AGATA ŻÓŁTASZEK

PRIVATE FINANCING OF HEALTH CARE IN POLAND – MICROSIMULATION MODEL[1]

1. INTRODUCTION

Healthcare is a key sector in every economy and is of great medical, social, and economical importance to all citizens. It is also one of the most diverse sectors in the world, especially in the aspect of financing. In Poland health care is mostly public funded. Generally, 70% of funding is state-based, which has been the case at least since the beginning of the XXI century. For the most part it comes from obligatory social insurance. In Poland there is practically no medical insurance, with the exception of insurance offered by employers in large companies. Such insurance, however, covers less than 5% and is a fairly recent thing. Therefore, the remaining 30% mostly includes out-of-pocket expenditures, either formal or not. The level of direct private funding is one of the highest in Europe (Żółtaszek, Jewczak, 2011). This is puzzling, since in Poland every medical service is available free of charge (nowadays dental and veterinarian expenditures are not public funded). However, the quality of services and waiting time are often far from optimal. The new quality certificates obtained by hospitals define the minimal not ideal conditions. For example, anaesthesiologists need to confirm a patient's identity, carry out a medical interview and participate in the entire operation procedure. It is disturbing that these basic requirements were not obvious, but after Poland's accession to the European Union the number of anaesthesiologists decreased dramatically. One specialist simultaneously supervised 3 operations, while many procedures were delayed due to the lack of qualified staff.

A gratuitous appointment to a specialist or a specialist medical examination may be scheduled in a few months or even years (for instance 8 months for a pacemaker). Some ill or elderly people are probably more likely to die waiting than actually seeing a doctor. Therefore, it is often better to pay, for example € 50, and get a CT scan in three weeks rather than wait 6 months to do it for free in the same public facility. Some equipment, like PET scanners, is not used because there are no public funds available or there is no specialised staff to operate it.

The National Health Fund (NFZ) signs contracts with hospitals predefining what number of individual procedures is to be refunded by the state during the next year. Anything above that quota increases the hospitals' debts. Some facilities or service providers do not get a contract at all and patients need to commute to other cities or ambulance companies have to encompass districts that are several hundred kilometres large, because their local counterparts are more expensive.

Due to the system's inefficiency new policies are being discussed, some of which include various methods of patient co-payment. The popularisation of the currently un-common private medical insurance, either supplementary or complementary to public financing, is one of the proposed solutions. On the other hand, a large increase of the social insurance contributions by 100-300% is also being considered. There is no solid proposal yet, and therefore numerous researches are carried out to verify the possible outcomes. Most of the research is performed at macro level.

Microeconometric modelling of health economics in Poland is restricted because of the limited micro datasets containing information on income, expenditures on health-care, health, and social status of households. Therefore, also microsimulations are rather uncommon in health economics or otherwise. The best known applications are the SIMPL – a tax-benefit model for Poland (extension of EUROMOD) (for more see Myck, 2008) and various traffic simulations. The micro simulation approach offers the possibility to asses various scenarios and determine the gain-loss distributions of each.

The main goal of this paper is to present a health econometric microsimulation model of the medical expenses of households in Poland, which is being developed by the author. The model is based on individual and household panel data (or lon-gitudinal data, repeated measures) which take into consideration income, direct and indirect private expenditures, willingness to pay for private medical insurance. The microsimulation model incorporates the spatiotemporal aspects and social specificity of households. It is to be used to forecast a future situation depending on various funding reform proposals. This research is to prove the usefulness of microsimulations in creating a health care policy, which is currently of major importance in Poland.

2. DATA

For the purpose of the microsimulation two interrelated datasets are planned to be used, for households and individuals. The Social Diagnosis is a project of the Coun-cil for Social Monitoring that measures the objective and subjective quality of life in Poland. The research has been conducted since early 1990s and has consisted in gather-ing a variety of economic and social data (for more see http://www.diagnoza.com/index-en.html). The Social Diagnosis offers unified datasets for the years 2000, 2003, 2005, 2007 and 2009. With a view to maintaining analogical time periods, data for the year 2000 has been excluded. Moreover, not all variables are available for 2009, and therefore the final databases of households and individuals consist of records in 3 time

periods: 2003, 2005 and 2007. The number and the definitions of variables are not the same for each year. However, it is possible to obtain analogical values for each year.

The household dataset contains information on:
–   region (province – NUTS2 region, size of place of residence),
–   income
–   medical expenditures in the previous 3 months on: ambulatory services (including doctor consultation, examination, dental services, etc.), unofficial payments, genuine grateful gifts, official fees for private and public hospital services, other payments for hospital services, , new variables are created: (1) unofficial expenditures constituting the sum of the unofficial payments and genuine grateful gifts, (2) hospital expenditures expressed as the sum of the official fees for private and public hospital services and other payments for hospital services,
–   how much a household is willing to pay for private medical insurance,
–   having a voluntary medical insurance (excluding insurance paid by an employer).

In 2003 Poland went through a major reform of the health care system that changed the Health Care Management Office into the Health Funds in every region overseen by the National Health Fund. There is no information on how this has influenced private expenditures on health care services at micro level. Therefore, in order to use the longitudinal data from 3 subsequent surveys of the Social Diagnosis, it has to be *assumed that households were indifferent to the reform at macro and regional level.*

The individual dataset contains information on: age, sex, level of education, socio-occupational status (student, pensioner, unemployed, etc.) and certified disability.

The repeated measures for the years 2003, 2005, and 2007 consist of approximately 2 000 households. They will be used to estimate the parameters of the microeconometric panel model, which is the core of the microsimulation model. Individual dataset is to be used in the microsimulation experiment to define values of exogenous variables.

To widen the variable set for households some attributes, of potential significance to income and/or medical expenditures, are added. They are derived from the individual database: number of members, the highest level of education in a household, any certified disability, presence of children, presence of people aged 60 and older.

Additional information is necessary to ensure the proper updates of attributes and exogenous variables in the simulation. The Polish demographic structure of marital status, mortality, child birth, commencing and completing higher education, is needed to determine the probability of events during the time of the simulation. The majority of these depends on age and sex. They will ensure the stochastic character of the microsimulation. The abovementioned demographic processes are not the only ones which determine the structure of the Polish society, however they are the only ones researched into and measured. After Poland joined the European Union in 2004 numerous people, not only doctors, emigrated to different UE Member Countries. However, there are no reliable estimates with respect to figures or destinations. Therefore, some assumptions on the population are required.

3. MODEL

3.1 ASSUMPTIONS

Separate assumption sets are needed for data, microeconometric model, microsimulation, and each scenario.

DATA

It is assumed that:
1) data is reliable, it represents the real situations of individuals and households at a given point in time,
2) households were indifferent to the reform of the health care system at macro and regional level,
3) the probability of marrying is the same as the probability of creating one household – this assumption is partly justified, as married couples generally start living together (either on their own or with parents) and informal cohabitation is often followed by formalization,
4) the probability of getting divorced is the same as the probability of a couple creating one household splitting up and forming two separate households – two problems are addressed by this assumption: firstly, in analogy to the previous postulate, informally-based households may not have the same odds of breaking up, but there is no data to verify it, and secondly, in Poland some divorcees / previously informal partners continue to cohabit (forming a quasi-common household) due to the lack of financial means to live separately,
5) the population is subject to no other demographic tendencies than those incorporated in the microsimulation model.

In Poland there is no reliable information on informal partners creating a common household. No research shows what fractions of people, other than marriages, start living together or separately. Although the number of people marrying and creating informal households or divorcing and breaking up an informal relationship differ, the probabilities of each may be imperfect, yet sufficiently accurate. Many variables which define the demographic dynamics in Poland are not sufficiently researched into and/or estimated, and therefore they are omitted in the microeconomic model, to simplify it.

MICROECONOMETRIC MODEL

It is assumed that:
1) the specifications of each equation represent the reality well,
2) there are no interdependencies between variables, other than those specified in the model,
3) the model is isolated – no exterior factors can influence the values of exogenous variables,

4) a person with the highest level of education reflects the household's education level (that person can influence other household members) .

These assumptions are generally used in econometrics, since a model is a simplified section of the reality.

MICROSIMULATION

It is assumed that:
1) the probabilities of demographic dynamics (marriage, divorce, death, birth) incorporated in the microsimulation model are constant for the whole duration of the simulation period,
2) people form lasting relationships with those that are similar in terms of demographic description – it is important for creating new objects (people) that enter the population by being added to an existing household,
3) the demographic and economic tendencies are constant in time and space.

SCENARIOS

Each scenario has a separate set of assumptions. They define the route polices will be taking during the simulation. Generally, for every situation it is assumed that (1) it describes the true state of the Polish health care system during the simulation period. Moreover, (2) no other changes that could influence the outcome of the microsimulation experiment occur.

3.2 MICROECONOMETRIC MODEL

The core of the microsimulation model is the microeconometric health economic model. It has been designed to calculate a household's monthly: net income, direct private health expenditures, the willingness to pay for private medical insurance. The empirical data used for the estimation of coefficients are short panel for approximately 2 000 households in 2003, 2005, and 2007. The longitudinal dataset offers 3 main advantages: (1) increased accuracy of estimation, (2) possibility of calculating fixed effects of units (households), and (3) knowledge of the dynamics of individual behaviour (Cameron, Trivedi, 2005).

Due to distributional properties of each endogenous variable different models and estimations methods are needed. Expenditures for ambulatory services and pharmaceutical expenditures are modelled as linear panel models and estimated with WLS (weighted least squares) approach. Unofficial expenditures can be obtained by two-part model as only 6% of observation are nonzero. Hospital expenditures cannot be reliably estimated because only 2% of information is nonzero, therefore binomial logit model may be applied to calculate probability of such expenditures. Willingness-to-pay for private medical insurance can be estimated as ordered multinomial model. Preliminary

estimation results are presented below (below parameters' estimates and next to right hand-side-cuts for WTP standard errors are given, determination coefficient R^2 and/or Akaike Infomration Criterion AIC are presented):

$$AE_{it} = \underset{(1.69)}{-12.6} \underset{(1.87)}{-8.7} \cdot t_{2005} \underset{(1.9)}{+10.3} \cdot t_{2007} \underset{(0.0008)}{+0.02} \cdot I_{it} \underset{(2.57)}{+23.9} \cdot MI_{it} + u_{1it}$$

(R^2 =17%, AIC=13676.87)

$$PE_{it} = \underset{(5.28)}{79.2} \underset{(3.54)}{-5.8} \cdot t_{2005} \underset{(3.59)}{+16.3} \cdot t_{2007} \underset{(3.52)}{+113.4} \cdot P_{it} \underset{(9.89)}{+101.8} \cdot L_{it} \underset{(3.31)}{+80.1} \cdot D_{it} \underset{(0.002)}{+0.02} \cdot I_{it} \underset{(1.07)}{+8.2} \cdot NH_{it} +$$

$$\underset{(7.36)}{-3.6} \cdot R1_{it} \underset{(5.49)}{-17.6} \cdot R2_{it} \underset{(6.03)}{+35.4} \cdot R3_{it} \underset{(7.26)}{-7.5} \cdot R4_{it} \underset{(4.99)}{+33.4} \cdot R5_{it} \underset{(5.75)}{+16.6} \cdot R6_{it} \underset{(4.84)}{+26.6} R7_{it} \underset{(7.46)}{+27} \cdot R8_{it} +$$

$$\underset{(5.91)}{-20.4} \cdot R9_{it} \underset{(5.91)}{+7.6} \cdot R10_{it} \underset{(5.67)}{-10.8} \cdot R11_{it} \underset{(4.25)}{-22.4} \cdot R12_{it} \underset{(5.66)}{+3.2} \cdot R13_{it} \underset{(5.68)}{-6.2} \cdot R14_{it} \underset{(5.37)}{-10.7} \cdot R15_{it} + u_{2it}$$

(R^2 =31%, AIC=15803.7)

$$UE_{it} = \underset{(0.05)}{-1.9} \underset{(0.06)}{+0.2} \cdot P_{it} \underset{(0.06)}{+0.3} \cdot D_{it} \underset{(8 \cdot 10^{-5})}{+0.0002} \cdot AE_{it} + u_{3it}$$

$$\ln UE_{it} = \underset{(1.31)}{3.3} \underset{(0.11)}{+0.4} \cdot \ln I_{it} \underset{(0.43)}{-0.9} \cdot u_{3it} + e_{it} \quad (\text{AIC}=3391.9)$$

$$HE_{it} = \underset{(0.11)}{-4} \underset{(0.0002)}{+0.0004} \cdot AE_{it} \underset{(0.0002)}{+0.001} \cdot PE_{it} + u_{4it} \quad (\text{AIC}=1472)$$

$$WTP^*_{it} = \underset{(2 \cdot 10^{-5})}{0.0002} \cdot I_{it} \underset{(0.0001)}{+0.0004} \cdot AE_{it} \underset{(0.1)}{+0.5} \cdot MI_{it} \underset{(0.09)}{+0.5} \cdot D_{it} \underset{(1.16)}{+0.5} \cdot E_{it} \underset{(0.12)}{+0.6} \cdot S_{it} + u_{5it}$$

$$WTP_{it} = \begin{cases} 0 \text{ when } WTP^*_{it} \leq 2.95 & (0.08) \\ 1 \text{ when } 2.95 < WTP^*_{it} \leq 5.94 & (0.17) \\ 2 \text{ when } 5.94 < WTP^*_{it} \leq 7.11 & (0.28) \quad (\text{AIC}= 4433.6) \\ 3 \text{ when } 7.11 < WTP^*_{it} \leq 8.27 & (0.47) \\ 4 \text{ when } WTP^*_{it} > 8.27 \end{cases}$$

i– household index, t– time index,

AE_{it} – three-months' expenditures on ambulatory services, PE_{it} – three-months' pharmaceutical expenditures, UE_{it} – binary variable equals 1 if three-months' unofficial expenditures occur, $lnUE_{it}$ – natural logarithm of three-months' unofficial expenditures (selective equation of the two-part model), HE_{it} – binary variable equals 1 if three-months' hospital expenditures occur, WTP_{it} – willingness-to-pay for private medical

insurance, categories 1-4: 1 – premium range is 100 PLN (€ 25) or less, 2 – 100-250 PLN, 3 – 250-500 PLN, and 4 – 500 PLN (€ 125) or more per month t_{2005}, t_{2007} − time binary variables, I_{it} – monthly net income, lnI_{it} – natural logarithm of monthly net income, MI_{it} – binary variable equals 1 if household has private medical insurance, P_{it} – binary variable equals 1 if household main income is pension, L_{it} – binary variable equals 1 if household has loan for medical expenses, S_{it} – binary variable equals 1 if household has savings for medical expenses, E_{it} – binary variable equals 1 if household has in last 3 months used medical services covered by medical insurance bought by an employer, D_{it} – binary variable equals 1 if household has in last 3 months paid directly for medical services, NH_{it} – number of household members, $R1_{it}, \ldots, R15_{it}$ – binary variable equals 1 if household lives in each province (1 – dolnośląskie, 2 – kujawsko-pomorskie, 3 – lubelskie, 4 – lubuskie, 5 – łódzkie, 6 – małopolskie, 7 – mazowieckie, 8 – opolskie, 9 – podkarpackie, 10 – podlaskie, 11 – pomorskie, 12 – śląskie, 13 – świętokrzyskie, 14 – warmińsko-mazurskie, 15 – wielkopolskie, zachodniopomorskie has been excluded), u_{rit}, e_{it} – residuals (r – equation index).

Expenditures on ambulatory services:
– increase over time,
– increase with higher income,
– are higher for households with private medical insurance.

Pharmaceutical expenditures:
– increase over time,
– increase with higher income,
– are higher for households that are mainly pension financed and/or taken loans for medical services and/or used medical services covered by "out-of-pocket" funds,
– grow with each household member,
– are spatially diverse (the lowest in śląskie and the highest in lubeslkie provinces).

Probability of unofficial expenditures rises with:
– pension as main source of income,
– direct expenditures for health services,
– income level.

An increase in income by 1% generates a 0.4% growth of unofficial expenditures.

Probability of hospital expenditures rises with ambulatory and pharmaceutical expenditures. Socioeconomic variables are poor indicators for calculating this class of medical expenses.

Willingness-to-pay for private medical insurance, represented by the value of a monthly coverage increases with:
– having been using private medical insurance of any kind,
– saving for medical purposes,
– direct expenditures on medical services
– medical services paid by an employer,
– income,
– ambulatory expenditures.

These recurrent equations form the microeconometric core of the microsimulation model. According to econometric theory it is justified to estimate each equation as an independent one-equation model (Wiśniewski, 2009).

3.3 MICROSIMULATION MODEL

Microsimulation is a numeric method used for performing socioeconomic experiments on individual data. It consists of:

– starting population of objects (actors) described with social and economic attributes,
– microsimulation model (an interdisciplinary model that mimics the social, economic and demographic setting of population's elements by defining possible events, decisions, options etc.).

The starting population for health economic simulation experiment needs to by a representation of Polish population. Therefore, the Social Diagnosis individual dataset for year 2007 (approximately 40 000 actors) will be used.

The microsimulation model consists of (1) the microeconometric model – the core (the health econometric model of households has been described in the previous section) and (2) the demographic model – the periphery (responsible for updating individuals' attributes and exogenous variables that change over time, based on Polish demography as well as transforming individual variables to household variables).

These objectives of demographic model are crucial for long-term simulation. Short-term simulations may be static and deterministic, because few changes are likely to occur. Assuming no demographic change in a ten-year period in association with individuals and households is unjustified. Every 2 years all variables will be updated. Some are deterministic, for example age. Others are programmed to arise with given probability. For each individual separately it will be randomly determined if: single adults will get married (or stay in an informal relationship), couples will divorce (or break an informal relationship and stop forming one household), children will be born, or someone dies. Most variable depend on age. Moreover, people will either commence or not higher education which they may or may not complete. Elderly people may retire or continue working. New individuals will be added to the population (through marriage or birth) and assigned a set of attributes. Some will leave the population (through divorce or death). This will ensure the dynamic and stochastic characteristics in the microsimulation. Every variable and attribute needs to be updated or assumed constant.

The last objective means that although demographical changes are programmed for individual people, the microeconometric model is designed to operate for households. Therefore, after adjusting attributes and variables for every person, exogenous variables will be calculated based on a household index.

4. EXPERIMENT

The microsimulation experiment will be held separately for each scenario. The simulation will be calculated for the years 2008–2018 (updates of attributes will occur in discrete two-year intervals) and repeated 1 000 times. The average values of endogenous variables will be obtained for every household. This will enable the calculation of descriptive statistical measures for income, private health care expenditures and the willingness to pay for private medical insurance in the simulation population. Moreover, the same procedure will be applied to the designed groups divided by region, size of place of residence, biological structure of a household and the main source of income. It creates the possibility to define the distribution of "gains" and "losses", "winners" and "losers" for each scenario. The results will be compared within and among the setups.

SCENARIO 1

The first scenario is the basic one, it is the benchmark for other setups. It is assumed that no changes in health care funding are introduced during the simulation. None of the proposed policy reforms will be implemented. The willingness-to-pay equation does not reflect the indirect private expenditures of households. Private insurance coverages have a marginal effect on the overall funding.

Each other scenario is to be compared as an alternative to this, no change, setup.

SCENARIO 2

One of proposed reforms of health care financing suggests a substantial increase in the obligatory social insurance and the "money follows the patient" policy. The former will be reflected by the reduction of the net income. The latter is expected to increase the efficiency of the health care system and decline in ambulatory and hospital expenses. Informal an pharmaceutical funding may not change. No changes stimulating the implementation of private medical insurance will occur.

This model cannot measure whether this proposal will indeed increase the efficiency of health care facilities.

SCENARIO 3

The willingness to pay for private medical insurance is equivalent to actually taking out the insurance. The insurance is complementary and voluntary. The amount of the premium defines the extension of the insurance: 100 PLN (€ 25) or less – 25% decrease, 100-250 PLN – 50%, 250-500 PLN – 75%, and 500 PLN (€ 125) or more per month – 100%. Moreover, no informal funding seems necessary, and thus it is also 0 PLN. For households without private medical insurance, endogenous variables are modelled similarly to scenario 1.

SCENARIO 4

The willingness to pay for private medical insurance is equivalent to actually taking out the insurance. The insurance is obligatory, but the level is not fixed. The amount of the premium defines the extension of the insurance (see Scenario 3). A household that declared no willingness to pay will be "forced" to purchase the basic and cheapest variant.

5. CONCLUSIONS

The Polish health care system is in transformation. The main aims for proposed modifications include the increase of efficiency and reduction of expenditures. The latter includes private out-of-pocket funding that may not always be government-supervised, as unofficial expenses are sometimes unethical or illegal. The variety of suggested reforms reflects the lack of unanimity among the health economists and policy makers. Furthermore, the political impact is often more substantial than economic reasoning. Nowadays, the oncoming parliamentary elections planned for late 2011 make it hard to distinguish genuine proposals from looking-for-electorate's-support suggestions.

However, everyone agrees that changes have to be made and they have to be made fast. What is in demand is the methodology allowing for a comparison of the present and future outcomes of alternative proposals. The microsimulation approach can be a useful tool for reforming the health care system, as it permits to draw a distribution of "gains" and "loses" of each policy. Determining "winners" and "losers" may be crucial to choosing the best option, as well as defining policy nuances that could partly protect the disadvantaged.

The microsimulation experiments can be highly beneficial, but their application is not devoid of problems. Appropriate micro databases are few and often insufficient. Moreover, programming experiments can be a challenge with respect to the required hardware and software.

Uniwersytet Łódzki

REFERENCES

[1] Baroni E., Richiardi M., (October 2007), *Orcutt's Vision, 50 years on*, Working Paper no. 65.
[2] Cameron A., Trivedi P., (2005), *Microeconometrics. Methods and Applications*. Cambridge University Press, New York.
[3] Myck M., (2008), *Analizy polskiego system podatkowo – zasiłkowego z wykorzystaniem modelu mikrosymulacyjnego SIMPL*, Problemy polityki społecznej nr 11/2008.
[4] Orcutt G.H., Caldwell S., Wertheimer R.F., (1976) *Policy exploration through microanalytic simulation*, The Urban Institute, Washington D.C.
[5] REPORT „Finansowanie ochrony zdrowia w Polsce – Zielona Księga II", wersja trzecia Ministerstwo Zdrowia, Warszawa, 29 August 2008.

[6] Suchecka J., (1992), *Modelowanie sfery ochrony zdrowia. Problemy i metody*, Wydawnictwo Uniwersytetu Łódzkiego.

[7] Suchecka J., (1998), *Ekonometria ochrony zdrowia*, Wydawnictwo Absolwent, Lodz.

[8] Suchecki B., (ed.), (2010), *Ekonometria przestrzenna*, PWE, Warsaw.

[9] *Statistical yearbook of the Republic of Poland 2010*, (2011), Central Statistical Office, Warsaw.

[10] World Health Organization Statistical Information System: Core Health Indicators, http://apps.who.int/whosis/database/core/core_select.cfm (10.05.2010).

[11] Wiśniewski J.W., (2009), *Mikroekonometria*, Wydawnictwo Mikołaja Kopernika, Toruń.

[12] Żółtaszek A., Jewczak M., (2011), *Spatial and dynamic analysis of healthcare expenditures in OECD countries*, [w:] Spatial econometrics and regional economic analysis, Suchecki B. (red.), Folia oeconomica 252, Wydawnictwo Uniwersytetu Łódzkiego, Łódź, http://www.diagnoza.com/index-en.html (20.04.2011).

PRYWATNE FINANSOWANIE OCHRONY ZDROWIA W POLSCE – MODEL
MIKROSYMULACYJNY

S t r e s z c z e n i e

Sektor ochrony zdrowia jest kluczowym działem gospodarki każdego państwa, wzbudza bezpośrednie zainteresowanie obywateli, zarówno w aspektach medycznym i społecznym, jak i ekonomicznym. Jednocześnie jest jednym z bardziej zróżnicowanych sektorów na świecie, szczególnie pod względem struktury źródeł jego finansowania. W Polsce znaczna część usług medycznych opłacana jest z budżetu państwa. Z powodu nieefektywności funkcjonowania sektora ochrony zdrowia, toczą się dyskusje dotyczące jego reform, m.in. współfinansowania usług medycznych. Jedną z propozycji jest wprowadzenie prywatnych ubezpieczeń medycznych jako produktów suplementarnych lub komplementarnych dla wydatków publicznych.

Celem artykułu jest prezentacja mikrosymulacyjnego modelu ekonometrii zdrowia wydatków gospodarstw domowych na ochronę zdrowia w Polsce. Model wykorzystuje dane panelowe gospodarstw domowych dotyczące prywatnego finasowania opieki zdrowotnej i skłonności do płacenia za prywatne ubezpieczenia medyczne. Model ma posłużyć prognozowaniu przyszłej sytuacji w zależności od implementacji proponowanych reform. Badanie ma udowodnić przydatność mikrosymulacji w tworzeniu polityki ochrony zdrowia w Polsce.

Słowa kluczowe: mikrosimulacje, ekonomika zdrowia, ekonometria zdrowia, prywatne wydatki na ochronę zdrowia, model mikroekonometryczny

PRIVATE FINANCING OF HEALTH CARE IN POLAND – MICRO SIMULATION MODEL

A b s t r a c t

Health care is a key sector of every economy and is of grate medical, social, and economical importance to all citizens. It is also one of the most diverse sectors in the world, especially in the aspect

of financing. In Poland health care is mostly public funded. However due to system's inefficiency new policies are discussed, some of which include various methods of co-payment. Popularisation of currently uncommon private medical insurance, either supplementary or complementary to public financing, are one of the proposed solutions

The main goal of this paper is to present health econometric micro simulation model of households' medical expenses in Poland. Model is based on individual household panel data considering private funding of health care and willingness-to-pay for private medical insurance. It is to be used to forecast future situation depending on various funding reform proposals. This research is to prove usefulness of micro simulations in assessing health care police, which is of currently of major importance in Poland.