The Impact of the Tariff Impasse Between Healthcare Providers and Funders on the Welfare of Healthcare Users

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ABSTRACT

The norm has been that tariff negotiations between healthcare providers and funders are expected to eradicate the out of pocket expenditures burden on policyholders. However, this has not been the case for policyholders in Zimbabwe's tertiary institutions. Cross-sectional data on randomly selected and interviewed healthcare users was used to examine the effects of the tariff impasse between healthcare providers and funders on healthcare users' welfare. The study used a Flexible Heteroskedasticity Ordinary Least Squares (FHOLS) to determine the impact of out-of-pocket spending burden ratio on per capita consumption based on healthcare users who had visited a provider within three months before the survey. The study found that out-of-pocket expenses did not significantly affect the well-being of healthcare users. Education was found to have a positive impact on welfare, while premiums paid had a negative impact. Policies should be implemented to improve user welfare, including better access to healthcare services, financial assistance, and support for vulnerable populations. Policymakers are encouraged to enforce measures that make insurance premiums affordable and explore options for subsidizing premiums paid by users.

Keywords— Healthcare, Healthcare Providers, Healthcare Funders, Healthcare Users, Flexible Heteroskedasticity Ordinary Least Squares

INTRODUCTION

The healthcare funders and providers have been in a long standing impasse over tariffs, resulting in a near stalemate situation. Medical doctors (ZiMA) stopped accepting medical aid cards and charged cash to all patients seen by their constituency. Healthcare funders and service providers used to agree on tariffs for certain procedures before 2002. However, after that period, health providers started charging higher tariffs which insurers claimed they could not afford. This resulted in partial reimbursement, resulting in an impasse between these two entities, with insurers disregarding gazetted fees (Parliament of Zimbabwe, 2016). Healthcare providers requested cash payments in advance due to unpaid claims that had been outstanding for over sixty days. This is because they felt burdened by the taxes paid on unearned income.

When Zimbabwe Medical Association (ZiMA), a sole representative association for all medical doctors, sole representative association for all medical doctors in zimbabwe irrespective of their area of specialty. The sole representative association for all medical doctors in zimbabwe irrespective of their area of specialty the sole representative association for all medical doctors in zimbabwe irrespective of their area of specialty and Association of Health Funders of Zimbabwe (AHFoZ), the representative body for the medical aid industry in Zimbabwe, fail to agree on a particular tariff, the practice has been that they agree on a

temporary co-payment which would be paid by patients over and above the acceptance of the medical aid (Parliament of Zimbabwe, 2013). In order to resolve a disagreement between two parties, they come to an agreement on a fair co-payment that does not negatively impact patients. As the African proverb states, " *when elephants fight, it is the grass that suffers*," it has been the consumers that have borne the burden of the impasse between the providers and the funders. Chief among other goals for these service providers is to deliver healthcare services to the service users (consumers), who are the clients of both the healthcare funders and service providers. Mossialos *et al.* (2014) defined healthcare funders as including all medical aid societies that contract with service users with the intention of reimbursing for costs of restoring or maintaining health and also contracting with service providers to pay them for services rendered or to be rendered to service users. Healthcare funders (insurance) offer the potential both to raise additional funds for essential public health services and through risk sharing, to ensure access amongst poorer sections of the population.

The exact mechanisms through which the impasse might contribute to less welfare are currently undertheorized and untested. On one hand, living without the security of any insurance could contribute to a reduction in the per capita consumption of service users and symptoms of psychological distress, (Alang *et al.,* 2015; Viertio *et al.*, 2021). Along with restrictive access to health care, lacking coverage could contribute to psychological distress by exposing individuals to new stressful conditions. On the other hand, health insurance premiums tend to reduce incomes for the lowly paid households in Zimbabwe and therefore reduce their welfare, given that individuals only get ill after a long period of time, Mhazo *et al.*, (2023). Such juxtaposing literature and ideas have not been theorized and tested, and therefore it is the intention of this study to ascertain the welfare impacts of the impasse on tariffs to charge between healthcare providers and healthcare funders. Although insured service users are cushioned to some extent by their medical aid, the shortfalls they have to pay have drained their finances. But while the health insurers and healthcare providers haggle, insured service users are likely to feel the pinch, as most do not have cash upfront to pay for their healthcare costs.

Architecture of the Zimbabwean Health Financing System

Major sources of funding for health in Zimbabwe include patients (through out-of-pocket payments of user fees and charges as well as other expenditures), donors, the government, and employers (ZHSA, 2011). The purchase or acquisition of health insurance reduces the risks and unpredictability inherent in a service user's cost of healthcare. Such purchase by service users is done contractually, through payment of monthly premiums to the healthcare funder. The healthcare funder would in return, if the service user receives health care over the course of the year, pay some (or all) of the costs depending on the details of the plan. Blomqvist and Léger (2005) argued that service users are risk averse and therefore they are willing to pay monthly premiums to healthcare funders so as to mitigate the potentially large loss in income by paying medical expenses with a one-off payment. Healthcare service users therefore pay healthcare providers indirectly through the healthcare funders, who pay out benefits through fee-for-service reimbursements to health care providers. The contract that is entered into between the funders and service users renders the funders' services a toll good, since those without this contract are excluded from the services offered by the funders, yet consumption of the service by one person does not diminish the quantity available to the next service user. This is an example of a Private Health Insurance (PHI), one of the many types of health insurance.

The sole representatives of the providers (ZiMA) and those of the Funders (AHFoZ) used to adhere to the National Health Reference Price List (NHRPL), which gave the tariffs for various healthcare services. Such tariffs were agreed upon by the two parties, and the government would endorse these tariffs as binding. The binding tariff negotiated by the two parties ensured that the healthcare provider would not require a co-payment from the user because the healthcare funder would fully reimburse in the incidence of an

emergency that required the use of healthcare services (Mhazo *et al*, 2023). However, during and after the year 2000, the providers on one hand, failed to agree to the proposals of the funders on new tariffs and the funders on the other hand, failed to adhere to the proposals of the tariffs brought forward by the providers. The government has since then not resolved the impasse for the past twenty three years and this has resulted in providers requiring a co-payment from the healthcare users. Kurani et al (2021) assert that health insurance companies and healthcare providers negotiate prices for services and products. These negotiated prices have typically not been publicly available, meaning that patients often do not know how much they will be charged until after they receive care and the associated bills" leading to out of pocket expenditures they will not be prepared to pay. Such co-payment has emanated from the disagreement between the two players, funders and providers, regardless the sequential meetings that the representatives of the two have held over the last twenty-three years.

Despite this disagreement transpiring for such a long period, there hasn't been any consensus or convergence in ideas in literature on what explains the existence of such an impasse. Herman (2022) also supported the impasse existing between funders and providers, stating that "As health care costs continue to rise, providers and health insurance companies often are at odds. It's a constant push and pull relationship, as physicians and hospitals try to get paid for services, and and the patient suffers as a result" On one hand, the opportunistic behaviour theoretical framework has predicted that the tariff impasse exists because all players want to maximize their welfare or payoffs and therefore would offer different contracts. Neither of the players would want to accept the other's contract as it reduces their welfare. On the other hand, incomplete contracts theory states that the impasse exists because of the existence of incomplete contracts in the presence of asymmetric information in the healthcare system. Such incomplete contracts are mainly emanating from the fact that the providers and funders have no contract between them, and thus none of them is obliged to a particular tariff. The implied contracts theory proposes that a contract exists between funders and providers, even if it is not written down, suggesting that an implied contract can prevent issues that may arise from missing links between parties. This means that the contract is not explicitly stated but rather understood by both parties. The implication of the contract can help avoid misunderstandings and disputes. Such conflicting theoretical ideas in literature have left the researcher with questions as to what then explains the existence of the impasse.

Primary Objective

The study aimed to determine how the tariff impasse between funders and providers affect the welfare of policy holders, specifically in terms of their per capita consumption.

LITERATURE REVIEW

The research aimed to explain the disagreement between healthcare funders and providers and determine if the tariff impasse affects healthcare consumers' welfare. The concept of incomplete contracts was introduced under contract law/theory (Grossman and Hart, 1986; Hart and Moore, 1990; Hart 1995) as quoted by Vorotyntseva et al 2021. They argued that contracts cannot specify every possible contingency due to bounded rationality, transaction costs, and non-verifiability. Bounded rationality refers to players' inability to write long-term contingent plans, while transaction costs make long-term contracts prohibitively expensive. Non-verifiability arises when some information is observable but not verifiable, such as healthcare quality, making court mechanisms ineffective in solving such cases.

Given the interconnectedness of contracts existing between providers, consumers and insurers, the branch of incomplete contracts has addressed asymmetric information existing between the three players. A market for incomplete contracts is characterized by the fact that the demand side is insured, where a consumer purchases a good to compensate consequences of unfavourable events, such as accident or an illness (Nell *et*

al. 2005; Barette, E and Garmon C. 2021)

According to Nell *et al.* (2005), insurance involves paying money upfront in exchange for a payout in the event of certain occurrences. However, some insurance contracts are incomplete as the amount of coverage received by the insured is based on their actual expenses rather than being directly tied to the occurrence of events. This means that insurers' payments are not unambiguously given and depend on the prices of insured services.

In the healthcare insurance market, adverse selection and moral hazard are two problems that arise due to asymmetric information. Adverse selection occurs when individuals with higher-risk health expectations are more likely to obtain insurance coverage than those with lower-risk health expectations, as insurers cannot distinguish between high-risk and low-risk individuals (Pauly, 2007). According to Cutler and Zeckhauser, 1998; Laksono *et al.*,2021; Liu *et al.*, 2021, service users who anticipate using healthcare services more frequently are likely to choose insurance plans with more generous coverage. This can lead to adverse selection, where the consumers who purchase the insurance plan are those who expect their healthcare expenditure to exceed or equal the premium paid. As a result, insurance companies may end up with a loss on each customer, regardless of the premium charged.

Moral hazard, arising as a consequence of asymmetric information, has resulted in situations where service users consume more care than necessary once they are insured because they do not bear the full cost of healthcare services. This has led to increased healthcare costs and inefficiencies in the system (Einav, 2012). The presence of insurance can lead to an increase in healthcare consumption due to moral hazard. This is because insured individuals have higher income for healthcare expenditure and insurance reduces the direct cost of healthcare services. As a result, those with insurance may use more healthcare services than those without insurance.

The contributions by Incomplete Information theory have limitations however given they assumed of information asymmetries existing and that insurance is available at actuarially fair premiums. Frictions however exist in the insurance market. Salop (1979) developed a model framework which could be used to solve for such problems (Nell *et al*, 2005). A Pareto-optimal insurance contract maximises the expected utility under further constraints. Under complete contracts, associated indemnity can be conditioned upon any possible state of nature and therefore under such ideal circumstances the optimal insurance arrangement is straightforward since insurance companies can anticipate the (equilibrium market) price for an insurance unit, the indemnity corresponds to the price. A welfare loss is incurred when insurance contract trades of the insurance-induced price effect on the insurance market and risk allocation.

Due to the complexity of the states of nature, insurers are unable to fully specify the behaviour of customers and suppliers in the case of a loss. Consequently, insurance contracts can only be conditioned upon the consumer's demand for insurance good. However, in complete contracts in moral hazard context, inefficiency high losses are due to reduced carefulness as a consequence of asymmetric information, but in the incomplete contract framework they result from coverage induced increase in prices. The key difference existing between incomplete contracts and moral hazard under complete contracts is that in the latter, an optimal insurance contract efficiently solves the incentive problem between the two contracting players and does not have any impact on other contracts. However, in the incomplete contracts, players' incomplete contract is affected by the market price for the insured service and therefore the optimal contracting in other contracting relationships. In addition, Nell *et al* (2005), however, only examined incomplete contracts in a competitive relative to a monopoly insurance market. This study, however, focuses on incomplete contracts emerging from a missing market or missing link between the three players in the study.

This study is the first step toward analysing the interdependence between insurers and providers, given the missing link between them. Hart (1987) illustrated through the reference of Coarse, Williamson and Klein

and Alchian that when contracts are signed, transaction costs are pervasive and large and players cannot write comprehensive contracts. The consequence of the relationship will not write a contract that anticipates all the events that may occur and the various actions that are appropriate in these events. Rather, they will write incomplete contracts, containing gaps or missing provisions.

Incompleteness creates events which make it desirable for the players to act differently from the way specified in the contract. As a consequence, the players will want to revise the contract. In addition, the players may sometimes disagree about what the contract really means, that is, disputes may occur and third parties may be brought in to resolve them. Hart (1987) added that if the contracts signed by players are incomplete, there must be some mechanism by which the gaps are filled in as time passes. In this regard, in a world of incomplete contracts there is an optimal allocation of residual rights of control, to the extent that ownership goes together will residual rights of control, there is therefore an optimal allocation of asset ownership.

Incentives for contracting parties to exploit anticipated gains from cooperation in a well-designed contract act against market failure. One of the contracting problems has the structure where the principal engages an agent to take certain actions on the principal's behalf. However, it is very common that the principal cannot directly observe the agent's actions, which creates a problem of moral hazard. Moral hazard is where the agent may take actions that increase their own pay-out but at the same time reducing the overall surplus of the relationship.

Contract theory therefore analyses a decision maker's behaviour under adverse selection and moral hazard with the aims to input a process that will optimize the individual's decisions. Healthcare funders and healthcare providers, in this regard, have no mutually beneficial contract, where it would be expected that if the contract did exist, the principal (funder/insurers) will contract with the agent (provider) to deliver services to a third party, who is the healthcare consumer for a payment. However, even though the contract is intended to be mutually beneficial and complete, this is not the case in Zimbabwe, as the contracts are incomplete. Only implied contracts exist, where the tariff commission expects the Funders to fully reimburse the user in the case that they are to receive services from the Provider. Healthcare funders and providers all operate privately to make profits and therefore it is to their best interest that the contracts they enter into should leave them better off. As a result, the principal (insurer) will, at the end of the day, not be able to pay the agent the amount charged and the consumer will thus have to pay the agent for the short fall. Such opportunistic behaviour in the presence of asymmetric information and incomplete contracts has resulted in the impasse existing between the Funders and Providers.

A classical study by Smith (1776) noted that a manager may make decisions contrary to the interests of the shareholders because of the separation of ownership and control in a company, and the principal may offer a package for compensation, which ties the managers' income to some observable performance measure in order to alleviate this moral-hazard problem. However, any performance measure is likely to be imprecise and in the end the optimal compensation schedule must trade off incentive provision against risk-sharing. However, Smith's contribution misses the mark for this study since there is no interaction between the provider and insurer on the tariff rate to be charged/paid, when the insurer ties the providers' income to some observable performance measure, this results in a financial gap that may have welfare impact on the third party who is the final recipient of the healthcare service.

However, Neumann and Morgenstern (1944) in the game theoretical approach have given a different view on what could be the result of the impasse existing in the healthcare system, and why a larger proportion of the healthcare users is not insured. The welfare effect of the tariff impasse is likely to be explained by how the three players interact and as such, the behaviour of each player should not be considered in isolation (Neumann and Morgenstern, 1944). According to the afore mentioned pioneers of game theory, the idea is that the outcomes existing in the healthcare system are as a result of games that are played by these three

players. In this case, the players participate in sequential games, where one of the players chooses an action before other players choose theirs, given that the later players will have some information on what the choices of the first player were.

On one hand, it is reasonable to argue that players would choose the most beneficial option given that they want to maximize their welfare/profits and therefore any outcome that minimizes their objective (i.e. minimizing profit) will be shun. In this view, given the three players interacting over two periods of time and at the beginning of the second period there is another round of contracting, at which the specification of transfers may be changed.

The agents and principals have their objective functions they like to maximize. The principal (medical aid/insurance and providers) is interested in maximising profit from the business, agents (healthcare users) aim to maximise welfare/utility (payoff) choosing the best contract available from the principal with proper allowances for its efforts. We assume that there exists a specification of actions that will maximize the player's joint payoff, a sum of the first and second period monetary gains.

Given that in the healthcare system there are more than one decision makers, game theory has allowed a coherent analysis of the decision-making processes and each player's payoff possibly depends on the actions taken by the other players. All pair of strategies leads to a payoff to each participant, a payoff measured by a real number. The objective of funders is to maximize profits, so they prefer partially reimbursing users rather than fully doing so. An equilibrium is reached where users purchase insurance and funders partially reimburse them to maximize profits. Providers will ask for a co-payment from users because the amount paid by funders will not be sufficient to cover all costs for full and quality treatment. The game theoretical approach suggests that more healthcare users are likely to use out-of-pocket expenditures relative to purchasing health insurance, and that if users do buy insurance; they are likely to be partially reimbursed and required by the providers to pay a co-payment because of their drive to make profits out of the transactions that they get into.

In support of the testable hypothesis formulated from game theory is the opportunistic behaviour (OB) theoretical framework, modified by Seabright (2004). Jensen and Meckling (1976) argued that the framework is predicted by agency theory, where the principal and the intermediary, as utility maximisers, are more likely to act according to parochial interests than in the interests of the other party or to maximise joint utility. Opportunistic behaviour may, however, not be classified as moral hazard, nor can it also be classified as adverse selection. Five categories of OB have been identified that are of likely relevance to Providers interested in the implications of opportunism on the healthcare service provision payoffs mix, namely, product, price, information, logistics-related and legal opportunism. According to OB approach, the Funders are likely to engage in price related opportunism, where they manipulate prices on the side of the healthcare consumer, by not fully paying the provider the bill, negatively affecting the product that is offered to the healthcare users. This has also taken the form of delays in payment beyond the stipulated period. This has thus resulted in healthcare users directly contracting with the Providers and shunning the use of Funders to obtain healthcare services. Such direct contracting was supported by Seabright (2004) who pointed out that, consumers directly contract with the manufacturer following the agent's inflation of prices for the product provided by the manufacturer.

From the discussed literature, it can be acknowledged that the incomplete contracts and game theoretical approaches play pivotal roles in explaining the interlinkages between the three players; healthcare funders, healthcare providers and healthcare users, and the missing link between the healthcare funders and healthcare providers. Most studies have just focused on the result of the impasse on tariffs to charge (OOP), but not on the impasse itself and thus these related empirical results have produced mixed results concerning the welfare impacts of the impasse on partially reimbursed and required by the providers to pay a

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Most studies that have analysed the welfare impacts of OOP have made use of OLS and descriptive statistics methodologies, applying multiple linear regression technique. This study also applies the OLS methodology, but an extended version, using the FHOLS technique, as it has been identified to successfully establish the impact of one variable on another.

METHODOLOGY

The reviewed literature has shown that no specific theory has addressed the possible existence of the tariff impasse, and further the interaction between the healthcare funders and healthcare providers which have an impact on consumers' welfare. Empirical literature has not adequately made remarkable advances in capturing such interrelationships and the related literature has tried capturing such welfare impacts, though indirectly through OOP, through employing advanced econometric techniques. The conventionally used methodology has been the Ordinary Least Squares (OLS) but this study will use a further advancement to OLS, Flexible heteroscedasticity OLS technique, due to its ability to correct for heteroscedacticity among variables. The methodology adopted in this study is both empirically and theoretically informed.

TABLE I Key Variables In The Model

Variable		Description/Indicator
pcc_i	Per capita consumption	Average consumption per person within a population, used as a proxy to capture welfare of the consumers of the healthcare services

$opsbr_i$	Out-Of-Pocket Spending Burden Ratio	Used to measure the impasse on tariff existing. Computed fromdividing out-of-pocket expenditures and the total healthcare expensecharged on the individual and then multiplied by one hundred toexpress it as a percentage
ppi_i	Premium Paid	Measure of the amount of money that individuals part with or pay for a health insurance policy
edu_i	Educational level as measured by the number of years of schooling	Highest level of education (in years) attained by the respondent at the time at which the research was undertaken

Model Specification

The study modified the conceptual model developed above and other models used in literature in order to ascertain and to reveal the impact of the impasse on tariffs to charge between healthcare funders and healthcare providers. This was done because the subject is new in literature and no studies have been done to elicit such welfare impacts of the impasse on tariffs to charge.

The conceptual model developed, which is to be modified into the empirical model is presented as:

$$Payoffs = f(q_i, chi_i, if_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Payoffs are used to measure consumer's welfare and thus the proxy to be used for welfare in equation 2 is per capita consumption (pcc_i). The quality of health insurance (q_i) cannot be quantified and therefore it is proxied by household perceptions about the quality of health insurance (hip_i). Educational level of the consumer is used as the proxy for information about funders (if_i). Among other models adopted are the ones by Joe & Mishra (2009) and Oluwafemi *et al* (2016) were modified to:

$$pcc_i = \alpha_0 + \alpha_1 opsbr_i + \alpha_2 edu_i + \alpha_3 pp_i + \varepsilon_i \ldots\ldots\ldots\ldots (2)$$

where pcc_i is per capita consumption, $opsbr_i$ is the out-of-pocket spending burden ratio, edu_i is theeducation level, pp_i is the premium paid, and ε_i the error term.

The study modified the conceptual model developed and other models used in literature in order to ascertain and to reveal the reasons why most of the healthcare consumers.

Study Population, Sampling Procedure and Sample

The targeted population from which a sample was drawn was University of Zimbabwe, with the largest population of working people in all Universities in Zimbabwe and high proportion of people insured. Due to a limited timeframe, a sample of 100 was chosen as a representative of the University of Zimbabwe staff members in all of the ten (10) faculties and questionnaires were administered to the individuals chosen through simple random sampling within those faculties. Questionnaires consisted of closed ended questions. Some of the questionnaires were signed in the presence of the interviewer, but most of them were left to the respondent to complete on their own, given that most of the staff had lectures during the time of questionnaire distribution. Visiting individuals at their offices during working days guaranteed a higher response rate, which would have not been obtainable, if they were to be completed or administered on weekends. The choice of who, from the selected sample, to respond to the questionnaire was based on who was available and willing to respond. Data from the sample were obtained through personally administered questionnaires, allowing for respondents' answers to be symmetrically compared and contracted.

Questionnaires were chosen because of their ease of administration and interpretation by both participant and the researcher. Closed ended questions, which were exhaustive in nature and allowing explicit options for a respondent to select from, were asked in the questionnaire. In order not to overlook errors that could have arisen in the designing of the questionnaire, a pilot testing was not conducted for the evaluation of reliability and validity of the questionnaire, using respondents chosen for pre-testing exercise from the Faculty of Social Studies, University of Zimbabwe, Harare, where most of the individuals are also insured and that is where the sample was then taken from. This allowed the researcher to observe how long it will take for the respondents to complete the questionnaire and elicit if there are any unclear questions.

Estimation Procedure

Given the conceptual models outlined in chapter two, the Flexible Heteroscedasticity Ordinary Least Squares (OLS) and the Maximum Likelihood (ML) methods were utilised. According to Gujarati (2004), the Flexible Heteroscedasticity The Flexible Heteroscedasticity Ordinary Least Squares (OLS) technique was used in the research to show the relations that exist between out-of-pocket spending burden ratio (tariff impasse) and other related economic variables that are to be used to capture consumers' welfare. The Maximum Likelihood (ML) was used to elicit why most individual are not health insured. Assuming that the amount of money that insured people pay as out-of-pocket expenditures as a proportion of the total healthcare cost represent an impasse existing on tariffs to charge, such expenditures can be used to determine the burden ratio imposed on service users.

The type of the relations between independent variables and out-of-pocket spending burden ratio were inferred from the signs of the slope coefficients, which were tested at 1%, 5% and 10% significance levels. FHOLS technique produced reliable and unbiased estimates because the model was linear. The Hosmer Lemeshow statistical test was used to test for the goodness of fit in the Logistic regression model. The test statistic followed a chi-square distribution and the probability value was very high and/or insignificant in some cases, an indication of good fit. In this regard, the p-value was expected to be very high to signify the best fit.

The study employed the Jarque–Bera test, which is a goodness of fit test, to test whether the sample data had a skewness and kurtosis matching normal distribution. First step in the test was the calculation of skewness and kurtosis measures of OLS residuals, and the test utilized the use of large samples of the Flexible heteroscedasticity OLS which also followed the Chi-square distribution in large samples. The JB statistic was given by,

$$JB = \frac{n-k-1}{6}\left(S^2 + \frac{1}{4}(C-3)^2\right),$$

where, S was the sample skewness; was the sample kurtosis; C was the degrees of freedom, or the number of observations; and n was the number of regressors. The study employed R-squared, which is known as the coefficient of determination to test for goodness of fit of the model. R-squared measures how much variation in the dependent variable is attributable to independent variables used in the model and it is widely used in fitting the regression line.

In the FHOLS, the Breusch Pagan-Godfrey test was not used to detect heteroscedasticity, a situation in which the variance of the error term is not constant for all independent variables in the model (Gujarati, 2006). However, such a test will ascertain whether the variance of the errors from a regression is dependent on the values of the independent variables, and if they are dependent, heteroscedasticity will be present. After estimating a regression model and obtaining residuals from the fitted model, assuming that the variance of the errors from a regression is independent on the values of the independent variables, then it

was the case that the variance is linearly unrelated to independent variables and therefore there was no need for the Breusch Godfrey test to be taken. If otherwise, the BG test would have been undertaken. In this regard, the test for heteroscedasticity was not performed given that the FHOLS used corrected for this problem.

The problem with this in regression analysis is that it results in wider confidence interval, which ultimately results in the acceptance of the null hypothesis where it was not supposed to be accepted. The coefficient matrix was used to check for multicollinearity, which occurs when there is an exact relationship between explanatory variables used in the regression model. Large variances and covariance is the problem that results from multicollinearity, and this makes estimation difficult. If the coefficient in the correlation matrix is greater than 0.8 (in absolute terms) it means, there is multicollinearity and dropping a variable is the solution to avoid multicollinearity. Then diagnostic test for model misspecification was applied, together with the choice of correct functional form and explanatory variables. The Ramsey Regression Specification Error Test (RESET) was used in FHOLS to check for model misspecification before individual coefficients to be interpreted.

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics results show that out of 94 healthcare users interviewed, 72 respondents were health insured and 22 were not health insured. The overall minimum and maximum values for our dependent variable *pcc* are 42.22 and 1400, with the mean being 203.47. This means that as measured by *pcc*, the consumers on average, have high per capita consumption for the period under study, as shown by the value of 203.47. All the coefficients for skewness are positive and close to zero, showing a reasonable degree of dispersion and therefore suggesting that there is no existence of outliers. In this regard, all the coefficients are positively skewed. For all the independent variables, kurtosis is close to 3, and this signifies that the data used is normally distributed, except for the dependent variable which is 11.628 suggesting that the data is not normally distributed. *Opsbr* has *edu* the lowest deviation between the maximum and the minimum because their values only range between zero and one, unlike *pcc* and *pp* which are not bounded and therefore having higher variances of 1357 and 2800. The description in Table 4 shows that on average, per capita consumption for University staff is around $203.74 with an average of 0.384 score of out of pocket spending burden ratio, which is below half on the scale of 0 to 1 by which *opsbr* was measured.

Correlation Analysis

None of the pair-wise correlations exceeded absolute 10, suggesting that there does not exist any serious multi collinearity problem. In this regard, explanatory variables do not move together in systematic ways meaning that there is no exact linear relationship among the independent variables (Gujarati, 2004), hence their individual effects on the explained variable can be isolated.

Econometric Results

The FHOLS econometric technique, which corrects for heteroscedasticity, was used in the regression to elicit the impact of the tariff impasse on per capita consumption of consumers at the University of Zimbabwe. The results show that coefficient for out of pocket spending burden ratio, which measured the impasse existing between funders and providers, was insignificant at all the conventional significance levels of 1%, 5% and 10%, yet education and premiums paid were significant at all conventional significant levels and at 5% and 10% respectively. The results are presented in Table 2.

TABLE 2 Gujarati., Welfare/Consumption Results

Dependant Variable:Pcc

	coefficient	coefficient	t-ratio	p-value
const	46.3015	62.7389	-0.738	0.4624
opsbr	-6.74523	36.462	-0.185	0.8537
edu	18.0771	4.57197	3.954	0.0002 ***
PP	-0.65502	0.274326	-2.388	0.0190 **
Statistics based on the weighted data:				
R-squared	0.166156			
Adjusted R-squared	0.138362			

Note: The asterisks ***, * represent significance at 5% and 10% levels, respectively

Out of Pocket Spending Burden Ratio

The coefficient of the tariff impasse as measured by the out of pocket spending burden ratio was found to be insignificant at all probability levels. This was the main independent variable in the analysis. The out of pocket spending burden ratio was measured as a ratio of out of pocket expenses to healthcare cost. In this regard, for the amount that was charged by providers, consumers could be asked to pay part of it if funders did not fully reimburse. The regression results suggest that the insignificance of out-of-pocket payments may be due to the low proportion of what consumers pay compared to what they are charged by providers. This means that consumers are less likely to feel burdened by these payments and therefore, they have less impact on their welfare. Additionally, the amount paid as out-of-pocket expenses as a proportion of income is so small that consumers do not feel the burden of paying these one-time payments, especially since they are not always ill and do not have to pay these cash amounts every day.

Premiums Paid

The coefficient of the variable is negative signifying that premiums paid had a negative relationship with per capita consumption of consumers. The coefficient of the variable has a p-value of 0.0190 which means it is statistically significant at 5% level of significance. From the results, a dollar increase in premiums paid reduces per capita consumption by $0.66. Consumers paying lower proportions of premiums relative to other consumers are likely to have a higher or better per capita consumption as they have more disposable income that they can use for consumption. For the consumers paying low premiums, this means low cost of living for them. As a result, lower costs are equated to savings which are then put to good use in purchasing more goods and services, giving the positive relationship with welfare.

Educational Level

The coefficient of the variable is statistically significant at 1% level of significance. The sign of the coefficient shows that there is a positive relationship between educational level and per capita consumption. The results confirm the predictions by Joe & Mishra (2009) who found education to have education to positively influence per capita consumption. The results could be also explained by the evidence from empirical literature that better education of the consumer has a potential to improve their wages and salaries, which translates to increase in disposable income and therefore welfare increased through increased consumption levels. The coefficient for education is 18.0771 and the results show that as education of the household head increases, the higher the per capita consumption as higher levels of education are associated

with higher levels of income.

The results from the empirical investigation on the impact of the tariff impasse on consumer welfare show that out of pocket spending burden ratio had no significant impact whilst education and premiums paid had significant impact. The coefficient of Education and premiums paid were significant at 1% and 5% respectively, with education having a positive impact and premiums paid having a negative impact on welfare as measured by per capita consumption. Furthermore, results from empirical investigation show that members of the apostolic sect have low probability of being insured than Pentecostal members. This was expected given that prior to the year 2015; they did not use health facilities until the government intervened. Though the government has intervened, their uptake of health facilities is still low. Age and religion were found to be significant in explaining the reasons why people are not insured. These coefficients of variables were significant at 1% and 5% respectively.

CONCLUSIONS

This study was motivated by the noticeable absence of empirical investigation on the impact of the tariff impasse between providers and funders on the welfare of the consumers. The lack of Zimbabwean specific studies ignited conflicting views conceived mainly from theoretical literature. Cross sectional data collected from University Staff in April 2017 was used for the study. The study used a logistic regression and descriptive statistics to answer the first objective of why most healthcare users rely on out of pocket expenditures rather than using medical aid, and secondly, Flexible Heteroscedasticy OLS was used to elicit the impact of the tariff impasse on per capita consumption. The empirical results revealed that out of pocket spending burden ratio does not have any impact on welfare of healthcare users, but however, education level and premiums paid have an impact on welfare of consumers.

Educational level has a positive impact on healthcare consumption, while premiums paid have a negative impact. The results indicate that out-of-pocket expenditures have little to no impact on welfare as long as they are minimal in proportion to income earned. Additionally, individuals with better education levels may have greater healthcare consumption levels in terms of quantity and quality due to their tendency to obtain better paying jobs and earn higher relative to their uneducated peers.

POLICY IMPLICATION AND RECOMMENDATIONS

The results of the study provided no support of any impact of out-of-pocket spending burden ration on healthcare user's welfare. However, the results have revealed that education and premiums paid have positive and negative impacts on welfare, respectively. Thus, on one hand, education is fairly important for welfare improvement, and on the other hand, premiums paid act in a retrogressive manner on welfare. Such positive interaction between education and welfare suggests that education policies have the potential to improve welfare. For instance, policies that college and tertiary attendance would be beneficial to the healthcare users. In this regard, the government may offer education subsidies, given that the welfare of the consumers is at the heart of the government. In addition, policies that promote universal education should be maintained by policy makers in order to improve consumers' welfare. This suggests that any expenditure on education by policymakers would be a worthwhile investment and not a cost.

Furthermore, regression results of the study indicate a negative relationship between premiums paid and welfare. These results imply that government measures that aim at regulating premiums paid so as to keep them from continuous inflation may help promote welfare for the healthcare users. Above regulating, the policymakers may also subsidize such premium payments such that the consumer does not pay the full amount of the premium but the government also aids in such expenses.

SUGGESTIONS FOR FURTHER RESEARCH

Further studies should focus on using other measures of welfare that are more reflective of the quality of life than quantity. Such microeconomic measures include the Compensating Variation (CV) and the Equivalent Variation (EV), or the change in consumer surplus. The complexity of such measures limited this study as they needed more time for the analysis. Perhaps, if welfare is measured by such measure then welfare can then be affected by the tariff impasse existing between funders and providers. Given that this study focused only on the University of Zimbabwe, the researcher suggests a broader study be done with Zimbabwean context. Further studies can also use other measures of the tariff impasse which were not available during the time of this study.

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