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SURGEON-INDUCED DEMAND ON PLANNED HERNIA REPAIR SURGERIES IN UKRAINE

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Summary. *Physician induced demand (SID) on medical services is the matter of vivid concern for researchers for its fundamental impact on the public health policy and public relations toward medical services. Research of the kind blazes a trail in the postsoviet space, likewise we failed to find any research on the topic in Eastern Europe publications. We use planned hernia repair surgery as indicative manipulation having elastic demand by costs. Results indicated that physician refers to SID moderately making allowance for the «cost» of SID-related profit. Such model confines physician SID behavior with the physician being good agent for the patients.*
Key words: *physician induced demand, system of simultaneous equations.*

Introduction

Physician induced demand attracts attention of health economics researchers for its profound impact on health policy, health insurance, health system reforms and relations of medical services to served communities. Recent Ukraine health policy exposed much concerns about medical input, especially of physician labor market. The most reformative appeared to be in-patient care input as the most expensive, which consumes about half of health expenditures. Given research is the first of a kind on the terrain of CIS as well as Eastern Europe countries and directly concerns ongoing health reforms in Ukraine. If hypothesis turns out to be true, it might be the basis for more detailed research on relevance of counterbalancing measures, widely adopted by other countries with market driven health economics. Most of them are safeguards to spiraling costs of health care.

Methodology, hypotheses

Two types of physician behavior are considered in modern supplier-induced demand (SID) framework. *Target income model* poses that reduced share of patients under growing physician supply inevitably leads to drop in physicians' income and compel latter to manipulate demand and fees to maintain the «target» level of income. Under this hypothesis one expects positive supply-demand and supply-fees correlation. Supporters of this concept [19] are prone to see it as commonly observed behavior, when people compare themselves to others by incomes. Once competition drops the profit rate mA to mB, the new equilibrium achieves as tangency point T2 to utility curve U2 (Exhibit 1). The broken line translates the markdown in utility to reduction of income. It shows that the change in inducement IT'2-IT1 compensates the drop in income A-C. *Profit-maximizing model* incorporates standard advertising/product promotion behavioral elements [22]. While previous model suggests inducement as reimbursement tool to compensate the drop of income, profit-maximizing model regards inducement as instrument to manipulate demand to the point when marginal profit equals marginal loadwork including penalties for inducement. Under this model physician considers inducement so long as it increases income. Therefore he/she might forgo inducement at low m because of low profitability [15]. This shift to left effect will not undermine the power of hypothesis test as long as surgery concerns. It may exist for outpatient care where fees may be below its equilibrium level and «fee riders rationing» is common, but the surgery is quite another issue. That makes test more straightforward and unbiased.

Both models impose limitations on inducement scope. Ethical and professional considerations restrict SID. Extensive arrangements introduced by third-party payers and managed care contracts affect physician behavior and raise costs of imperfect agency thereby reducing SID. Obvious lack of counterbalance measures in Ukraine makes our hypothesis test easier to perform by reducing type-II error as well as greatly simplifies design and econometric model. The power of test can even be higher when examine demand-supply and fees-supply correlations in most SID-susceptible groups in population [8]. Another option to enhance power is to research homogenous pathology [4;25]. Having studied prevalent surgery conditions, namely hernia and strangulated hernia, we followed mentioned reasoning. Further test enhancement in this tune concerns accounting

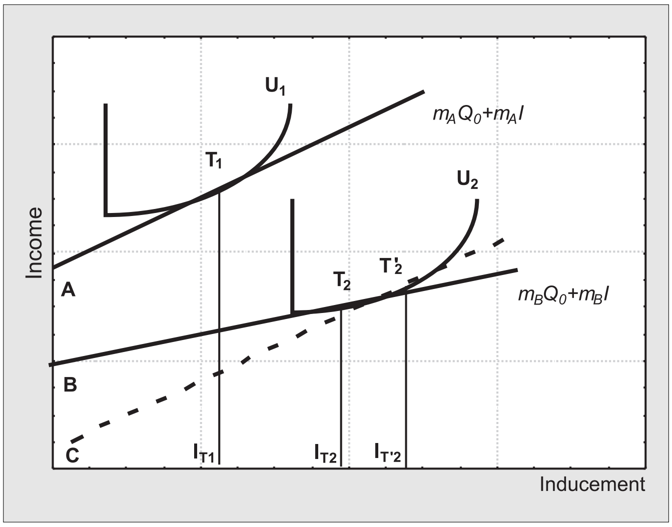

Exhibit 1. *Target income model*

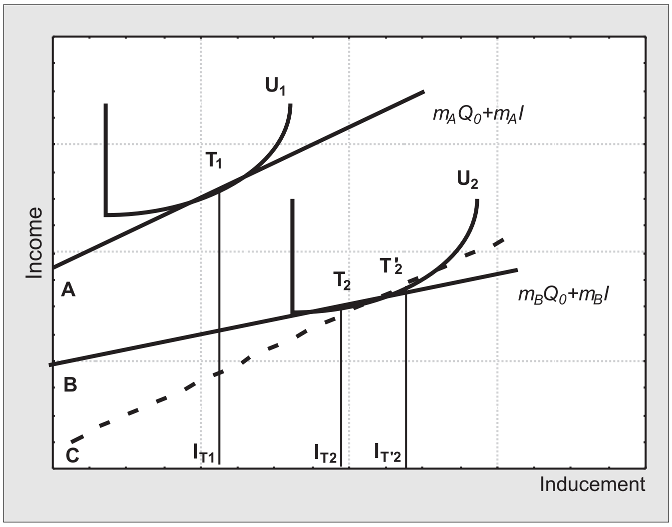

Exhibit 2. *Profit-maximizing model*

for surgery complexity, urgency, and necessity. Using the much similar conditions we attenuate unobservable biases as most important for cross-section designs.

Summarizing abovementioned concepts and reasoning we suggest that hypothesis on existence of surgeoninduced demand on most prevalent surgical operations can be tested by:

1. Analyzing partial relationship between surgeon supply and number of operations. Observation of significant positive relationship under different model specifications satisfies Condition A of SID hypothesis (See chapter «Theoretical model. *SID identification tests*»). Unlike other services or goods, demand on surgical operations (except cases of vital necessity) is boosted mainly by producer.
2. Analyzing partial relationship between patients' fees and surgeon supply. Existence of significant positive relationship satisfies Condition B of SID hypothesis.
3. Comparison of supply-demand effects studied separately in urban/rural and children/adults contingents. If effect turns out to be stronger for SID-susceptible groups of population (urban adults) we would be prone to accept hypothesis.
4. Comparison of partial supply-demand effects studied separately for surgeries with higher/lower complexity, urgency, and necessity. Significant differences in supply-demand effects indicate that hypothesis is true.
5. When supply-fees effect is strong and positive the surgeons pursue target income model. When this effect is weak but supply-demand effect is present, surgeons' behavior assumes profit-maximizing model.
6. When supply-| fees- surgeon employment status either appeared to be significant Condition C of SID hypothesis is satisfied.

Statistically grounded expansion of tests we expound in chapter «Theoretical model. *SID identification tests*».

Though most Health economists recognize SID behavior as crucial issue in controlling growing health expenditures it's still remain a challenge to discern and evaluate its effect in experimental settings. Panel data researches have advantage of eliminating the unobservable effects biases. Four big issues we think prevented all of mentioned research to reach more reliable conclusions:

1. Low factor price ratios variation. It produces severe multicollineariaty precluding efficient SID estimation. An examination of the degree of variation in factor price ratios could indicate identifiableness of SID effect [1]. Data limitations also precluded adjustment of wages for non-pecuniary compensation and fringe benefits. To the extent this component is floating across nominal revenue, dispersion can be significantly distorted. High multicollinearity among covariates that might be the result of other relationships that are ignored makes SID distinction moot.
2. Constrains of counterbalancing environment that prevents full scale SID behavior as well as limits «free dimension» price ratios fluctuations.
3. Negligence of substitution effect between markets, physician (same procedure can be served by different specialists, i.e. operation can be done by general practitioner) and other procedures.
4. Failure to implement fees, volume of services, surgeon/population density as endogenous variables.

These 4 scourges are present in every cited research and are challenging in this application. We have unique opportunity to deal with them properly. See the way we addressed 1st handicap in data and theoretical model sections. 2nd obstacle is much attenuated by absence of effective counterbalancing regulations in Ukraine. Amount of fees charged is also has substantial unregulated «stochastic» component. 3rd problem is simplified by the fact that only one market exists for rural district population —

governmental public health services. As for geographic markets, there is indeed a minute possibility to get given operations in neighboring district facilities due to health regulations for common conditions treatment. So, we only concern with scant possibility to be treated at 3rd level by incorporating «border-crossing» variable (see data section). There is neither substitution effect with other specialists for given operations are realm of general surgeons nor with other procedures.

Data. The most important data issue is availability of fees patient charged for operations. Though presumably in-patient care is free of charge by the Ukrainian Constitution every patient in reality pays for services. Patient pays for medicines, dressings, anesthesia, diagnostic procedures and laboratory tests. There is actually a variety of ways how surgeon is paid including direct pocket payment. There is tangible lack of control of fees scope. It varies from one locality to another and almost become the factor of «local tradition». It plays to our hands as far as it insures so needed variations in factor price ratios. Furthermore this variation is somewhat independent from market factors. This unique opportunity allows us to extricate SID effect. Every rural district of Vinnitska, Zhytomirska, Chmelnitska oblasts presents the unit of observation. We suggest nested data composition: patients nested within surgeons (level two) who in turn nested within Central District Hospitals. We will draw samples of patients who undergone planned herniorrhaphy in 2008 from each of the district (up to 10 patients randomly per condition and district) and will produce correspondent average values (see Addendum 1). Level two covers information on surgeons. Most important employment (SID power) classification variable is «Head of Surgery/regular surgeon» that is similar to «employer/employee» classification [11]. Level three (aggregated) data will be obtained from annual reports of Central District Hospitals. These are 3 endogenous variables: number of annual *herniorrhaphies* per surgeon, population (Y, for regular surgeons averaged), number of general surgeons per population (S), fees (P). Exogenous variables in (Y) equation are: proportion of population aged above 50 years (AGE), proportion of women population (SEX), proportion of physicians with first+ higher categories (QUALIF), employment classification variable (SIDpower), whole surgeries workload (WLOAD) to account for substitution effect between markets bias, patients income (INCOME). Exogenous variables for surgeon supply (S) equation are: number of physicians per population (DENSITY), unemployment rate in district (UNEMPLOY), number of services rendered by single specialist (SHORT1), number of services without specialist (SHORT2) which can be regarded as a measure of attractiveness of the area along with physicians qualification (QUALIF) and ratio of vacancies to filled physicians' situations at Central District Hospital (VACANCY). Fees equation (P) incorporates exogenous variables: surgery complexity index (COMPLEXITY), average length of stay in hospital (T) which is also signifies treatment quality, employment status (SIDpower), and patients income (INCOME). Besides total treatment fees (P) we will also consider fees components (fees for medicine, instrumental, laboratory analyses, anesthesia, nurse care, physician care). To control for «border-crossing» bias we will introduce ratio of surgeries performed in Oblast Clinic to those performed in CDH (Oblast) in modified demand equation.

Theoretical model. We develop our approach based upon integration of Fuchs (1986), Grytten and Sorensen (2001) models. The system of simultaneous equations (SSE) is:

demand: Y=S + Tcost + AGE + SEX + QUALIFS + SIDPower + WLOAD + INCOME (1)
supply: S=Y +Tcost +DENSITY + UNEMPLOY + VACANCY +SHORT1 +SHORT2 +QUALIFS (2)
charge: Tcost=Y + S + COMPLEXITY + T + SIDpower + INCOME (3)

To relent bias due to district-related unobservables we introduce *district identification* variable in each equation.

All equations proved to be overidentified. We performed specification tests to examine SSE [24]: 1) endogeneity of fees variable by Hausman test; 2) overidentifying restrictions to detect endogeneity of instruments by Lagrange multiplier (LM) based test, 3) functional form by RESET test, 4) heteroskedasticity by testing homokurtosis by LM based test.

The major concern was question on the exogeneity of fee variable due to the possible measurement error (recollection | report bias). The classical errors-in-variables (CEV) assumption implies that measurement error is correlated with a measure of true x*k; call it xk, so while $x_k = x^*_k + e_k$ (e_k – measurement error)

$Cov(x_k,e_k)=E(x_k e_k)= E(x^*_k e_k)+E(e^2_k)=\sigma^2 e_k$

Thus under the CEV assumption, the covariance between measure x_k and e_k is equal to the variance of the measurement error. Under CEV regression on measure x_k generally gives inconsistent estimators of all of the β with

$$p\lim(\hat{\hat{\beta}}_K) = \beta_K \left(\frac{\sigma^2_{RK}}{\sigma^2_{RK} + \sigma^2_{EK}} \right)$$

where RK is the linear projection error in $x^*_k=\delta_0+ \delta_1 x_1+... + \delta_{k-1}x_{k-1}+RK$.

In our case CEV assumption fails. Fees is indeed self-reported amount of money paid for surgery. Suppose we postulate the standard measurement error model, $fees=fees^* + e_{fee}$, and let us assume that patients try to report the truth. It seems very likely that those who did not pay at all – so that $fees^*=0$ – will also report fees=0. In other words, the measurement error is zero for patients who didn't pay. When *fees*>0* it is more likely that someone miscount the payment. Such miscounting almost certainly means that e_{fee} and fees* are correlated, a finding which violates the CEV assumption so that *Cov(fees,* e_{fee}*)=0* and we have consistent estimators of β. Therefore, we treat fees as endogenous variable but without correction on measurement error due to abovementioned reasoning. Still to be on safe side we will use payment for medicines as proxy for fees due to its objectiveness (we calculate this part of payment based upon case history and local medicines prices).

SID identification tests:

1. We adhere to three conditions of the traditional SID model: Condition A, the total market supply has been increased which means positive correlation (S, Y); Condition B, the market demand has been increased; Condition C, the reason of the demand increase is induced by the suppliers for a better profit.

The effects of interest are embossed with bold.

$Y=\beta_1*S+\beta_2*$**SIDpower**+the rest (1)

Corr(S, Y) *>0* assures condition A. Corr(SIDpower, Y) *>0* assures condition C, the demand line shifts further to the right by Head of Surgery juxtaposed with regular surgeon to safe better profit. With both Corr(S, Y) *>0* and Corr(SIDpower, Y) >0 we arrive *at* condition B. *Therefore, to test* $\beta_1>0$ *and* $\beta_2>0$ *simultaneously is to test the existence of SID* [11].

2. We also exploited Corr(S, P) and Corr(SIDpower, P) for *both being proved positive also suggest Conditions B and C fulfilled.*

$P=\beta_1*S+\beta_2*$**SIDpower**+the rest (3)

3. The basis to third test was laid by Jerry Green, 1978 [9]. He considered workload (W) relationship

$W=R\varphi$ (4)

where R is the population/physician ratio, and φ is per capita demand. The no-inducement hypothesis is that the arguments of φ consist of observable exogenous variables, such as patients income (I), and observable endogenous variables, such as price (P), but no unobservable endogenous variable-for example, a shift term under the control of the physician:

$\varphi(P,I)=P^{\varepsilon}I^{\eta}$ (5)

Differentiating (2.1) with respect to *R* and *I*, he arrived at

$dW/dR=\varphi+R(d\varphi/dR) \quad = \varphi + R\varphi_P(dP/dR)$

$dW/dI= R\varphi_I+R(d\varphi/dI) \ = R\varphi_I + R\varphi_P(dP/dI)$ (6)

Green proved that under assumption of utility function $U(PR\varphi, R\varphi)$ maximization (arguments are physician's income and workload) and iso-elastic form of φ which implies that $\varphi/R\varphi_I=\varphi_P/R\varphi_{IP}$ we have:

$dW/dR= \quad \varphi[1 + (\varphi_P/\varphi_I)(dP/dI)]$

$dW/dI=R\varphi_I[1+ (\varphi_P/\varphi_I)(dP/dI)]$ (7)

or

$(dW/dR)/(dW/dI)= \varphi/R\varphi_I =(dP/dR)/(dP/dI)$ (8).

Under H_0 of no inducement the ratio of the coefficients of *R* **(**β_{11}/β_{21}**)** and I **(**β_{12}/β_{22}**)** in the two equations for P and Y should be equal. This relation forms the basis for the test we are going to perform. The effects of interest are embossed with bold.

$Y=\beta_{11}*S+\beta_{12}*$Income+ the rest (1)

$\ln(P)=\beta_{21}*S+\beta_{22}*$Income+ the rest (2)

Estimation: Estimation will be done by SYSLIN procedure, SAS 9.1 Level 1M3 XP Home platform, S/N 882876, Site #12300001 licensed to Ocheredko Oleksandr. We trade off efficiency for robustness of estimations by applying 2SLS estimator. Choosing 2SLS estimator we assume possibilities of heteroscedasticity and covariation between variables and errors in different equations. Error covariance matrix structure is also unknown. In spite of these drawbacks 2SLS equation by equation estimator provides consistent evaluation of parameters [11, 13]. We will use robust t-statistics (parameters covariation matrix will be obtained with heteroscedasticity assumption) to test 1–4 components of hypothesis and robust Wald statistics to test 5th and 6s components of hypothesis (see Hypotheses section). Other tests-related peculiarities are given in chapter «Theoretical model. *SID identification tests*»

Results

Basic descriptive statistics of variables in the model are given in Table 1. The average frequency of planned hernia repair surgeries per 10000 population (Y) was 16,41, average provision with surgeons per 10000 population (S) was 1,23, the averaged total costs per given surgery (TCost) was 826,50grn, the averaged costs of medication per given surgery (MCost) was 234,99grn. Average provision with physicians per 10000 population (DENSITY) was 24,80, averaged proportion of surgeons with first and higher categories (QUALIFS) was 66,28%, averaged annual frequency of surgeries per surgeon (WLOAD) was 401, averaged proportion of population aged above 50 (AGE) was 44,94%, averaged share of females (SEX) was 54,60%, averaged ratio of vacant physician offices to 100 taken (VACANCY) was 1,25, number of specialties with only one specialist available (SHORT1) was 17, number of specialties with no specialist available (SHORT2) was 1,59, averaged unemployment rate (UNEMPLOY) was 3,77%. Outcome of 87% sampled patients exceeded subsistence level (INCOME). Complicated cases of hernia repair surgeries (COMPLEXITY) happened in 24% surgeries. Averaged in-patient stay in cases of hernia repair surgeries (T) equaled 7,9 days. 49,01% of hernia repair surgeries were performed by heads of surgeries (SIDPower).

Variables values are akin to those in other oblasts of Ukraine and practically coincide with figures reported across the country, therefore the conclusions more likely to be typical and can be generalized. High variability of variables though (above 20% in most cases) incapacitates testing of.

Table 1

Basic descriptive statistics of variables in the model

Variables	Average	St. error	Variation (%)
Y	16,41	0,77	24,27
S	1,23	0,05	21,34
Tcost	826,50	68,32	42,95
Mcost	234,99	22,33	49,38
DENSITY	24,80	0,84	17,67
QUALIFS	66,28	3,41	26,74
WLOAD	401,48	19,99	25,87
AGE	44,94	1,88	21,76
SEX	54,60	1,47	14,01
VACANCY	1,25	0,68	78,33
SHORT1	17,00	1,76	53,91
SHORT2	1,59	0,25	60,30
UNEMPLOY	3,77	0,38	52,92
INCOME	1,87	0,05	12,98
COMPLEXITY	0,24	0,04	60,04
T	7,90	0,18	12,15
SIDPower	0,49	0,03	34,61

Evaluation of demand equation (Y) effects.
SID hypothesis, Test 1

Evaluation of demand equation (Y) effects is given in Table 2. Direction of regression coefficients β proves the relevance of demand equation. Determination of Y by independent variables of equation is high – adjusted for degrees of freedom value of multiply correlation coefficient equals 89,34%. Nevertheless only effects of variables S and SIDpower proved to be significant and positive. Therefore, we have both conditions satisfied, namely Corr(S, Y) > 0 i Corr(SIDpower, Y) > 0, that in turn consummates prerequisites A, B, C of SID hypothesis. Basmann test of identification of demand equation (Y) stated that the set of independent variables of demand equation is sufficient by F(7, 11)=1,10; p =0,4282. That is the results of Test 1 are valid.

Evaluation of supply equation (S) effects is given in Table 3. This equation effects are not part of the SID tests for it expresses endogenous variable provision with surgeons S by instrumental variables of attractiveness of the region to surgeons. The main requirements for the equation are its identification and high determination. That first is met is obvious from Basmann test which is of value F(7, 11)=0,89; p=0,5449. Second condition is also fulfilled – adjusted for degrees of freedom value of multiply correlation coefficient equals 83,26%. Direction of regression coefficients sustains logic interpretation – higher attractiveness of the region supports better provision with surgeons. Only two regression coefficients appeared to be significant – unemployment rate (UNEMPLOY) and number of specialties with no specialist available (SHORT2). It's these variables that rendered most leverage on provision with surgeons.

Evaluation of charge equation (Tcost) effects.
SID hypothesis, Test 2

Evaluation of charge equation (Tcost) effects is given in Table 4. Direction of regression coefficients β proves the objectiveness of charge equation. Determination of Tcost by independent variables of equation is high – adjusted for degrees of freedom value of multiply correlation coefficient equals 90,80%. Still all effects were insignificant. Marginally significant appeared to be regression coefficients of variables Y (p=0,0785) and SIDpower (p=0,0518), both are positive by direction. We have to consider a paucity of sample – 27 regions. So it's direction of effects that are important at first hand. This sustains the simultaneous fulfillment of conditions Corr(S, TCost) *>0 and* Corr(SIDpower, TCost) *>0*, those in turn meet conditions A, B, C of SID hypothesis (Test 2). Basmann test of identification of charge equation (Tcost)

Table 2

Evaluation of demand equation (Y) effects. SID hypothesis, Test 1.

Variables	β	m	t	Pr > |t|
Intercept	-3,696	7,392	0,50	0,6231
S	11,976	5,316	2,25	0,0370
TCost	0,0005	0,004	0,12	0,9043
AGE	0,053	0,054	0,97	0,3426
SEX	0,0116	0,059	0,19	0,8482
QUALIFS	0,006	0,020	0,34	0,7359
SIDPower	4,798	2,636	1,82	0,0431
WLOAD	-0,0008	0,0034	0,25	0,8072
INCOME	0,1664	1,1270	0,15	0,8842

R^2=0,9262; **R^2adj**=0,8934
F(7, 11)=1,10; **Pr** > F =0,4282

stated that the set of independent variables of charge equation is sufficient by F(9, 11)=2,03; p=0,1335. That is the results of Test 2 are valid.

SID hypothesis, Test 3.

According to null hypothesis (H0) of absence of SID effect:

$\beta_{11}/\beta_{21} = \beta_{12}/\beta_{22}$, where

β_{11} – regression coefficient Y on S in equation (**Y**)

β_{21} – regression coefficient TCost на S in equation (**TCost**)

β_{12} – regression coefficient Y на INCOME in equation (**Y**)

β_{22} – regression coefficient TCost на INCOME in equation (**TCost**)

From Tables 2–4:

β_{11} = 11,976±5,316

β_{12} = 0,1664±1,1270

β_{21} = 615,12±339,33

β_{22} = 54,63±91,869

Table 3

Evaluation of supply equation (S) effects: (S)

Variables	β	m	t	Pr > |t|
Intercept	0,5887	0,3229	1,82	0,0850
Y	0,0176	0,0063	2,79	0,0541
Tcost	0,0005	0,0003	1,48	0,1560
DENSITY	-0,00005	0,0070	0,01	0,9942
UNEMPLOY	-0,022	0,0080	2,76	0,0542
VACANCY	-0,002	0,0075	0,30	0,7710
SHORT1	-0,003	0,0047	0,76	0,4584
SHORT2	-0,029	0,0088	3,27	0,0411
QUALIFS	0,001	0,0014	0,68	0,5078

R^2=0,8841; **R^2adj**=0,8326
F(7, 11)=0,89; **Pr** > F =0,5449

Table 4

Evaluation of charge equation (Tcost) effects. SID hypothesis, Test 2

Variables	β	m	t	Pr > |t|
Intercept	-641,0	260,74	2,46	0,0232
Y	8,576	5,834	1,47	0,0785
S	615,12	339,33	1,81	0,0849
Complexity	35,78	140,22	0,26	0,8012
T	-1,569	25,456	0,06	0,9515
SIDPower	951,75	460,23	2,07	0,0518
INCOME	54,63	91,869	0,59	0,5587

R^2=0,9292; **R^2adj**=0,9080
F(9, 11)=2,03; **Pr** > F =0,1335

You may notice large errors of coefficients because of small number of regions covered, this biases towards accept of H0 which stipulates the absence of SID effect. Making allowance for aforementioned the value of the test:

F(1; 56)=2,34 Pr > F=0,1314

rejects SID hypothesis though doesn't accepts H_0. Thereafter it's possible to stipulate the evidence of limited SID effect.

Type of SID behavior

Insomuch as results are indicative towards the SID effect we should consider the type of SID behavior. As was stated above (hypothesis clause 5) in the presence of correlation between costs and surgeons supply we are prone toward first type of behavior. In its absence and significant effect supply-demand second type of behavior is evident. By the results (Tables 2–4) there is no potent relationship between costs and surgeons supply – regression coefficient in equation supply (**S**) β=0,0005±0,0003, p=0,1560 insignificant. On other hand, regression coefficient between supply and demand in demand (**Y**) equation β=11,976 5,3163, p=0,0370 is positive, substantial and significant even with small sample. Thereafter the second type of SID behavior is more appropriate, that is also goes from Test 3 results. It means that surgeons refer to SID behavior to manipulate demand to the level where marginal profit equals marginal input, moral and judicial risks in (grievances of patients, negative attitude of administration, colleagues). By this model physician refers to SID moderately making allowance for the «cost» of SID-related profit. Such model confines physician SID behavior with the physician being good agent for the patients. It's a type of SID behavior prevalent in developed countries [15]. Besides, the less pay off, the less physician gravitates toward SID and the more towards «profit maximizing» model. It is possible that this very fact is crucial for limited SID behavior on the secondary level of medical care. On the other hand administrative and law regulation of medical care tailoring also confines SID behavior. What are the leverages that induce the physician to choose behavior of limited SID – low profit, hazard to reputation with risk of losing patients, moral ground of being perfect agent, possible lawsuits – needs special research.

Conclusions

1. Physician induced demand (SID) on medical services is the matter of vivid concern for researchers for its fundamental impact on the public health policy and public relations toward medical services.
2. We found that surgeons refer to SID behavior to manipulate demand to the level where marginal profit equals marginal input, moral and judicial risks in (grievances of patients, negative attitude of administration, colleagues).
3. By this model physician refers to SID moderately making allowance for the «cost» of SID-related profit. Such model confines physician SID behavior with the physician being good agent for the patients. It's a type of SID behavior prevalent in developed countries.
4. What are the leverages that induce the physician to choose behavior of limited SID – low profit, hazard to reputation with risk of losing patients, moral ground of being perfect agent, possible lawsuits – needs special research.

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Індукований попит на заплановані хірургічні операції грижі в Україні

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Індукований лікарями попит (ІЛП) населення на меддопомогу привертає увагу дослідників, зважаючи на фундаментальний вплив на політику та реформи в галузі охорони здоров'я, зв'язок медслужб з населенням. Дослідження такого плану вперше проведено на території пострадянського простору. Ми не зустріли робіт з такої тематики у країнах Східної Європи. Як індикаторну медичну послугу ми застосували планове грижесічення, використовуючи еластичний попит за витратами для незащемленої кили. За результатами дослідження лікарі застосовують ІЛП обмежено, зважаючи на «ціну» додаткового прибутку. За такої моделі поведінки лікар використовує ІЛП помірковано, зважаючи на інтереси пацієнта.

Ключові слова: індукований лікарями попит, система одночасних рівнянь.

Индуцированный спрос на запланированные операции грыжи в Украине

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Индуцированный врачами спрос (ИВС) на медицинские услуги обращает внимание ученых из-за фундаментального влияния на политику и реформы в отрасли здравоохранения, связи медслужб с населением. Исследование такого рода впервые проведено на территории постсоветского пространства. Мы не встретили работ по данной тематике в периодике стран Восточной Европы. В качестве индикаторной медицинской услуги мы применили плановое грыжесечение, используя эластический спрос по стоимости для неущемленной грыжи. Результаты исследования показали, что врачи применяют ИВС ограниченно, учитывая «цену» дополнительной прибыли. При такой модели поведения врач использует ИВП умеренно, учитывая интересы пациента.

Ключевые слова: индуцированный врачами спрос, система одновременных уравнений.

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