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2010

working paper series

IMPACT OF HEALTHCARE REFORMS ON
OUT-OF-POCKET HEALTH EXPENDITURES IN
TURKEY FOR PUBLIC INSUREES

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Working Paper No. 544

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Working Paper 544

September 2010

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¹ This work has benefited from a financial grant from the Economic Research Forum (ERF). The content and recommendations do not necessarily reflect the views of the ERF.

First published in 2010 by
The Economic Research Forum (ERF)
7 Boulos Hanna Street
Dokki, Cairo
Egypt
www.erf.org.eg

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Abstract

The Turkish health care system has been subject to major reform during the last five years. During the reform process, access to private and public providers was eased for public insurees. Despite the importance of the reform, there is no rigorous study of the reform's impact on health expenditures and access. This study analyzes a rich dataset on healthcare expenditures to look into the presence and size of out-of-pocket (OOP) health expenditures. The study uses Household Budget Surveys from 2003 to 2006, which provide a range of individual and household level data, as well as aggregate and detailed health care expenditures. Using econometric methods we analyze the presence of health expenditures, the share of health expenditures in total monthly expenditures and the level of health expenditures. Results show that the ratio of households with non-zero OOP expenditure has increased with the reforms, but the share and level of OOP expenditures have decreased. In addition, the impact is different across income levels. The results of a semi-parametric analysis show that wealthier individuals have benefited more in terms of the decrease in OOP health expenditures.

ملخص

لقد شهد نظام الرعاية الصحية في تركيا إصلاحات رئيسية خلال السنوات الخمس الأخيرة. وخلال عملية الإصلاح المُقدمة لشركات التأمين العامة والخاصة، يُسر حصول المؤمن عليهم علي هذه الرعاية من المؤسسات الخاصة والعامة. وعلي الرغم من أهمية عملية الإصلاح، فلا توجد دراسة دقيقة لمعرفة تأثير هذا الإصلاح علي نفقات الرعاية الصحية ومدى إتاحتها. وتحلل هذه الدراسة مجموعة كبيرة من البيانات عن نفقات الرعاية الصحية للبحث في الأمرين التاليين: (1) وجود نفقات نثرية في مجال الرعاية الصحية (2) حجم النفقات النثرية. وتستخدم الدراسة استقصاءات الميزانية العائلية التي أُجريت في الفترة من عام 2003 إلي 2006، والتي تتيح تراوفا من البيانات علي المستوي الشخصي والعائلي وأيضاً بشأن نفقات الرعاية الصحية إجمالاً وتفصيلاً. ومن خلال استخدام أساليب الاقتصاد القياسي، نحلل وجود أية نفقات في مجال الرعاية الصحية، و حصة النفقات بالنسبة لإجمالي النفقات الشهرية ومستوي هذه النفقات. وتظهر النتائج زيادة المعدل المنزلي للنفقات النثرية غير المعادلة مع تنفيذ هذه الإصلاحات، بينما انخفضت حصة ومستوي النفقات النثرية الأخرى. ويعتبر الأثر متبايناً لمستويات الدخل. ويظهر تحليل شبه بارامترى أن الأفراد الأكثر ثراء يستفيدون بصورة أكبر في ضوء انخفاض النفقات النثرية في مجال الرعاية الصحية.

1. Introduction

The Turkish health care system is in the process of a major transformation aiming to facilitate access and increase efficiency. One aspect of the reform is the rearrangement of the public health insurance schemes through the inclusion of private providers, equalizing the benefit packages across different public health insurance schemes, and introducing measures to improve efficiency of public hospitals.² This paper aims to analyze the impact of these developments on out-of-pocket (OOP) health expenditures by public insurees.

Health insurance aims to decrease the financial burden created by adverse health conditions, and hence would be expected to decrease OOP expenditures. A number of studies analyzed the impact of health insurance and the extent of its coverage on OOP expenditures (e.g. Sepehri et al. 2006).³ Wagstaff et al. (2008) point, however, that under certain conditions, such as weak monitoring of providers and partial coverage of health expenditures, demand inducement may take over resulting in even higher OOP expenditures.

In Turkey, public insurance covers about two thirds of the population.⁴ Until recently access was restricted to hospitals operated by the Ministry of Health (MoH) for some insurees and to those operated by the Social Insurance Organization (SIO) for others. While private hospitals existed, patients covered by social security had to pay fully for healthcare services out of pocket. Public services were considered to be unsatisfactory with long waiting times, shortage of physicians and lack of high-tech devices. Patients often looked for private providers. It was very common to use private resources or a mixture of private and public resources. In 2003, dual practice where physicians working in public hospitals also saw patients in their private clinics was very common. When patients chose to use public providers, where most inpatient and outpatient care were covered, it was common to make informal payments.

In 2003, private expenditures constituted about one third of total health expenditures in Turkey (OECD, 2008). Most of this figure consisted of OOP expenditures since private insurance is not common.⁵ Reforms have facilitated access to healthcare services (both private and public) and may have decreased OOP. Yet unfavorable incentives to patients, such as fees for service payment schemes at public providers and profit motives at private providers, combined with prevalence of informal payments for treatments may have created upward pressure on OOP.

A major reason for the interest in the reforms' impact is the costs associated with the reforms. Social Security Organization's payments to private hospitals have increased six-fold between 2002 and 2007 reaching 21% of total treatment expenditures by the government and 9% of all health related public spending. Payments to public hospitals have also increased during the same period reflecting the new performance payment scheme and the higher number of patients treated. Whether this spending was translated into a lower financial burden for patients is a question worth asking.⁶

² There has been a major change in the extent of coverage for those who cannot afford to pay health insurance premiums. Through a program called 'Green Card' a large part of the uninsured population has been covered under a program covering inpatient and outpatient services. For a discussion of the health expenditures and poverty in Turkey see Aran and Hentschel (forthcoming).

³ Another line of research focused on drug copayments and subsidies. See Alan et al. (2002) for an assessment of welfare implications of drug subsidies in Canada.

⁴ There also exists a health insurance program for poor which covered about 15% of population in 2006.

⁵ Less than 1 percent of the population has private insurance.

⁶ An equally, if not more, interesting question is the impact of the reforms in health status. Unfortunately we do not have detailed micro level data.

The high cost of the reforms brings about an equally important question of the distribution of benefits across individuals. For example, including private providers in the coverage might have been more beneficial to wealthier households since private providers had extra charges which were unaffordable by poor households even after the reforms. We shed light on the topic by analyzing the change in OOP expenditures by income levels.

Also important is the prevalence of similar reforms in developing countries. South Asian countries such as South Korea and Taiwan made similar attempts to rearrange the public insurance system. Mexico initiated a reform in 2003 (Knaul and Frenk 2005). Findings from the Turkish example along with experiences from other countries may provide guidance for other countries contemplating reform for health insurance systems.

While Turkey launched a reform program in 2003 —with various important and interesting aspects— evaluating these reforms has been rather scant, mostly due to lack of useful data. There have been some attempts to analyze the situation of OOP expenditures mostly with respect to the poor and elderly. Aran and Hentschel (forthcoming) analyzed the situation of the poor and the change from 2003 to 2006. Sulku (2009) looked into the situation of elderly in 2003 to provide a base point for further studies when data becomes available.

To analyze the issue we make use of the Household Budget Survey of Turkey 2003–2006. The survey provides information on total monthly OOP expenditures on healthcare as well as its components, total monthly expenditures and type of health insurance. We also have a range of socioeconomic indicators that can be used as control variables. The analysis first looks into presence of any OOP health expenditures. Considering that there are copayments for drug expenditures, this analysis also provides a measure of health care access in terms of prescribed (and purchased) drugs and hospital visits.

We then compare the level of expenditures on healthcare before and after the reforms. Uninsured households are used as a control group in the analysis despite its caveats described below in the methodology section. Analysis is also repeated using semi-parametric estimation methods that provide the difference in the impact across income levels.

Our results show that with the reforms a higher number of insurees had non-zero health expenditure, the share of health related expenditures of all expenditures seems to be lower and the benefits seem to be higher for relatively wealthier groups.

The following section provides a brief overview of the Turkish healthcare system and recent reforms. In Section 3 we discuss the impact of reform on OOP expenditures. Section 4 presents the data and methodology. Results are discussed in Section 5. Section 6 concludes.

2. Turkish Healthcare System and Reforms

In Turkey healthcare is financed by the government budget, a unified social security mechanism and private payments (directly or through private voluntary health insurance schemes). Total health expenditure was 4% and 5.6% of the GDP in 2003 and 2006 respectively (OECD, 2008).

Prior to 2008, there were three social security institutions. Retired civil servants were covered by the Government Employees Retirement Fund (GERF). Active civil servants' healthcare services were paid for by their organizations through the government budget, and they were subject to similar rules as GERF members. Private sector employees and blue-collar public workers were covered by the Social Insurance Organization (SIO), while the self-employed, including those working in the agricultural sector, were covered by Bağ-Kur (BK). There also

existed a plan for the poor who were unable to pay for healthcare (Green Card)⁷. Additionally, there were less than one million (out of more than 70 million) people with private health insurance.⁸

In 2003 there were several restrictions on the use of healthcare providers. SIO members were restricted to the hospitals operated by the organization. They were also required to use pharmacies operated by these hospitals for medicine. GEF members and active civil servants could only use hospitals operated by MoH. BK members had access to MoH hospitals but with restriction. Relevant public hospitals were free of charge under all three types of social security, but the quality of care at these hospitals was often criticized as being low. As primary care services were unsatisfactory and the referral system did not function well—a problem that still persists—patients often went directly to outpatient clinics attached to these hospitals. This led to long waits in order to see a doctor (World Bank 2001). High patient demand also meant that doctors spent little time with each patient. Anecdotal observations and results of diagnostic surveys indicate that in order to secure favorable treatment and better care and services in public hospitals, making OOP payments, giving presents to doctors and/or hospital personnel and using connections are common (Adaman 2003).

Since 2003 efforts have been made to unify the three different insurance schemes. While the unification has been formally achieved in 2008, starting 2004 efforts were made to unify the coverage of the schemes. Starting from mid-2003, the largest group of public insurees (SIO members) who had been restricted to hospitals operated by SIO, gradually gained the right of access to hospitals operated by MoH. Starting 2004, social security organizations signed contracts with private hospitals allowing their members to use services offered by those hospitals. Since the amount paid by social security organizations covered only a portion of the expenses for most medical procedures, private hospitals generally charged extra fees. During the same time period hospitals operated by MoH started a performance payment scheme, similar to fee-for-service schemes which increased the quantity of services provided by hospitals. In 2005, SIO stopped operating its own hospitals and transferred ownership to the MoH.⁹

In Turkey, detailed information on OOP is very limited. A survey by Tatar et al. (2007) found that of all OOP expenditures, about 70% of the payments were formal and the rest informal. For public insurees, drug expenditures constituted half of the formal spending followed by physician medical services. Public insurance bears a copayment of 20% for active premium payers and their dependents, and 10% for retirees. Among informal expenditures physician medical expenditures played the most important role. These payments may have decreased with the reforms having facilitated access to services.

⁷ The Green Card program covers healthcare expenditures of those earning less than one-third of the minimum wage. The card is given after a thorough investigation and is renewed every year. In 1992 when the program was initiated, it covered only inpatient healthcare expenditures. In 2004, outpatient expenditures and drug expenses were also included in the coverage. In 2008, the number of Green Card holders was about 9 million.

⁸ The number of people covered by these institutions is not very clear. According to SIO statistics, active and retired civil servants make about 15 percent of population, while SIO and BK cover 50 percent and 23 percent of the population, respectively. SIO statistics provide the number of dependents through a raw estimation and may not be accurate. It should also be noted that BK count includes both active and inactive members. It may be overstating the number of actively insured members.

⁹ Since 2006, efforts to assemble the three social security institutions under one roof have intensified. In 2008 a General Health Insurance plan, aiming at universal coverage, was put in place—the accomplishments of which, as of 2009, are yet to be seen. As part of the transformation, the public health insurance schemes have been collected under one roof.

3. Reforms, Out of Pocket Payments, Access

The reforms may have worked through different channels and OOP expenditures may have changed in different ways. In a system which fully covers both inpatient and outpatient services, increasing the number of hospitals covered by insurance schemes should have resulted in smaller OOP for insurees. Those who preferred private facilities over public facilities for various reasons would have benefited from the wider coverage. Those who had to make informal payments to use public services may have benefited from increased coverage which included private providers.

However, even the patients who had full coverage had to bear some expenses. Drug expenses required a copayment. Use of private facilities often required an extra charge by the private provider (though it was admittedly smaller than it was prior to the reform).¹⁰ Moreover informal payments to doctors and hospitals were rather common before and possibly after the reforms. In this setting, since access costs dropped making healthcare services more affordable, we expect to observe a higher number of households using healthcare services. This would be translated in higher proportion of households with non-zero OOP expenditures.

In such a setting an increase in provider coverage may have changed OOP expenditures for various reasons and in different ways. First, increased coverage may have decreased both monetary and non-monetary costs of access. Depending on the price elasticity of healthcare service use, this would result in higher utilization of health care providers. If this use is accompanied by a prescription drug or some extra charges by a private or public (informal charges) provider, it would show up as an increase in the number of households with positive OOP expenditure in our data.

On the other hand, without proper monitoring, private providers may have an incentive to induce demand in this new setting. This may even be the case in public hospitals because new payment schemes that are similar to fee-for-service systems create a suitable environment for such behavior. These would both increase the number of households with non-zero OOP and the level of health related expenditures.

The impact is expected to differ across income levels. For wealthier patients who used private providers prior to reform, the cost of private healthcare should have gone down with reforms. In addition, as public healthcare systems became more efficient, seeking public providers became a viable option. However, at lower levels of income private providers were still likely to be unaffordable and even expensive due to extra charges. In such a setting we expect the benefits, in terms of OOP expenditures, to be higher for wealthier households.

Easier access to public and private providers may also be beneficial to poorer households. If monetary and non-monetary costs of access were prohibitive, making poor households chose to receive no treatment especially for minor items, easier access would make both public and private providers more accessible to poorer households. Unfortunately, we do not have data on health status and usage of providers to fully assess the non-monetary benefits of easier access on poorer households. We can only get indirect information through health expenditures.

¹⁰ With the reform this extra charge was limited to 30% of payment by government to the private provider. Recently it was allowed to change between 30% and 70% depending on quality of the hospital.

4. Methodology

Turkey does not conduct health surveys regularly.¹¹ For this study, to compare between the situation before and after the reform, we make use of Household Budget Survey (HBS) for 2003 and 2006. The HBS has been conducted yearly from 2002 onwards, and the data from 2003 to 2006 is currently available to the public.¹² The survey includes a large number of households each month (about 2200 per month in 2003 and about 800 per month in following years), and is representative of Turkey.

The survey includes household expenditures incurred within the month in which the survey was conducted, as well as a number of individual and household characteristics. The OOP health expenditures used in the study take into account all kinds of health expenditures including copayments but excluding insurance premiums. The unit of observation for health expenditures is the household.

The data provides information on the health insurance status of each individual. The categories are public insurance, private insurance, Green Card, and none. All three public insurance schemes discussed above are indicated as public insurance with no further detail. We classify a particular household as having public insurance if all the household members have public insurance. Those households with mixed membership—public, Green Card, and uninsured, are kept out of the sample.¹³

The survey provides a range of socio-economic indicators for the household. We use the household size, some household head characteristics (age, education, marital status), location (urban or rural) and number of children and elderly in the households.

Household income is proxied by monthly expenditure. As shown in Table 1, along with summary statistics for other variables, there is a considerable change in expenditure levels from 2003 to 2006. The average goes up from about 792 to 1060. We try to control for the impact of this change using log of expenditure as a control variable. This strategy is sensible assuming that the impact of the income on health expenditures is similar across individuals and across time periods. The data, unfortunately, does not provide any means to test the validity of this argument and we are aware of other similar studies, such as Alan et al. (2002), where income levels change considerably over the time periods considered.

We convert all TL values into 2003 prices using general CPI levels for monthly expenditures. For health expenditures we do the adjustment based on subcategories (such as drugs, hospitals, etc) and calculate the health expenditures by adding up the adjusted figures of the subcategories. We calculate the share of health expenditures in total monthly expenditures of a household and use this variable in the analysis.

The data provides us with the share of health expenditures for households. Considering that under the public health insurance insurees are responsible for paying a copayment for drug expenditures, we can argue that it provides us with information concerning medical visits including a prescription. In that sense the analysis of the presence of any health expenditure is able to provide us with clues on access to health services.

The analysis on the presence of any health expenditure is conducted using probit methodology. The dependent variable is a dummy showing the presence of such expenditure.

¹¹ The closest substitute is Turkish Demographic and Health Survey of 2003 and 2008. The data for 2008 is not available yet and is not as rich as the Household Budget Surveys.

¹² Data for years 2004 and 2005 was also available but a longer time period is more appropriate to observe full impact.

¹³ We tried to use the uninsured as a control group, but their number was halved during this period from 30% of population to 15% (10 percentage points to Green Card holders and 5 percentage points to public insurance) making them difficult to use as controls.

Independent variables include socio-economic variables and a dummy variable for the year 2006, intended to measure the impact of the reforms.

The analysis proceeds with the level of health expenditure and share of health expenditure in total expenditures separately. A regression analysis is used considering only those households who had non-zero health expenditure during the period.¹⁴ To better see the impact of income on the benefits, we run separate semi-parametric regressions for 2003 and 2006 and display the figures showing the income levels and estimated OOP.

Selection Bias

The summary statistics show an increase of about five percentage points in the ratio of households with public health insurance. If the change is due to the increased benefit package, our results would be likely to be biased. The reason behind it is that those who are more likely to make use of these new benefits would join the group, creating a selection bias in the results.

In Turkey, public health insurance and social security (pension system) are bundled into one package. Hence, an increasing number of insurees does not only reflect a choice for joining public health insurance. Moreover, many times it is not the individual's choice because unemployment is high and whether the individual works in a formal job (hence insured) or not is determined by the employer. In that setting we do not expect the change to result from the change in the benefit package and hence the health status, but rather from the developments in socio-economic variables. For that purpose we run a probit analysis to analyze the insured vs. the uninsured status of households using a number of socio-economic variables and a dummy for the year 2006. The coefficient for the year 2006 dummy is expected to capture the impact of the differences in 2006 which includes the changes in health insurance coverage. Our results, presented in Table 2, show that once we control for independent variables, the dummy for the year 2006 has a negative sign, indicating there is no increase in the probability of being insured in 2006 compared to 2003.

It should be noted however that our analysis above may have missed crucial variables that determine the insurance status of the household and may be biased itself. To check the robustness of our results in the analysis of OOP expenditures, we repeat all the analysis with a subgroup of our sample which is not subject to selection bias. This group is composed of retired households. In both years a similar ratio of households belongs to that group (11.1% and 10.8% of all households in 2003 and 2006 respectively). Our results, presented in further detail below, are similar to the results with the whole sample.

5. Results

The results for the impact of reforms on public insurees' OOP is shown in Table 3. The first set of results presents the analysis of having any OOP using probit methodology for public insurees. The first line displays the impact of the reforms through a dummy variable for the year 2006. All the numbers are marginal effects and hence show the impact of a change of one unit in relevant variable (a switch from 0 to 1 in case of dummy variables) on the probability of having OOP at the average level of other independent variables.

Before going into the impact of reforms, we note that all the independent variables have the expected signs except for household size. A non-zero OOP is more likely the higher the monthly expenditures, number of children and elderly. The higher the education level — which is a possible proxy for health status — the lower the probability of a non-zero OOP. Household size seems to have an unexpected impact, but it should be noted that we already

¹⁴ One may alternatively consider a Tobit-like analysis with the whole sample to account for households with no health expenditure. In the absence of variables for health status/needs, this turns out to be futile.

control for the number of children and elderly separately. Furthermore, dropping the household size variable from the regression does not change the results significantly (results available from the authors).

The marginal effect of the year 2006 dummy is positive and significant at the 1% level. An increase of 6 percentage points is observed in the probability of having OOP in 2006 relative to 2003 for a household with public insurance at the average level of other independent variables. Considering that the ratio of households with non-zero OOP expenditure was 41% in 2003, this implies an increase of about 15%.

This result may indicate an increase in use of health facilities. Since drug expenditures are co-paid, we expect the data to reflect all healthcare visits that include a drug prescription. The observed increase in ratio of households with positive OOP expenditures may be because of higher usage due to easier access.

The analysis of the share of total expenditures spent on healthcare is rather difficult considering the change in the proportion of households with OOP expenditure across the years. We consider only those with positive OOP expenditure and run a regression of health spending share in total spending as well as level of health spending. Table 3, column 2 and 3 show the results for the share and the level. The level of OOP health spending seems to be significantly lower for public insurees in 2006 compared to 2003.

The analysis is also repeated with a subgroup of the sample (households where the main insuree is a retired individual). We find that the results are very similar to those for the whole sample. The presence of OOP increases by almost the same percentage points as with the whole sample. The share and level of health spending is significantly lower in 2006 compared to 2003.

To analyze distribution of the impact across households with different income levels, we use a semi-parametric regression following Alan et al. (2002).

$$\text{Health expenditure} = f(\log \text{ expenditures}) + X\beta + u$$

where X denotes the socio-economic variables used in previous regressions. The estimation is done with both 2003 and 2006 data separately and estimated non-parametric function f is plotted in figures 1 and 2 for share and level of health expenditures respectively. The findings indicate that the impact of the reforms have been different at different levels of income (as proxied by monthly expenditures of household). At low levels of income, there is no visible positive impact on OOP measured by both share and level of health expenditures. This is understandable as these households had no means to spend either in 2003 or in 2006. As the income level increases the drop in share and level of OOP is larger. The benefits, in terms of the decrease in the share of health expenditures, increase with the income. Our results are similar to Alan et al. (2002) who investigated the impact of drug subsidies in Canada.

6. Conclusion

Results show that reforms had some positive impacts on OOP expenditures. First, it increased access to health care services as indicated by the increasing number of households with non-zero OOP spending. In the presence of drug copayments, this may signify an increased use of healthcare services.

The share and level of health expenditures display a decrease over the reform period. With the diversified set of benefits, households have to spend less from their pocket compared to earlier periods. As expected, the impact on health expenditure is strongest among those with higher income levels. Including private providers in insurance coverage and lowering waiting times at public hospitals are factors more likely to decrease the costs of wealthier households, since they use services of private providers more often.

For households with lower income levels, OOP is not much affected by the changes. These households were more likely bearing the non-monetary costs of using free public healthcare services prior to the reforms. After the reforms, there were no changes in costs of access to public health services. Hence, we do not observe much of a change in OOP expenditures. However, the non-monetary costs should have been lower, since we observe a higher level of usage for healthcare services (indirectly through presence of OOP expenditures). Unfortunately our data does not allow us to measure the magnitude of the change in non-monetary costs. However, various surveys by the Turkish Statistics Institute and independent researchers point to a higher level of satisfaction with public providers.

The fact that OOP expenditures continue to exist despite the reforms could be related to copayments and informal payments. Unfortunately informal payments to physicians are a serious problem in Turkey. A further decrease in OOP expenditures would only be possible by finding a solution for this practice.

References

- Adaman, Fikret. 2003. "Study on the Social Protection Systems in Turkey". *Entry for the report Study on the Social Protection Systems in the 13 Applicant Countries*. prepared for European Commission, 2003.
- Alan, S., Crossley, Thomas F., Grootendorst, P. and Michael R. Veall. 2002. "The Effects of Drug Subsidies on Out-of-Pocket Prescription Drug Expenditures by Seniors: Regional Evidence from Canada". *Journal of Health Economics*. Vol. 21, pp. 805–826.
- Aran, M. and J. Hentschel. 2008. "Household Level Health Expenditures and Health Insurance Coverage of the Poor in Turkey". *Mimeo*. World Bank.
- Knaul, Felicia M. and Julio Frenk. 2005. "Health Insurance in Mexico: Achieving Universal Coverage Through Structural Reform". *Health Affairs*. Vol. 24, N. 6, pp. 1467–1476.
- OECD. 2008. "*OECD Reviews of Health Systems: Turkey*". OECD and the International Bank for Reconstruction and Development, World Bank.
- Sepahri, Ardeshir, Sisira Sarma, Wayne Simpson. 2006. "Does Non-profit Health Insurance Reduce Financial Burden? Evidence from the Vietnam Living Standards Survey Panel". *Health Economics*. Vol. 15, N. 6, pp. 603–616.
- Sulku, Seher N. 2009. "Financial Burden of Health Care Expenses among the Nonelderly Population in Turkey: 2002–2003". *Presentation at 2009 IHEA Congress*. Beijing.
- Tatar, Mehtap, Hacer Ozgen, Bayram Sahin, Paolo Belli and Peter Berman. 2007. "Informal Payments in the Health Sector: A Case Study from Turkey". *Health Affairs*. Vol. 26, N. 4, pp. 1029–1039.
- Wagstaff, Adam, Magnus Lindelow. 2008. "Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China". *Journal of Health Economics*. Vol. 27, pp. 990–1005.
- World Bank. 2001. "Turkey: Country Economic Memorandum-Structural Reforms for Sustainable Growth". *World Bank Report* No. 20029-TU.

Figure 1: Estimated Share of Health Expenditures (Results from Semi-parametric Estimation)

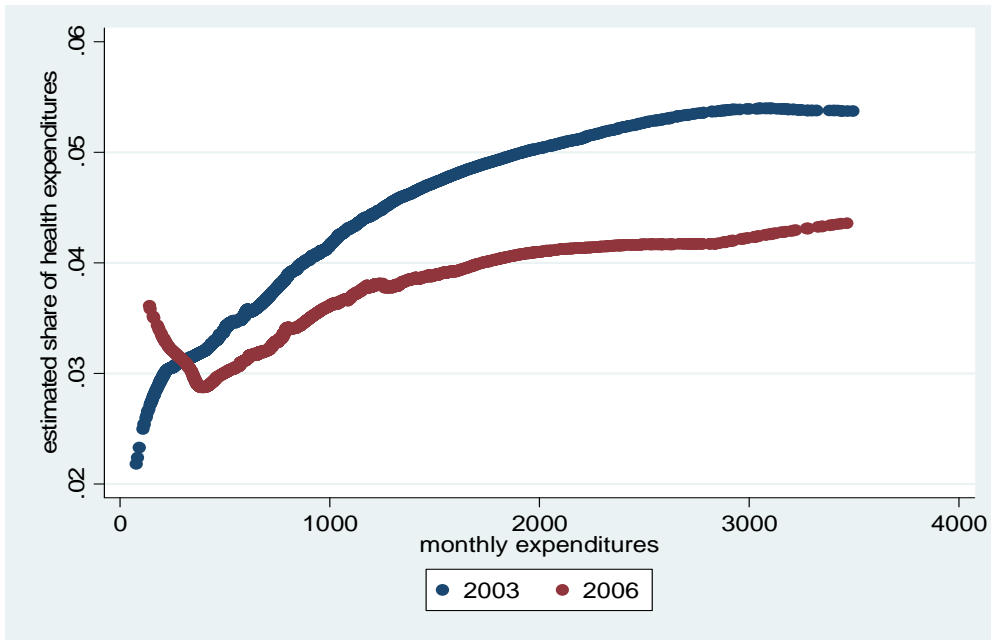


Figure 2: Estimated Health Expenditures (Results from Semi-parametric Estimation)

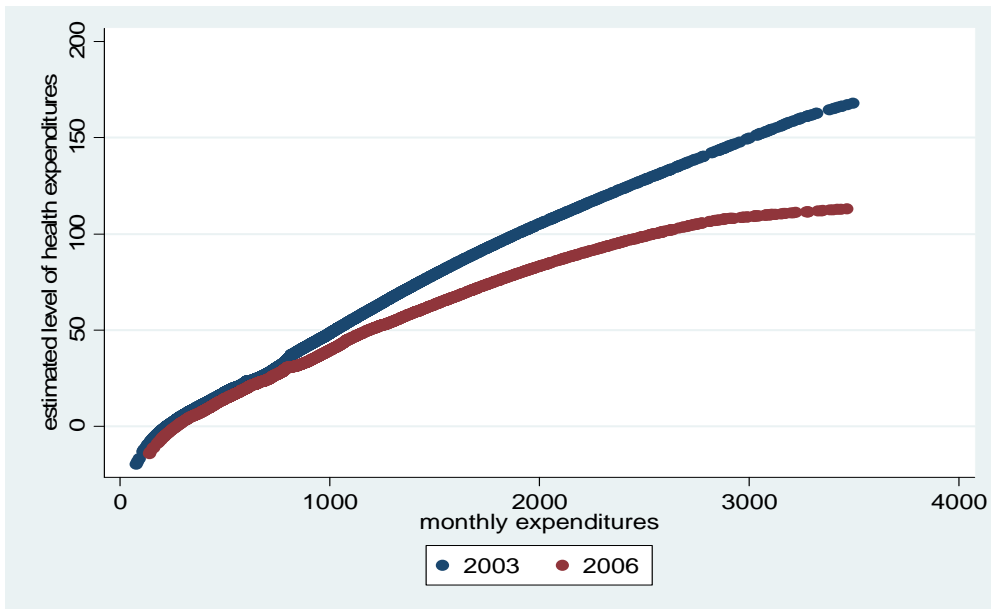


Table 1: Summary Statistics

	Public Insurees	
	2003	2006
Percent of households	57.03	62.61
Percent with non-zero health spending	41	54
Total monthly expenditures-all sample	792	1061
Those with non-zero OOP	909	1143
Total health related expenditures	15	23
Those with non-zero OOP	37	48
Share of health expenditures	0.016	0.019
Those with non-zero OOP	0.038	0.035
HH size	3.61	3.59
HH head male	0.91	0.91
HH head married	0.9	0.91
HH head education-HS	0.35	0.33
HH Head education-Unv	0.14	0.14
Number of elderly	0.24	0.22
Number of children	0.97	0.98
Urban household	0.8	0.77

Table 2: Public Insurance Membership

	Probit: Dummy for Having Public Insurance		
	Marg. Eff.	St. err.	
Year 2006	-0.025	0.008	***
Total expenditures (log)	0.226	0.008	***
HH size	-0.179	0.007	***
HH size squared	0.0035	0.0006	***
HH head male	0.052	0.021	**
HH head married	0.130	0.020	***
HH head education-HS	0.167	0.009	***
HH head education-Unv	0.211	0.013	***
Urban household	0.180	0.008	***
HH head age-< 35	-0.107	0.010	***
HH head age-> 55	0.011	0.011	
Number of elderly	0.025	0.008	***
Number of children	0.070	0.005	***
Constant	-	-	
R_sq	-		
N	34322		

Table 3: Presence of any OOP and Share in All Expenditures

	Probit: Dummy for any Health Exp.			Reg: Share of Health Exp.(only those with non-zero exp.)			Reg: Health Exp.(only those with non-zero exp.)		
	1		***	2		***	3		***
	Marg. Eff.	St. err.		Coeff.	St. err.		Coeff.	St. err.	
Year 2006	0.062	0.010	***	-0.006	0.002	***	-7.4	3.0	**
Total expenditures (log)	0.200	0.009	***	0.009	0.002	***	48.3	4.0	***
HH size	-0.017	0.012		-0.010	0.002	***	-10.8	2.3	***
HH size squared	0.0003	0.0012		0.0006	0.0002	***	0.7	0.2	***
HH head male	-0.042	0.029		0.006	0.006		-0.3	4.2	
HH head married	0.054	0.027	**	-0.007	0.005		1.0	4.1	
HH head education-HS	-0.083	0.011	***	-0.004	0.002	**	-5.13	2.4	**
HH head education-Unv	-0.134	0.014	***	-0.005	0.003	**	0.0	4.1	
Urban household	0.007	0.011		-0.008	0.002	***	-8.2	2.5	***
HH head age-< 35	0.061	0.013	***	0.006	0.002	***	6.1	2.6	**
HH head age-> 55	0.033	0.014	**	0.004	0.003		3.9	3.1	
Number of elderly	0.050	0.010	***	0.007	0.002	***	9.7	2.7	***
Number of children	0.031	0.006	***	0.004	0.001	***	4.3	1.3	***
Constant	-	-		0.007	0.012		-255.9	23.7	***
R_sq	-	-		2.26			8.9		
N	20050			8899			8899		

*, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent, respectively.

Table 4: Presence of any OOP and Share in all Expenditures for Retired

	Probit: Dummy for any Health Exp.			Reg: Share of Health Exp.(only those with non-zero exp.)			Reg: Health Exp.(only those with non-zero exp.)		
	1		***	2		***	3		***
	Marg. Eff.	St. err.		Coeff.	St. err.		Coeff.	St. err.	
Year 2006	0.062	0.023	***	-0.008	0.005	*	-10.0	8.9	
Total expenditures (log)	0.224	0.021	***	0.016	0.005	***	69.2	11.0	***
HH size	-0.027	0.035		-0.009	0.006		-7.6	8.0	
HH size squared	0.0012	0.0043		0.001	0.0007		0.6	0.9	
HH head male	-0.110	0.066	*	0.027	0.010	***	8.4	10.1	
HH head married	0.076	0.052		-0.021	0.011	**	-8.1	7.7	
HH head education-HS	-0.096	0.025	***	-0.002	0.005		-0.58	6.4	
HH head education-Unv	-0.144	0.033	***	-0.007	0.007		-2.6	13.1	
Urban household	0.000	0.027		-0.027	0.008	***	-20.3	8.4	**
HH head age-< 35	-0.315	0.073	**	0.186	0.011	***	105	17.2	***
HH head age-> 55	0.038	0.026		0.005	0.004		5.3	5.5	
Number of elderly	0.046	0.015	***	0.011	0.003	***	16.2	4.6	***
Number of children	0.002	0.024		0.002	0.003		-0.2	4.2	
Constant	-	-		-0.033	0.035		-391	73.3	***
R_sq	-	-		5.76			12.8		
N	3817			1618			1618		