluding +2 pp net capital generation for the industry).

Despite this decline, according to analysts, the industry remains well capitalised to meet policyholders' obligations, with analysts estimating the industry's solvency ratio between 180% (JPM) and 190% (Deutsche Bank). UBS [2020] concludes that capital buffers/ratios remain appropriate despite the high volatility within insurers' target ranges and not at levels close to worsening dividends. Given that the sector is the fourth largest distributor of dividends on European equities and with dividend cuts in other financial sectors, this is a crucial finding.

Contrary to the impact on the financial market, the actual impact on property and accident claims surprised significantly compared to the pre-Covid stress scenario. There are two main reasons for this unexpected development: firstly, the interpretation of pandemic exemptions and other pandemic risk mitigation conditions in general insurance lines are questioned, and secondly, accumulation scenarios in

specialist lines did not fully predict the broad impact of pandemic containment measures.

Initial estimates place the Covid-19 pandemic among medium to large natural disasters in terms of potential insured property rights and compensation claims. Willis Towers Watson [2020] placed the damage estimates in a similar range of \$32-80 bn for the US and UK markets. However, the range of uncertainty is extensive at this early date, ranging from optimistic scenarios [\$11bn, WTW 2020] to worst-case scenarios [\$140 bn, WTW 2020]. Looking at the industry scenario estimates from WTW [2020] in Figure 10, moderate claims of \$38 bn are mainly due to business disruptions (\$18.5 bn, or 49%, about 10% of which are due to event cancellations).

To put these losses in context, Swiss Re [2018] estimates that the insured losses from natural disasters in the worst two years in the last decade were \$144 bn in 2017 due to hurricanes Harvey, Irma and Maria, and \$139 bn in 2011, mainly due to the combination of earthquakes in Japan and New Zealand and floods in Thailand. While unpleasant and unexpected, these anticipated claims are well within the scope of the industry.

Poland

The COVID-19 epidemic had not only adverse effects on the loss ratios of individual insurance products. Although it hit many business lines very hard, there was a significant reduction in the loss ratio in some areas. When it comes to motor insurance, such a trend has been observed, among others, in the area of third party liability insurance for motor vehicle owners. The lock-down period loss ratio was at the level of 50% - 70% of the loss ratio before the pandemic outbreak. The decrease in the loss ratio resulted mainly from the decrease in the frequency of claims [KNF, 2020].

The total net financial result (net profit) of insurance companies in 2020 was less favourable than in the previous year and amounted to PLN6.1bn, due to the worse result obtained by both life insurance companies (section I) and non-life insurance companies (section II) [GUS, 2021]. The pandemic changed the attitude of Poles to life insurance. The coronavirus made it no longer possible to ignore the dark scenario in thinking about the future. The increase in deaths and more frequent serious diseases was reflected in life insurers' results for 2020. They paid out 10% more benefits in group 1 (life insurance) than in the previous year, despite a smaller number of accidents at work, traffic accidents, and generally much lower activity of the society resulting from the introduced restrictions.

Pay-outs increase was related not only to COVID-19 but also to the overall overload of the health system and the growing mortality of Poles, which in 2020 was higher than the average in previous years by approx. 70 thousand people. However, the mortality rate did not start to rise significantly until mid-October last year, and it mainly affected the elderly, over the age of 75, who rarely have life policies, which shows that the increase in deaths is not the only reason for higher pay-outs. This year will be different because the increase in mortality is already visible in the younger groups.

In the entire section I (life insurance covering five insurance groups), the sum of payments decreased from PLN18.56 bn in 2019 to PLN17.42 bn in 2020 [GUS, 2021]. One can also see how the pandemic affected individual groups (types) of insurance. While group 1 shows a significant increase in payments, in the case of other policies, this is not necessarily visible.

The decrease in payments was also visible in group 3 (life insurance, if related to an insurance capital fund and life insurance, in which the insurance company's benefit is determined based on specific indices or other base values).

It can be assumed that the clients did not withdraw the funds accumulated in the insurance capital fund due to significant declines in the financial market, especially in the first phase of the pandemic.

Higher mortality and increasing pay-outs in protective insurance will probably affect the prices of life policies, and although insurers do not admit to such plans, brokers expect an increase in rates due to rising life expectancy in 2021 and maybe also in 2022. Longer perspective increases in rates may result from paying off the "health debt" that we have incurred due to limiting the availability of health care. Surgical operations and hospitalisations postponed until now will have to be performed one day, which will undoubtedly translate into higher benefits payments incurred by insurers. However, the increases will be amortised to some extent by the increased demand for protective insurance.

The pandemic has made employers more interested in group insurance for employees. Companies more and more often participate in the costs of insuring their employees, and those who have done it before are increasing their share. On the other hand, employees do not manifest any increased enthusiasm for group insurance.

In the employee group life insurance, it may be possible to avoid premium increases because, in the case of large enterprises, premiums depend to the greatest extent on the so-called loss ratio, including mortality, occurring in a particular company and not in the entire population.

Insurers offering group policies adapted efficiently to the changed circumstances and, in response to COVID-19, introduced new technological solutions, e.g. portals allowing employees to sign up for insurance, simplifying the employers' contracts administration and adapting remote work procedures.

The pandemic has launched many processes that may pose a challenge to the insurance market in Poland. It is worth mentioning the risk of increasing the loss ratio in the medium term in business lines like unemployment insurance or low contribution insurance for mortgage loans, third party liability/motor insurance, guarantees, travel insurance or telemedicine. Of course, the increased loss ratio need not translate directly into the deterioration of financial results. Of course, premium levels and their adjustment to the changing risk profile will be of key importance in this area. The risk in this context may be the increased price pressure, which, combined with the increasing claims ratio, may contribute to the deterioration of the industry's results. A separate difficulty will be determining the levels of premiums and technical provisions in such a dynamically changing environment. The existing

solutions, often of a retrospective nature and based on historical trends, may not be readily applicable in the current situation.

Deteriorating economic conditions may pose another threat to the insurance sector in Poland. A drop in interest rates, an increase in unemployment, and a possible reduction in demand for group insurance are undoubtedly a great challenge for both life and non-life insurers.

4. Compulsory and voluntary health insurance in Poland

In Poland, the health insurance contribution (in the form of a targeted and paid public tribute) is the primary means of financing the health care system, through which it fulfils the constitutional tasks of the state in the field of health protection. As a rule and under Art. 79 sec. 1 of the Act on healthcare services, the contribution amounts to 9% of its calculation basis. In the case of farmers, the basis for calculating the premium is the size of the farm, expressed in conversion hectares, where the premium is 1 PLN per hectare. In most professional groups, the basis for calculating the premium is the tax income obtained in a given month on the given insurance title or other economically similar benefits (e.g. scholarships or allowances). There are also cases where the basis of assessment is a flat rate, independent of the payment capacity of the insured entity. For example, the basis for calculating the contributions of entrepreneurs is the declared amount, but not lower than 75% of the average monthly salary in the enterprise sector in the fourth quarter of the previous year, including dividends/profit payouts [see: Article 81 (2) of the Act on healthcare]. The health insurance premium in its legal structure is characterised by the possibility of deducting its part when calculating personal income tax. In 2020, it came to 7.75% of the calculation basis. Therefore, the actual burden of the health insurance premium for the majority of the insured amounts to approx. 1.25% of the basis of its assessment.

Under the Act of August 27, 2004, on health care services financed from public funds it is stated that Beneficiaries have the right to health care services aimed at maintaining health, preventing diseases and injuries, early detection of diseases, treatment, care and prevention of disability and its reduction.

The recipients are entitled to guaranteed benefits in the field of: primary health care; outpatient specialist care; hospital treatment; psychiatric care and addiction treatment; medical rehabilitation; nursing and caring benefits as part of long-term care; dental treatment; supply of medical devices, requested by authorised personnel, and their repair; emergency medical services; palliative and hospice care; health programs; drugs, foodstuffs for particular nutritional uses and medical devices available on prescription in a pharmacy etc.

Voluntary commercial health insurance purchased in Poland is supplementary to the public system. They come in the form of medical subscriptions offered to employees by workplaces and health insurance policies offered by insurance companies. Private insurance is a supplement to general insurance, including a much more comprehensive range of benefits, but with limited availability.

5. Empirical research methodology and findings

This study aimed to define the mediating role of PLS (profit and loss sharing) in the context of the effect of price influence on moral hazard.

The study participants were employees of a company that provides legal services to airline passengers whose flights were delayed, cancelled or denied boarding by the airline, according to the European Union Regulation WE261/2004. The choice of the unit was dictated by the fact that the employer provides all employees (regardless of the position or length of service) with a comprehensive private health insurance.

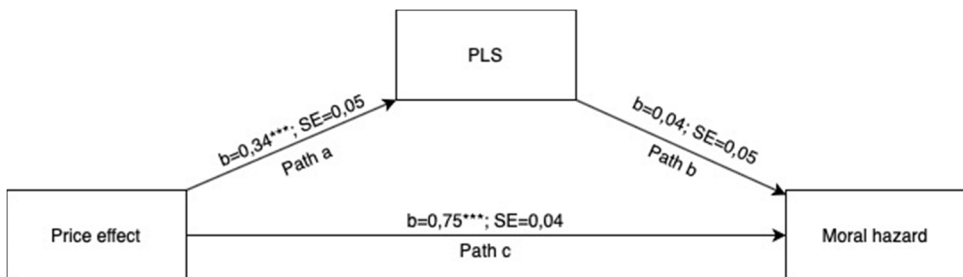
The study was conducted in July 2021. A questionnaire was used to measure the relationship between the variables. The study used a 7-point Likert scale, ranging from 1) “definitely no” to 7) “definitely yes”. The questionnaire was addressed to all employees of the company, i.e. to 268 people. A 34% response rate was achieved. Questionnaires with missing data were removed, and overall, 60 responses were analysed, representing the attitudes of 22.38% of the company’s employees.

Of the 60 respondents, 17 were women (28.3%), while 43 (71.7%) were men. The age of the respondents ranged from 20 to 51 years. All respondents declared having higher education. Moreover, 6 people (10%) were employees performing managerial functions.

The following variables were distinguished for empirical research: dependent variable (moral hazard), independent variable (price effect), mediating variable (profit and loss sharing).

CHART 1.

The mediation effect of profit and loss sharing in the relation between the price effect and the moral hazard



Source: author’s own work.

The obtained data were subjected to statistical analysis, first using the Pearson correlation, and then, to determine the mediating relationships, simple and multiple regression analysis. It is worth mentioning that in the classic R. M. Baron and D. A. Kenny mediation model (Figure 1), the mediation dependency testing is carried out in the following three steps: (1) we examine the relationship between the independent variable and the dependent variable (path c); (2) we define the relationship of the independent variable with the mediator (path a) and the mediator with the

dependent variable (path b); (3) we analyse the relationship of the independent variable with the dependent variable after taking into account both the independent variable and the mediator in the regression model (path c), checking whether the relationship between the independent variable and the dependent variable weakens and whether it retains or loses the level of statistical significance [Baron, Kenny, 1986; Bedyńska, Książek, 2012].

Currently, it is assumed that in order to find the mediation effect, the key is the occurrence of significant relationships ($p \leq 0,05$) between the independent variable and the mediator (path a) and between the mediator and the dependent variable (path b) [Hayes, 2018].

In this research project, this method of statistical analysis was adopted. The computations used an interpreted programming language and an environment for statistical calculations and visualisation – R.

In order to test the proposed theoretical model, a mediation analysis was performed using the Preacher-Hayes Mediation analysis package for R.

The first step was to check whether there was a positive correlation between the price effect and the moral hazard. It should be noted that there is a statistically significant and very strong relationship with a positive sign ($\beta = 0.79$; $p < 0.001$) between the independent variable and the dependent variable. Then, it was checked whether PLS is an intermediary variable in the relation between price and the moral hazard of employees. The analyses show that the price effect coexists statistically with the mediator, and the relationship between these variables is moderately strong and also positive ($\beta = 0.79$; $p < 0.001$). However, an insignificant relationship between the mediator and the dependent variable can be seen while the price is entered into the model ($\beta = 0.03$; $p = 0.450$), resulting in a breach of the classic approach of R. M. Baron and D. A. Kenny [Baron, Kenny, 1986]. The lack of mediation is also confirmed by the fact that the independent variable is statistically significant and still strongly associated with moral hazard, also in the presence of a mediator ($\beta = 0.76$; $p < 0.001$).

6. Conclusions

The limitation of this study was the treatment of moral hazard as a univariate variable. The results and the conclusions drawn on their basis prove that PLS has no mediation effect.

The question remains of why this is happening in this study. There is no doubt that moral hazard is a complex phenomenon. The employees of the described company are people with higher education, from countries including Poland, Spain, Germany, Denmark and Brazil. Describing and examining the moral hazard using several or more variables (e.g. earnings, household size) would make it possible to capture its multidimensional structure. It would allow the assessment of the contribution made by each of the individual variables to the overall effect of moderated mediation, especially under low mediator conditions.

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