

Financial protection in health in Turkey: the effects of the Health Transformation Programme

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Financial protection should be the principal objective of any health system. Commonly used indicators for financial protection are out-of-pocket (OOP) payments as a share of total health expenditure and the amount of households driven into poverty by catastrophic health expenditures (CHEs). In the last decade, OOP health payments consisted of approximately one-fifth of the health finance resources in Turkey. Until the year 2008, Turkish health system covered different public and private financing programmes as well as different types of service provision. After 2008, universal financial coverage became a part of the Health Transformation Programme (HTP). This study aimed to evaluate the financial protection in health in the era of health reforms in Turkey between 2003 and 2009. Household expenditures were derived from nationally representative Turkish Household Budget Surveys (HBSs), 2003, 2006 and 2009. Proportion of households facing CHE and impoverishment are calculated by using the methodology proposed by Ke Xu. Probability of incurring and volume of OOP spending were assessed across the health insurance groups by two-part model approach using logistic and OLS regression methods. Our findings showed that the probability of incurring and volume of OOP spending increased gradually in publicly insured households between 2003 and 2009. However, there was a diminishing trend in CHE in Turkey during the period under consideration. The official data showing an ~3-fold increase in per capita health care use since 2003 and our study findings on decreasing CHE in this period can be interpreted as positive impact of HTP. On the other hand, increased household consumption as a share of OOP health payment and the deterioration in the progressivity of OOP spending in this period should be monitored closely.

Keywords Turkey, catastrophic health expenditure, Kakwani Progressivity Index, Health Transformation Programme

KEY MESSAGES

- Catastrophic health expenditures (CHEs) showed a declining pattern from 2003 to 2009 in Turkey. CHE was 0.75% (95% CI 0.64, 0.85) in 2003, while it was 0.59% (95% CI 0.43, 0.75) and 0.48% (95% CI 0.34, 0.61) in 2006 and 2009, respectively.
- Increased household consumption as a share of out-of-pocket (OOP) health payment and the deterioration in the progressivity of OOP spending in this period should be monitored closely.

Introduction

In the real world, no health system meets the full cost of health services out of the prepaid and pooled funds collected by tax or insurance contributions. Most of the healthcare systems require some form of co-payment, sometimes of an informal nature, at the time of use (WHO 2005). For 5.6 billion people in low- and middle-income countries, over half of all healthcare expenditure is financed through out-of-pocket (OOP) payments. This forces many families to forgo healthcare services because they cannot afford them. In addition, more than 100 million people around the world are pushed into poverty each year because of catastrophic healthcare expenditures. On the other hand, 'Fairness in financial contribution' is defined by World Health Organization (WHO) to be one of the three intrinsic goals of a health system (WHO 2000).

'Financial protection' is described as how far people are protected from the financial consequences of illness (Wagstaff 2009). Evidence shows that in countries having more nationwide pre-payment mechanisms for health care, financial protection is better and catastrophic expenditure is less frequent. In contrast, catastrophic expenditure is more frequent when health care has to be paid for OOP at the point of service (WHO 2008). Financial equity of a healthcare system can be assessed by the distribution of the financial burden of OOP expenses among households (Castano *et al.* 2002). As opposed to access, health care should be financed according to ability to pay (Daniels *et al.* 2000). This can be interpreted in terms of both vertical equity and horizontal equity. In the case of vertical equity, persons or families of unequal ability to pay make appropriately dissimilar payments for health care. On the other hand, horizontal equity refers to the case that persons or families of the same ability to pay make the same contribution (Wagstaff and Doorslaer 2000). Measuring the progressivity of OOP payments by ranking the population according to their ability to pay is well accepted way of analysis to assess the level of vertical equity (Castano *et al.* 2002; Yu *et al.* 2008).

OOP health payments consisted of approximately one-fifth of the health finance resources in Turkey in the last decade. OOP health expenditure shares in total health expenditure were 18.5% in 2003, 22.0% in 2006 and 17.4% in 2008. The public and private health expenditure shares in GDP were 3.84 and 1.73% in 2003, 3.97 and 1.84% in 2006 and 4.44 and 1.64% in 2008, respectively (Ministry of Health Turkey 2011). A pilot study revealed that the shares of total OOP payments made in the context of public and private providers were 31.7 and 68.3%, respectively, and when OOP payments were broken down by purpose and the public-private status of providers, it was found that 62% of payments made to public-sector providers were formal and 38% were informal (Tatar *et al.* 2007).

Until the year 2008, Turkish health system covered different public and private financing programmes as well as different service provision. After 2008, the financial coverage became universal as a part of the Health Transformation Programme (HTP). The HTP was conceived as a 10-year reform programme covering the period 2003–13. In 2003, the system was a combination of a national health service, providing limited health services free of charge to the population, and a number

of social health insurance schemes covering formal sector workers and their dependents. There was also a social assistance programme (Green Card) for the poor and vulnerable (OECD 2008).

Public financing in Turkey before the universal coverage

- (a) 'Social Insurance Organization' (SIO) provided pension and health services to private sector employees, blue-collar public sector workers and agricultural labourers—and to the dependents of all three groups, covered 47.91% of the population in 2007 (SGK 2007). Health services were primarily funded by premiums, paid by employees and employers. The total SIO premium included 14% of payroll paid by the employee and employer. In addition, within the SIO health system there was a 20% co-payment for outpatient drugs, reduced to 10% for retired beneficiaries. Beneficiaries having chronic diseases were exempted from co-payments (Liu *et al.* 2005).
- (b) 'Bag-Kur' or the 'Social Insurance Agency of Merchants, Artisans and the Self-Employed' covered the self-employed workers which consisted 22.5% of the population. This scheme did not directly provide health services, but contracted with other healthcare providers in the public and some private sectors. Reimbursement levels were varied by type of provider. Drug purchases generally required a 20% co-payment from active members and a 10% co-payment from retired members (Liu *et al.* 2005).
- (c) 'The Government Employees Retirement Fund' (GERF) was a combined pension and health insurance fund covering 15.05% of the population in 2007 (SGK 2007). GERF covered inpatient and outpatient health services where a 10% drug and prostheses co-payment applied for non-exempted services. Hospital accommodation may have been based on an individual's grade within the civil service. Like 'Bag-Kur', GERF did not operate health facilities, but contracted with public and some private institutions (Liu *et al.* 2005).
- (d) 'Green Card programme': In 1992, the government introduced the Green Card programme. The objective of the Green Card programme was to provide health benefits to the poor and vulnerable who were incapable of paying for health services. Total number of Green Card holders was more than 14 million in 2007 (SGK 2007; OECD 2008).

Private financing

In the case of Hungary, Switzerland, Turkey and, in particular, Mexico, private financing plays the important role (Orosz and Morgan 2004). The private sector comprises private insurance, private household OOP spending, non-profit institutions and corporations. OOP spending forms 65% of private funding sources in Turkey. Among the OECD countries, it ranges from 35% in the Netherlands to 93% in Mexico (WHO 2012).

- (a) 'Private insurance': Private health insurance has strong potential in Turkey, but currently is limited to ~1% of the population. Private health insurance was permitted in

Turkey starting in the 1990s (Liu *et al.* 2005). Private insurance policies vary, but typically include a 20% co-payment for outpatient and maternity services and drugs.

- (b) Household 'OOP expenditure' on health comprises cost-sharing, self-medication and other expenditure paid directly by private households, irrespective of whether the contact with the healthcare system was established on referral or on the patient's own initiative (OECD 2011a).

Health coverage and health financing reforms in Turkey under the HTP from 2003 to the universal coverage in 2008

Several reforms have been implemented to harmonize health benefits across the different health insurance schemes, and Green Card holders. In 2005, Green Card holders were given access to outpatient care and pharmaceuticals. With this implementation, Green Card holders were given access to the same benefits as SIO, Bag-Kur and GERF enrollees. The objective of this reform was to enhance financial protection and access to care for Green Card holders. Also in 2005, SIO beneficiaries were given access to all public hospitals and pharmacies. In 2007, the New Health Budget Law (SUT) was adopted. According to SUT, the referral requirement from MoH hospital to university hospitals was removed for SIO and Bag-Kur so the beneficiaries of these insurance schemes can access directly the university hospitals. With these changes, the benefits of SIO and Bag-Kur beneficiaries were improved to the level of GERF. The operationalization of the Social Security and Universal Health Insurance (UHI) Law, in 2008, has completed the harmonization of the benefits package; Green Card holders have now formally joined UHI and received the same benefits package that other beneficiaries had been receiving since the July 2007 Health Budget Law (OECD 2008).

In this study, we aimed to evaluate the financial protection in health and probable effects of new policies on the OOP expenditures in the era of health reforms in Turkey between 2003 and 2009. There are very few studies on different facets of OOP payments in Turkey (Tatar *et al.* 2007; Ozgen *et al.* 2010; Yardim *et al.* 2010; Erus and Aktakke 2012). Financial protection measures were estimated only in one study using cross-sectional 2006 Household Budget Survey (HBS) (Yardim *et al.* 2010). Therefore, we hope that this study will be an important contribution to the literature on the assessment of the insurance component of a health reform process in an upper-middle income country.

Data and variables

In this study, household expenditures were derived from nationally representative Turkish HBSs, 2003, 2006 and 2009. These surveys are compatible with HBSs of EuroStat. HBS-2003 was conducted on a total of 2160 monthly and 25 920 annually sampled households. The 2006 survey was conducted on a total of 720 monthly and 8640 annually sampled households. In 2009 HBS, sample size was increased to 12 600 households by using a sample frame determined from National Address Database established in 2007. All these surveys were conducted

Table 1 CPI values for all and health expenditure items across the HBS years in Turkey

Years	Medical products	Outpatient	Inpatient	All items
2003	100.0	100.0	100.0	100.0
2006	89.2	141.4	151.5	128.8
2009	96.3	154.1	157.4	164.3

between 1 January and 31 December for each year. The number of households for which the surveys were valid were 25 764 for 2003, 8558 for 2006 and 10 046 for 2009.

In HBSs, all purchases of the households are written in a diary by the literate members of the household. These diaries are transferred to the questionnaire by compiling at the end of the survey month. Each interviewer records the data on consumption expenditures and income of six sample households as a result of eight visits in a month including one visit prior to the survey month, twice during the first and second weeks, once during third and fourth weeks and once following the end of the survey month. The final consumption expenditure of households encompasses all domestic costs (by residents and non-residents) for individual needs. Among other things, it includes expenditure on goods and services, the consumption of garden produce and rent for owner-occupied dwellings (EuroStat 2011).

During the visits in the survey month, all consumption expenditures of the sample household including health are obtained through the diaries and interviewing method.

Consumption expenditures in Turkish HBS are also classified according to EuroStat classification schema—the Classification of Individual Consumption by Purpose-HBS (COICOP-HBS) (TurkStat 2010b). There are three main categories for the health expenditures in the COICOP-HBS: medical products, appliances and equipment. In this article, we prefer to refer to this category as 'medical products'. Other two categories are 'outpatient services' (medical, dental and paramedical services) and hospital services. We will refer to these two categories as 'outpatient' and 'inpatient', respectively.

One important point is that Turkish MoH had started its HTP by a declaration in December 2003 (Baris *et al.* 2011). First policies were put into practice in 2004. So that 2003 Health Budget Survey data belong to the pre-HTP period.

The year 2003 is the base year for Turkey consumer price index (CPI). All monetary values were deflated to related base year values by using either CPI for all items CPI for medical products, appliances and equipment CPI for outpatient services or CPI for inpatient services (TurkStat 2011). These index values are shown in Table 1. For the one who wishes to compare the consumptions internationally, purchasing power parity for actual individual consumption was 0.714646 for Turkish Lira in 2003 which means that ~72 TL was equal to 100 PPP US dollars (OECD 2011b).

Methods

Proportion of households facing catastrophic health expenditure (CHE) and impoverishment are calculated by using the methodology proposed by Ke Xu (Xu 2005). All variables related to

expenditure are provided to be in a monthly figure. 'OOP health payments' refer to the payments made by households at the point they receive health services and are net of any insurance reimbursement. A household whose OOP health payments exceed 40% of its capacity to pay (CTP) (total spending minus estimated subsistence need) is said to incur 'catastrophic spending'. Reported consumption expenditure is used to measure a household's CTP. 'CTP' is considered as the household's non-subsistence spending. Considering the economy of scale of household consumption, the household equivalence scale was used rather than actual household size. A formula ($\beta^{0.56}$) was used to estimate the equivalence scale, where β is the household size. A poverty line was used in the analysis as subsistence spending. This poverty line was defined as the food expenditure of the household whose food expenditure share of total household expenditure was at the 50th percentile in the country. To minimize measurement error, we used the average food expenditures of households whose food expenditure share of total household expenditure was within the 45th and 55th percentiles of the total sample (Xu *et al.* 2003, 2007; Xu 2005). The actual poverty lines (subsistence expenditure per capita) were 93.72 TL, 140.11 TL, 183.74 TL for 2003, 2006 and 2009, respectively. Progressivity of OOP payments and the sub-components were measured in Kakwani's progressivity index (KPI) by using DAD4.6 Distributive Analysis software (Duclos *et al.* 2006).

'Two-part model approach' was used in the analysis of the determinants of the OOP health expenditures. The two-part model is usually estimated by a logit or probit model for the probability of observing a positive value of y , along with OLS on the sub-sample of positive observations. This methodology is an appropriate way of dealing with health expenditure data. This is because not every individual gets sick (typically only a small proportion does) and not every sick individual obtains treatment or incurs OOP treatment expenses (Jones 2000; Heard and Mahal 2010). In our analysis, specifically, the first part involved estimating equation

$$Z_i = X_i\beta \quad Z_i = 1 \text{ (if } O_i > 0) \text{ and } Z_i = 0 \text{ (if } O_i = 0). \quad (1)$$

In the Equation (1), O_i referred to OOP spending on health care and X_i was a vector of explanatory variables including expenditure quintiles, demographic data and insurance schemes. The second part involved estimating Equation (2) for only observations with expenditure exceeding zero:

$$nO_i = X_i\beta \quad (2)$$

The regression models were applied to pooled data from all the surveys with survey year as a dummy variable to determine if there was a significant difference between the results before and after the financial health reform stages implemented in Turkey. The analyses were undertaken firstly using restricted (full) models on the total pooled sample. Then, unrestricted models for each health insurance type were estimated (household head's insurance type was taken as a proxy for the household). The null hypothesis that the regression coefficients are the same for each health insurance group was assessed by Chow test. The intercepts were allowed to differ under the null

hypothesis by including the insurance type variable into the full models (Wooldridge 2006).

SPSS 15.0 was used and sampling weights were taken into account in all analyses. Concentration curve graphics were drawn by DAD 4.6 Distributive Analysis Software (Duclos *et al.* 2006). Although in the literature Lorenz curves are commonly called concentration curves for magnitudes other than income or wealth (Reinhardt 2009), in our study we preferred to call them Lorenz curves for capacity/ability to pay. All values in the analyses were monthly figures.

Results

In Table 2, descriptive analysis of household characteristics has been shown. Proportion of households with heads having no health insurance has fallen gradually from 26.6% in 2003 to 10.8% in 2009. Ratio of Green Card holders increased steeply during the period 2003–6, but then it showed a steady state during the period 2006–9. For all of the study years, approximately one-third of the households had at least one preschool aged child; in one-fifth of the households, there was at least one elderly (65 years old and over) person; two-thirds of the households settled in urban areas; one in ten household heads had tertiary education level. Average household size showed mild decrease along the survey years (from 4.1 in 2003 to 3.8 in 2009). Average CTP in parallel with average monthly expenditure has shown a gradual increase in these periods. OOP healthcare expenditure share in CTP increased slightly. Average OOP expenditure in households that incurred OOP spending (non-zero households) also showed a slight and gradual increase. On the other hand, probability of incurring any OOP spending increased sharply from 41.9% in 2003 to 59.8% in 2009.

In Figure 1, lines belonging to different years imply monthly monetary values of OOP in 2003 Turkish liras (TL) across the expenditure quintiles. In all three survey years, richest quintile has spent ~6 to 14-folds more on health care than the poorest quintile. For each expenditure, quintile OOP spending was lowest in 2003 and highest in 2009. OOP share in CTP has shown a steep, gradual increase along the survey years in the poorest quintile, in spite of a slight decrease in the richest. OOP share in CTP has shown a slight but gradual increase across the survey years in the total population.

Figure 2 shows OOP share in CTP along the health insurance schemes. A gradual increase has been seen in public insurance scheme; in contrast, private and non-insured groups have shown a gradual decrease during the period 2003–9. In Green Card group, OOP shares have shown fluctuation as it is seen a significant decrease in 2006 was followed by the same amount increase in 2009.

Figures 3 and 4 show OOP health spending components in expenditure quintiles and insurance groups, respectively. In the poorest fifth, real spending on medical products increased ~2-fold between the survey years, but the share of the medical products in the total OOP spending stayed fixed at ~70%. There was a marked difference between the poorest and richest fifths concerning the shares of OOP health spending components. In the richest quintile, medical products consisted of relatively small part of the total OOP and the shares of outpatient and

Table 2 Descriptives of household characteristics according to data years

Socio-demographic characteristics	Years		
	2003 % (SE)	2006 % (SE)	2009 % (SE)
Health insurance type of HH head			
Public	69.7 (0.3)	74.6 (0.5)	77.8 (0.4)
Private	0.8 (0.1)	0.7 (0.1)	1.2 (0.1)
Green Card	2.9 (0.1)	10.0 (0.3)	10.1 (0.3)
Non-insured	26.6 (0.3)	14.7 (0.4)	10.8 (0.3)
Having preschool aged child	31.8 (0.3)	31.7 (0.5)	30.7 (0.5)
Having elderly	19.4 (0.2)	18.5 (0.4)	20.4 (0.4)
Settlement			
Urban	63.8 (0.3)	64.4 (0.5)	71.4 (0.5)
Rural	36.2 (0.3)	35.6 (0.5)	28.6 (0.5)
Education of HH head			
Primary	62.9 (0.3)	64.6 (0.5)	61.4 (0.5)
Secondary	27.5 (0.3)	26.7 (0.5)	27.4 (0.5)
Tertiary	9.6 (0.2)	8.7 (0.3)	11.2 (0.3)
Average household size	4.13 (0.01)	4.08 (0.02)	3.83 (0.02)
Households incurred in OOP spending in the last month	41.9 (0.3)	54.5 (0.5)	59.8 (0.5)
Expenditure characteristics			
	Mean (SE)	Mean (SE)	Mean (SE)
Total monthly expenditure per household (TL) ^a	738.34 (4.40)	951.10 (8.03)	1027.09 (7.60)
CTP per household (TL) ^a	577.01 (4.30)	766.68 (7.78)	845.99 (7.36)
OOP expenditure per household (TL) ^a	16.44 (0.51)	23.14 (1.08)	25.86 (0.83)
OOP share in CTP (%)	2.85	3.02	3.06
Mean OOP expenditure in non-zero households (TL) ^a	39.28 (1.18)	42.49 (1.94)	43.23 (1.34)

^aMonthly expenditures based 2003 real prices.

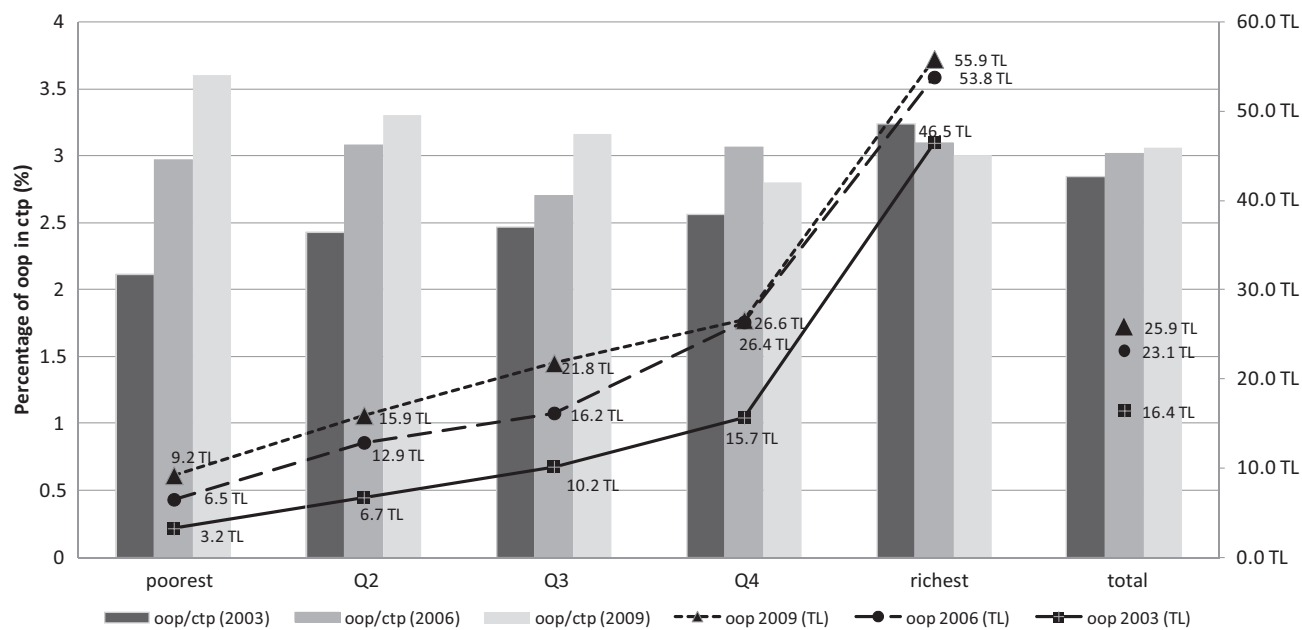


Figure 1 OOP health expenditure shares of households in CTP and monthly monetary values (deflated to 2003 TL) across the expenditure quintiles (1 PPP\$ = 0.72 TL for 2003).

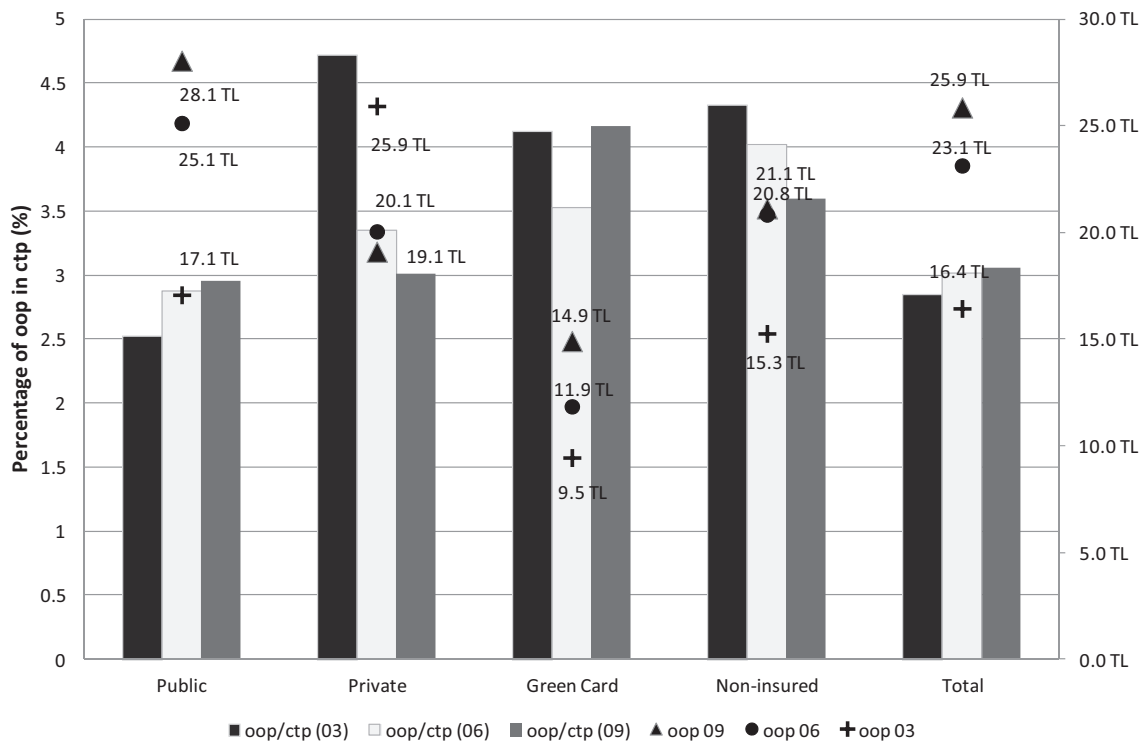


Figure 2 OOP health expenditure shares of households in CTP and monthly monetary values (deflated to 2003 TL) across the health insurance schemes (1 PPP\$ = 0.72 TL for 2003).

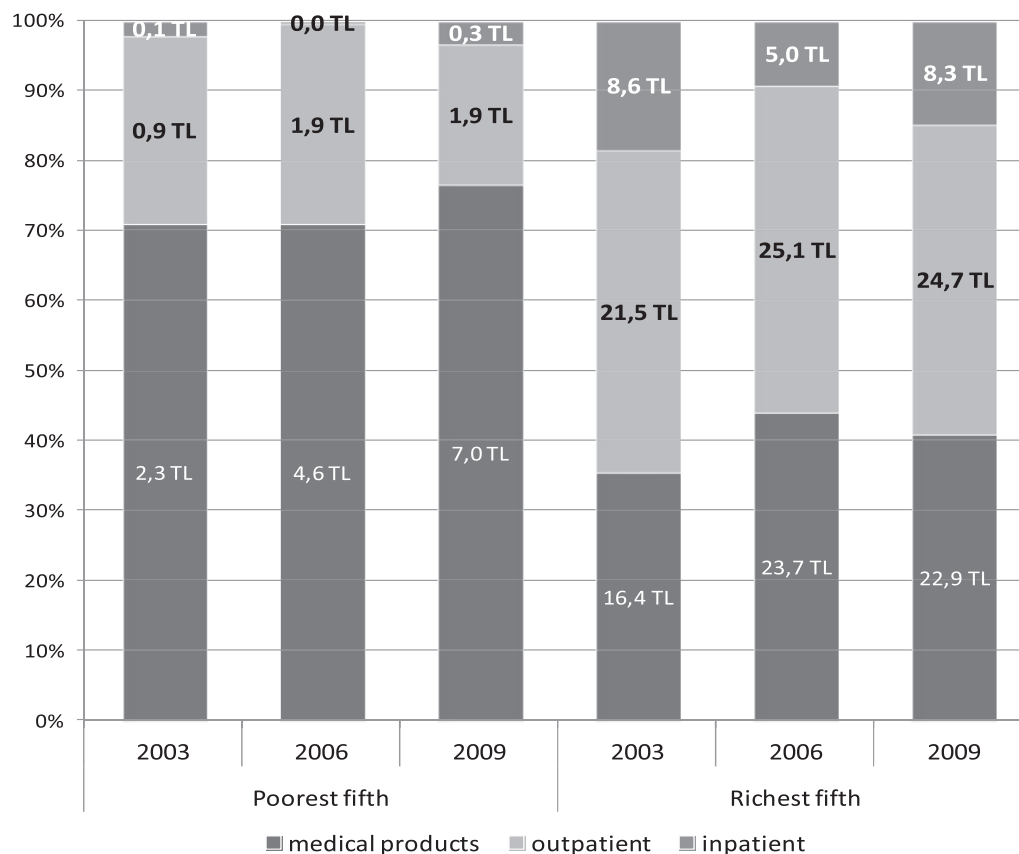


Figure 3 Monetary (monthly real values of 2003) and per cent values of components of OOP health expenditure of households according to poorest and richest fifths in the study years.

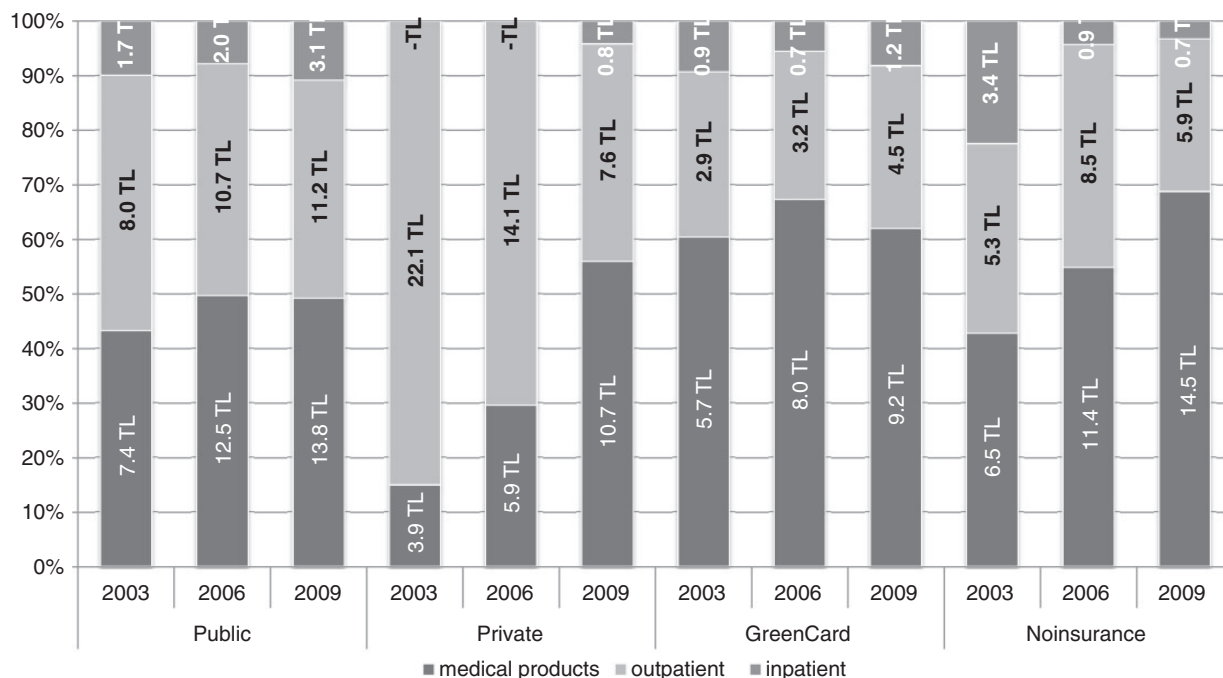


Figure 4 Monetary (monthly real values of 2003) and per cent values of components of OOP health expenditure of households across the health insurance schemes.

inpatient care were much higher than corresponding components in the poorest quintile. Components of OOP spending also showed different distributional pattern across the insurance groups (Figure 4). The share of medical products was generally higher in the Green Card beneficiaries. Medical product component showed gradual and sharp increase in the privately insured and non-insured groups along the survey years.

KPI values for OOP expenditures are shown in Table 3. Distribution of OOP health payments showed mild progressivity in 2003 (KPI: 0.079) which means that the burden of OOP payments was on the shoulder of richest households. However, the progressivity of OOP payments did not continue in 2006 and 2009. Considering the standard errors, KPI values of these years implied proportional distribution. Diminishing trend in the progressivity of OOP across the years of 2003, 2006 and 2009 can be seen graphically in Figure 5. In graphical presentation, OOP shows a regressive pattern in 2009. In Figure 6, the subcomponents of OOP expenditures are shown. Expenditures for medical products show a gradual regressive pattern along the years of surveys. KPI values for the subcomponents are shown in Table 3. The regressivity of medical product expenditures was statistically significant in 2009.

Table 4 shows probability and volume of OOP health expenditures according to some characteristics of households and survey years. Values are the results of univariate analysis assessing each variable separately in the data set. Confounding factors and interactions between variables have not been taken into account in these analyses. As it is seen in Table 4, probability and volume of the OOP spending of the households increased gradually between 2003 and 2009 in Turkey. The

Table 3 Progressivity indices for OOP expenditures (Turkey HBSs)

	Gini Index of CTP (G) (SE)	Concentration Index (C) (SE)	KPI ^a (C-G) (SE)
2003	0.479 (0.005)		
OOP		0.558 (0.017)	0.079 (0.017)
Medical products		0.447 (0.018)	-0.031 (0.018)
Outpatient		0.597 (0.020)	0.118 (0.019)
Inpatient		0.798 (0.043)	0.319 (0.043)
2006	0.425 (0.005)		
OOP		0.434 (0.026)	0.009 (0.025)
Medical products		0.348 (0.049)	-0.077 (0.048)
Outpatient		0.507 (0.026)	0.082 (0.026)
Inpatient		0.625 (0.064)	0.200 (0.064)
2009	0.412 (0.004)		
OOP		0.384 (0.022)	-0.028 (0.021)
Medical products		0.257 (0.022)	-0.156 (0.022)
Outpatient		0.479 (0.022)	0.067 (0.022)
Inpatient		0.653 (0.085)	0.241 (0.085)

^aKPI values that are statistically different from zero are highlighted in bold.

increase was much higher in the probability of incurring OOP spending than the volume of the spending.

Logistic regressions for the probability of incurring OOP health spending across the health insurance groups are displayed in Table 5. Highly significant Chow test value

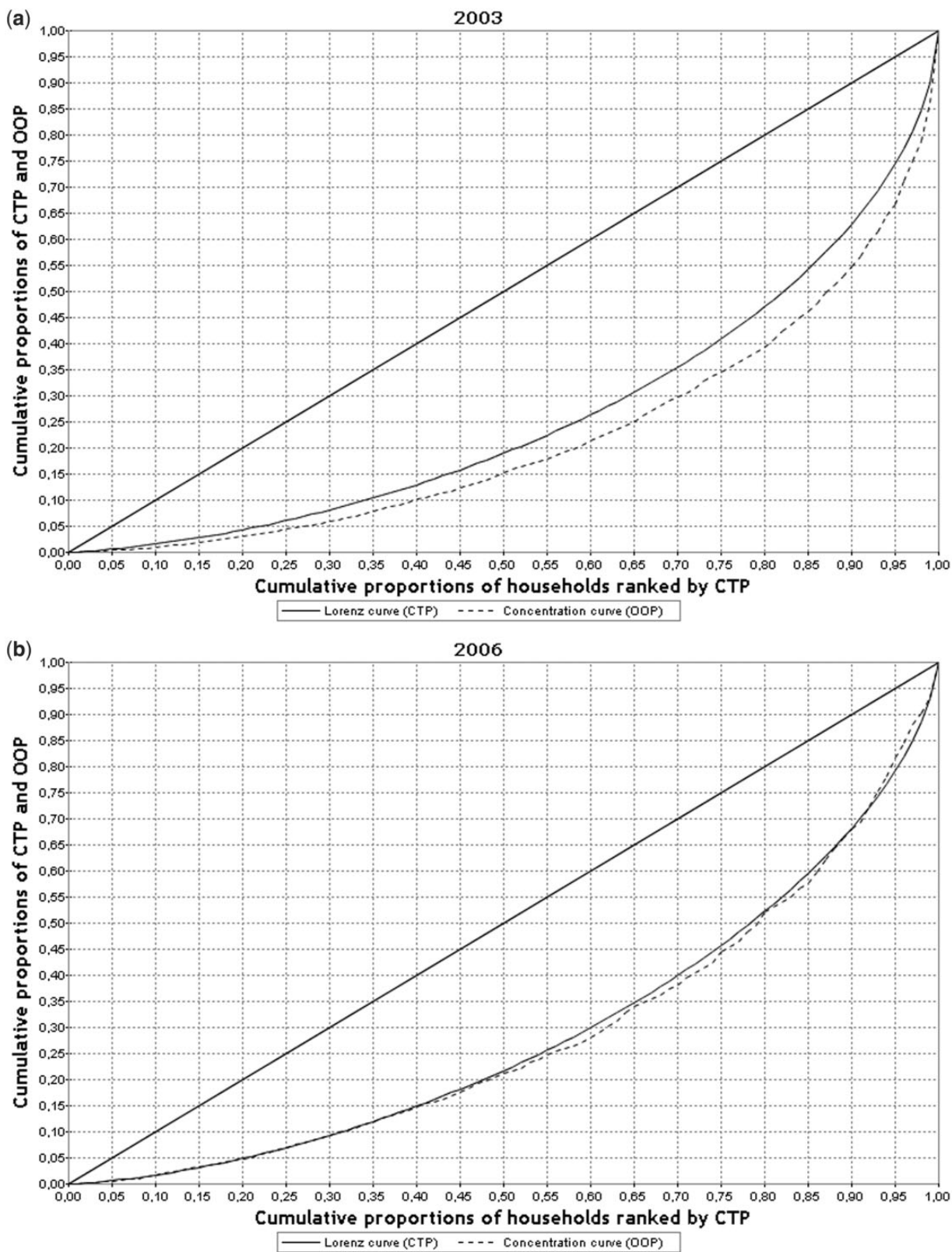


Figure 5 Lorenz curve of CTP and concentration curve of OOP expenditure: (a) 2003, (b) 2006 and (c) 2009.

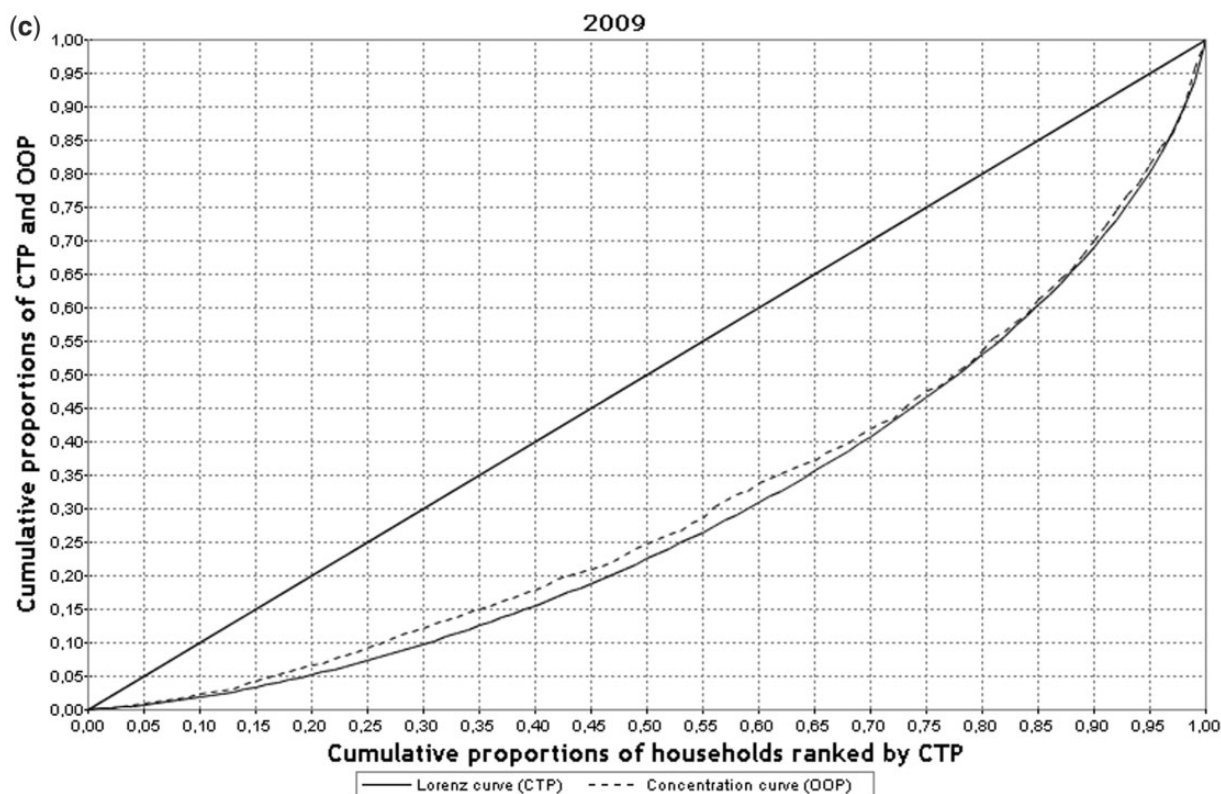


Figure 5 Continued.

indicates that the coefficients of the independent variables are not identical across the insurance groups. Probability of incurring OOP spending was low in 2003 compared with 2006 reference group in all insurance groups. This finding indicates that households were more likely to incur OOP spending in 2006 than 2003. However, in the period 2006–9, only the households in the public insurance and Green Card groups were more likely to incur OOP spending. Household size and having elderly in the household were the determinants that increased the probability of incurring OOP spending in every insurance group. Having preschool aged child has increased the probability of incurring OOP spending in all groups except the privately insured. Rural settlement had only a slight effect solely in the publicly insured group. Probability of incurring OOP spending has been raised from the poorest to the richest along the expenditure quintiles in all groups except the privately insured.

Table 6 shows the results of linear regression analysis of the OOP health spending in non-zero (incurred OOP in the last month) households across the health insurance groups. Statistically significant Chow test value also justifies the separate analysis for each insurance group instead of a full model. Because the dependent variable is in a natural logarithm form in the model, the coefficients of the independent variables can be interpreted as per cent changes according to the reference groups. Non-zero households in publicly insured group spent ~35.6% less in 2003 and 19.8% more in 2009 compared with 2006, the reference survey year. This same pattern was also statistically significant in the non-insured

group. The Green Card beneficiaries spent less in 2003, but the increase in 2009 compared with 2006 was not significant. Privately insured group showed no statistically significant difference between the survey years. Having preschool aged child was the determinant of high volume of OOP spending in all insurance groups. On the other hand, having elderly individuals in the household, living in rural area and having primary or secondary education showed varied effects on spending among these groups. Being in the expenditure quintiles other than poorest had gradual increasing effect on the volume of OOP spending.

Proportion of poor households and proportion of households facing catastrophe and impoverishment are shown in Table 7 according to expenditure quintiles and health insurance schemes. CHEs showed a declining pattern from 2003 to 2009. CHE was 0.75% (95% CI 0.64, 0.85) in 2003, while it was 0.59% (95% CI 0.43, 0.75) and 0.48% (95% CI 0.34, 0.61) in 2006 and 2009, respectively. The difference in the proportion of households with CHE between 2003 and 2009 was statistically significant when the confidence intervals have been taken into account. Proportion of impoverished households showed no statistically significant deterioration or improvement in these periods.

Discussion

Financial protection should be the principal objective of any health system. It refers to how far people are protected from the

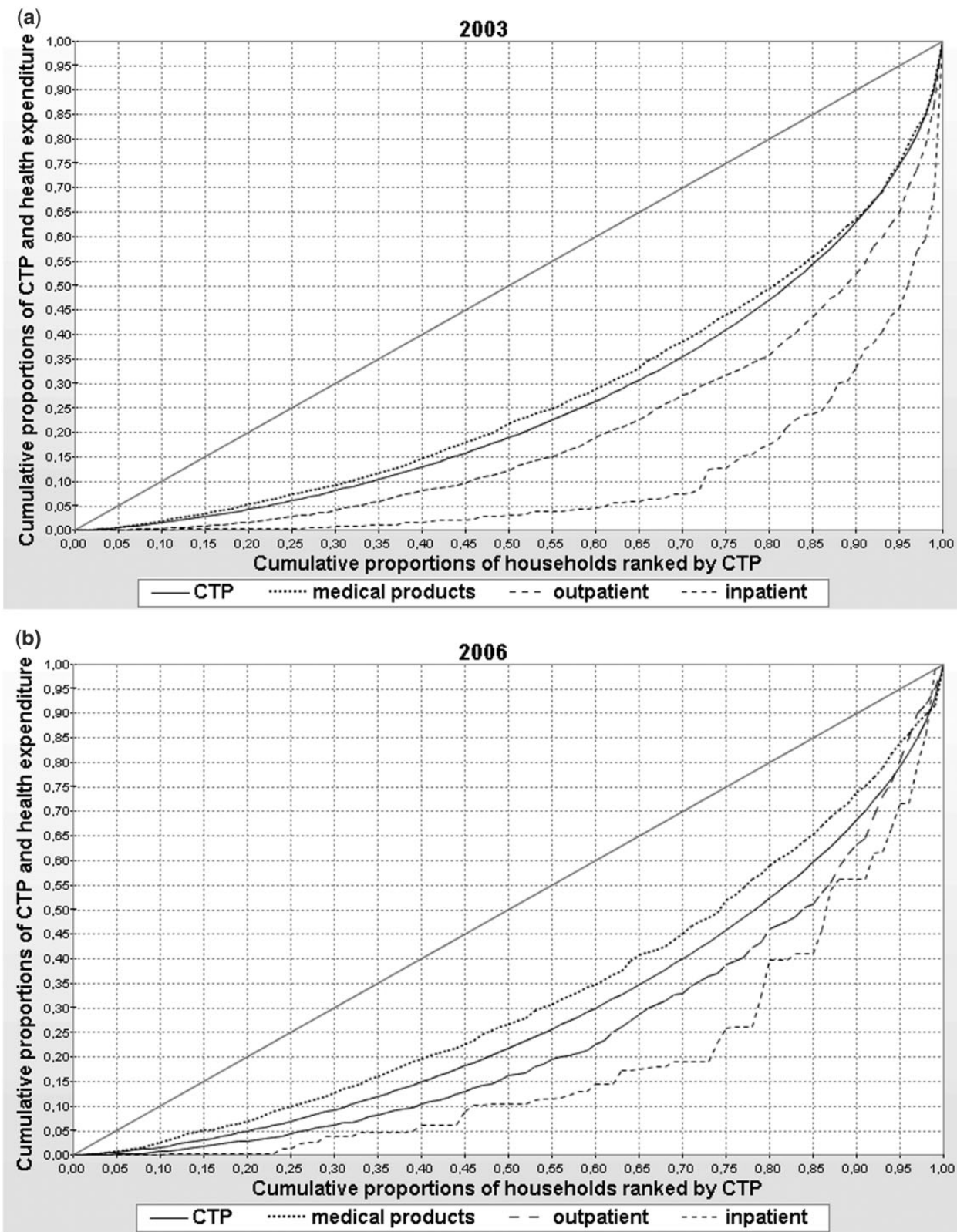


Figure 6 Lorenz curve of CTP and concentration curves of OOP expenditure components: (a) 2003, (b) 2006 and (c) 2009.

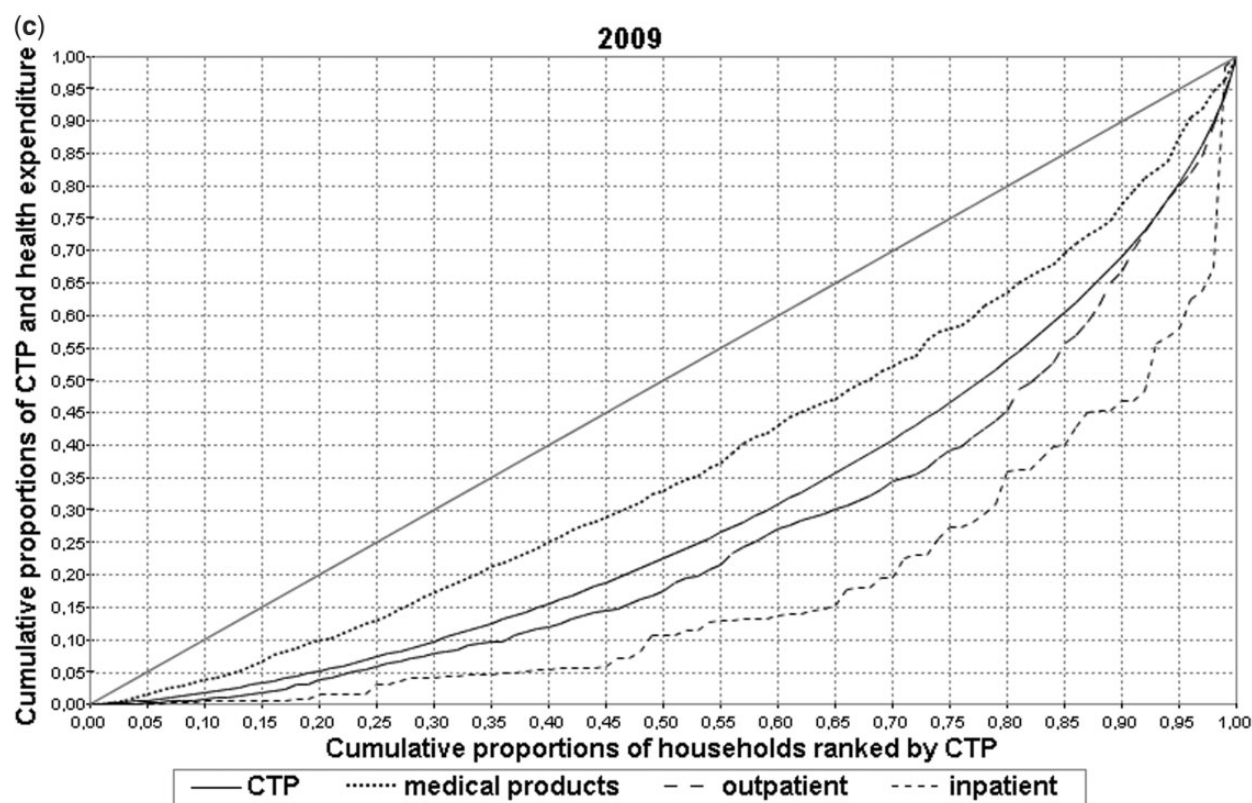


Figure 6 Continued.

financial consequences of illnesses. Commonly used indicators for financial protection are OOP payments as a share of total health expenditure; OOP spending as a share of household consumption (sometimes non-subsistence expenditure as we have used in our analysis) by income classes; and the percentage of households driven into poverty by catastrophic expenses (OECD 2008).

The pioneering countries of social health protection, such as Germany, Luxembourg, Belgium, France and the UK, are high-income countries with universal coverage and effective access to health services. In these countries, premium-based social health insurance and the tax-based National Health Service are the main health financing mechanisms. Private for profit insurance makes up only a small share of health expenditure and the OOP share is ~10% of total health expenditure for these countries (Thomson *et al.* 2009). But, when we look at the World figures of 2010, 32 of the 150 countries (populated countries, such as Iran, Egypt and India among them), 50% and more of the total expenditure on health is borne by OOP (WHO 2012).

In Turkey, OOP expenditures consist of ~1.5% of GDP and 20% of total health expenditure (OECD 2009; TurkStat 2010a). These proportions are more or less closer to the OOP shares of GDP and total health expenditures of many OECD welfare economies.

Our study showed that, after 2003, there was a diminishing trend in CHEs in Turkey. Besides, the proportion of households facing CHE was quite similar to many developed European

countries' values (Xu *et al.* 2003). Impoverishment due to catastrophic healthcare expenditure was low and showed a decreasing pattern. However, a remarkable deterioration in the progressivity of OOP spending during this period needs an explanation. From the progressivity analysis, we saw that medical product component was the main contributor for this deterioration. The progressivity of outpatient OOP expenditures for 2003 and 2009 was found significantly different. Progressivity of outpatient component was much smaller in 2009 than 2003. Hence, one explanation for the situation can be attributed to the provider-induced demand due to expanded insurance coverage. We know that physicians' recommendations about some services might have varied based on the physicians' knowledge of patients' health insurance coverage and the relevant reimbursement policies (Phillips *et al.* 1998). This phenomenon might result in the providers recommending more services to the insured poor, either for maximizing their performance-based income or for giving the best service as an agent of the patient. Therefore, the poor households were obliged to spend more OOP due to physician-induced demand. In addition, several robust studies revealed that the health insurance could increase financial risk by encouraging people to seek care when sick and to seek care from higher-level providers (Ekman 2007; Wagstaff and Lindelow 2008).

Nevertheless, OOP burden was not significantly regressive in Turkey. In most European OECD countries and USA, the analysis of progressivity using the Kakwani index has revealed

Table 4 Per cent of households that incurred OOP expenditure and average OOP expenditures in non-zero households according to some characteristics of households and survey years

	Per cent of households incurring OOP spending			Mean OOP expenditures in non-zero households in the last month		
	2003 % (SE)	2006 % (SE)	2009 % (SE)	2003 TL ^a (SE)	2006 TL ^a (SE)	2009 TL ^a (SE)
Total	41.9 (0.3)	54.5 (0.5)	59.8 (0.5)	39.28 (1.18)	42.49 (1.94)	43.23 (1.34)
Expenditure quintiles						
Q1	29.5 (0.6)	39.5 (1.2)	49.6 (1.1)	10.96 (0.48)	16.43 (0.92)	18.55 (0.87)
Q2	36.7 (0.7)	52.3 (1.2)	57.5 (1.1)	18.53 (0.72)	24.61 (1.30)	27.66 (1.22)
Q3	42.2 (0.7)	54.4 (1.2)	62.2 (1.1)	24.06 (0.86)	29.74 (1.71)	34.97 (1.63)
Q4	47.8 (0.7)	60.6 (1.2)	65.1 (1.1)	32.74 (1.16)	43.50 (2.09)	40.87 (2.30)
Q5	53.5 (0.7)	65.6 (1.2)	64.7 (1.1)	86.86 (4.28)	82.07 (7.44)	86.34 (5.17)
Health insurance type of HH head						
Public	42.5 (3.7)	56.2 (0.6)	61.1 (0.6)	40.19 (1.21)	44.68 (2.43)	45.93 (1.54)
Private	44.1 (3.5)	59.1 (6.4)	64.2 (4.3)	58.84 (19.10)	33.93 (28.22)	29.73 (4.79)
Green Card	40.5 (1.8)	46.8 (1.7)	59.0 (1.5)	23.31 (2.30)	25.35 (2.44)	25.26 (2.57)
No insurance	40.3 (0.5)	50.5 (1.4)	51.0 (1.5)	37.94 (2.11)	41.31 (2.86)	41.41 (4.83)
Having preschool aged child						
No	40.7 (0.3)	53.1 (0.7)	58.3 (0.6)	38.83 (1.25)	44.69 (2.70)	43.78 (1.78)
Yes	44.4 (0.5)	57.5 (0.9)	63.3 (0.9)	40.17 (2.50)	38.12 (2.13)	42.09 (1.80)
Having elderly						
No	40.9 (0.3)	53.0 (0.6)	58.1 (0.5)	38.11 (1.35)	40.94 (2.29)	42.35 (1.43)
Yes	46.0 (0.7)	60.9 (1.2)	66.5 (1.0)	43.63 (2.45)	48.39 (3.25)	46.26 (3.30)
Settlement						
Urban	43.9 (0.4)	56.2 (0.7)	60.3 (0.6)	41.08 (1.25)	45.57 (2.69)	44.91 (1.59)
Rural	38.2 (0.5)	51.4 (0.9)	58.5 (0.9)	35.65 (2.52)	36.37 (2.18)	38.92 (2.44)
Education of HH head						
Primary	41.8 (0.4)	54.8 (0.7)	59.9 (0.6)	31.84 (1.43)	37.93 (2.55)	38.16 (1.68)
Secondary	41.0 (0.6)	53.4 (1.0)	59.4 (0.9)	40.50 (1.78)	45.65 (2.66)	43.66 (2.10)
Tertiary	45.1 (1.0)	55.5 (1.8)	60.5 (1.5)	81.52 (5.62)	66.56 (8.02)	69.64 (5.38)

^a2003 real values.

that OOP payment is regressive (De Graeve and Van Ourti 2003). Several studies have shown that in developing countries, all families, including the poor, spend a high share of their budget on OOP health spending (Makinen *et al.* 2000; Leive and Xu 2008). The regressivity of OOP spending is related to the degree to which populations are covered by pre-paid insurance schemes. A study of pre-reform health financing in Mexico using Kakwani indices found that overall the system is close to neutral, OOP spending is regressive and other sources of finance tend to be somewhat progressive (Murray *et al.* 2003). In our study, we found that OOP payment was progressive in 2003 but it was proportional in 2006 and mildly regressive in 2009 in Turkey.

World Health Report 2008 described three dimensions for the expansion of the universal health coverage. The breadth of the coverage implies expanding the health insurance to encompass the uninsured. The depth of the coverage asks which benefits are covered and the height of the coverage asks what proportion of the cost is covered (WHO 2008). In the period 2003–6, expanding the breadth dimension of the universal insurance had dominance in the health reform activities in Turkey. During the period 2006–9, we saw the arrangements in

the health insurance schemes targeted to expand the depth of the universal insurance coverage (OECD 2008; Yasar 2011).

Our findings on the increase of the probability of incurring OOP spending for the public and the Green Card insurees in the period 2006–9 can be inferred as an evidence of the impact of health reform policies. For the former period, 2003–6, it is hard to make any judgement because of the possible self-selection matter for the Green Card insurees. People in more health care need would have admitted Green Card Programme, due to the new control mechanism, more frequently and as a result, they would have utilized more services than people in less need would. Households with Green Card insurance increased from 2.9 to 10.0% during this period. On the other hand, proportion of households with Green Card insurance did not change in the period 2006–9 (10.0% in 2006 and 10.1% in 2009).

According to the Ministry of Health data, outpatient healthcare visits per capita increased from 2.9 in 2002 to 5.3 in 2006 and 7.6 in 2009 (Ministry of Health Turkey 2011). In other research focusing on the impact of healthcare reforms on public insurees in Turkey during the period 2003–6, Erus and Aktakke showed that OOP share in total household expenditure decreased from 3.7% in 2003 to 3.4% in 2006 in the public

Table 5 Logistic regressions for the probability of incurring OOP health spending across the health insurance groups

	Dependent variable: incurring OOP in the last month (incur_oop = 1)			
	Publicly insured <i>N</i> = 32 104 Odds ratio	Privately insured <i>N</i> = 391 Odds ratio	Green Card <i>N</i> = 2926 Odds ratio	Non-insured <i>N</i> = 8947 Odds ratio
Years				
2003	0.555***	0.448**	0.768**	0.656***
2006	1.00	1.00	1.00	1.00
2009	1.256***	1.174	1.712***	1.057
Expenditure quintiles				
Q1	1.00	1.00	1.00	1.00
Q2	1.594***	1.135	1.692***	1.641***
Q3	2.010***	0.824	2.058***	2.523***
Q4	2.664***	1.467	3.300***	3.252***
Q5	3.375***	1.888*	2.317**	4.517***
Household size (cont.)	1.097***	1.125*	1.039**	1.066***
Having preschool aged child				
No	1.00	1.00	1.00	1.00
Yes	1.315***	1.434	1.314***	1.283***
Having elderly				
No	1.00	1.00	1.00	1.00
Yes	1.519***	1.732**	1.307***	1.448***
Settlement				
Urban	1.00	1.00	1.00	1.00
Rural	0.941*	0.974	1.040	1.035
Constant	0.363***	0.734	0.459***	0.374***
	Model chi-square: 2125.083	Model chi-square: 26.561	Model chi-square: 143.168	Model chi-square: 612.866
	Model <i>P</i> -value: 0.000	Model <i>P</i> -value: 0.003	Model <i>P</i> -value: 0.000	Model <i>P</i> -value: 0.000
	−2 log likelihood: 42449.590	−2 log likelihood: 500.533	−2 log likelihood: 3491.819	−2 log likelihood: 11969.901
	Nagelkerke <i>R</i> ² : 0.085	Nagelkerke <i>R</i> ² : 0.090	Nagelkerke <i>R</i> ² : 0.071	Nagelkerke <i>R</i> ² : 0.086
	Likelihood ratio Chow test: LR chi-square = 89.416; df = 27; <i>P</i> -value = 0.0000			

P* < 0.10; *P* < 0.05; ****P* < 0.01.

insuree group that had non-zero OOP spending (Erus and Aktakke 2012). Conversely, the share of OOP spending in total expenditure increased among total public insuree population (households that had either zero or non-zero health expenditures) in this period (from 1.5 to 1.8%, respectively) which implied that more households incurred OOP spending with less volume of spending. However, they classified a particular household as having public insurance if all the household members have public insurance or otherwise they excluded it from the analysis. In our analysis, we classified the insurance status of the households according to the household head's health insurance status. In Turkey, mother, father and spouse of the insuree, if they are unemployed and uncovered by any type of public insurance, then they are assigned as dependents and they can benefit from the all the rights of the health insurance and the insuree. The children can benefit from their parent's insurance until the age of 18. If the child continues his/her education then the age limit rises to 25. When we analysed the 2006 unweighted HBS data, we saw that 11.7% of the households had at least one uninsured person despite the household head having public insurance.

In this study, we have used the household as the analysis unit. We had to classify the households according to insurance schemes, and taking the household head's insurance status as a reference seemed the most convenient way of classification. As a result, our analysis gave a different consequence from Erus and Aktakke's study. We found that the volume of OOP spending in the publicly insured households showed a significant increase during the period of 2003–6.

We also found an increase for the next period. This increase in the volume of OOP spending during the period 2006–9 for the public insurees may be explained by the effect of the New Health Budget Law (SUT) adopted in 2007. By this regulation, SIO and Bag-Kur beneficiaries have gained direct access right for the university hospitals. Formerly their access for these hospitals had been strictly restricted via the referral procedures.

We found that the uninsured group also incurred more OOP spending in 2006 compared with 2003. Therefore, we suggest that there might have been another factor/s influencing the probability of OOP spending besides the financial arrangements of the health reform process in this period. Ongoing amelioration in Turkish economy after the 2000–1 economic crises

Table 6 Coefficients in linear regressions for the volume of OOP health spending of the non-zero households across the health insurance groups

	Dependent variable: ln(OOP) conditional on (incur_oop = 1)			
	Publicly insured N = 15 995 Coefficients	Privately insured N = 201 Coefficients	Green Card N = 1303 Coefficients	Non-insured N = 3952 Coefficients
Years				
2003	-0.356***	-0.213	-0.308***	-0.459***
2006	Ref.	Ref.	Ref.	Ref.
2009	0.198***	0.313	0.127	0.172*
Expenditure quintiles				
Q1	Ref.	Ref.	Ref.	Ref.
Q2	0.351***	0.365	0.506***	0.738***
Q3	0.637***	0.908***	0.860***	1.059***
Q4	0.909***	0.981***	1.274***	1.468***
Q5	1.576***	1.791***	1.068***	2.077***
Household size (cont.)	0.044***	0.034	0.007	0.027**
Having preschool aged child				
No	Ref.	Ref.	Ref.	Ref.
Yes	0.285***	0.745***	0.154*	0.284***
Having elderly				
No	Ref.	Ref.	Ref.	Ref.
Yes	0.231	0.876***	0.273***	0.302***
Settlement				
Urban	Ref.	Ref.	Ref.	Ref.
Rural	0.080***	0.297	0.085	0.171***
Education of HH head				
Primary	Ref.	Ref.	Ref.	Ref.
Secondary	-0.004	0.685***	-0.157	-0.068
Tertiary	0.154***	0.733	-0.064	-0.195
Constant	1.465***	0.650	1.781***	1.428***
	F: 184.554	F: 5.234	F: 9.837	F: 60.495
	P: 0.000	P: 0.000	P: 0.000	P: 0.000
	R ² : 0.122	R ² : 0.250	R ² : 0.084	R ² : 0.156
Chow test: F = 2.523; df = (36, 21401); P-value = 0.0000				

*P < 0.10; **P < 0.05; ***P < 0.01.

might influence healthcare utilization in all social groups especially the uninsured who were not so poor as to benefit from the Green card programme but probably had no regular income like publicly insured. According to Macove, the strongest growth performance in Turkey took place in 2004/5, followed by a certain slowdown as of 2007, as a result of reform fatigue, political uncertainties and the tightening of monetary policy after the exchange rate (Macove 2009).

An important point that should not be missed in this discussion is that some people may be deterred from using healthcare services because of financial cost that they cannot afford. This point is the major limitation of the conventional indicators aimed to measure the performance of healthcare systems' financial protection ability (Moreno-Serra *et al.* 2011). In the National Health Accounts survey conducted in 2002–3, it

was found that 15.5% of the study population could not use healthcare services although having health problems in the last 2 weeks. Lack of money was the primary reported cause of forgoing care for the 60% of this population (Refik Saydam Hygiene Center 2006). We have estimated the unmet need due to financial cost across different health insurance schemes from the micro data of income and living conditions survey (SILC 2007) conducted in Turkey. We found that 6.1% of public insurees, 9.2% of private insurees reported forgone use of healthcare services during the last 12 months because of financial barriers. These proportions were much higher in Green Card insurees and non-insured group (22.4 and 29.9%, respectively). Unfortunately, there are no available data to reveal the changes in forgoing health care due to financial barriers in Turkey between different periods.

Table 7 Catastrophe and impoverishment across the expenditure quintiles and health insurance schemes

	Poor HHs (%)	Catastrophe (%)	Impoverishment (%)
Expenditure quintiles			
2003			
Poorest	22.7	0.6	1.3
Q2	–	0.7	0.0
Q3	–	0.6	–
Q4	–	0.6	0.0
Richest	–	1.2	–
2006			
Poorest	16.3	0.5	1.7
Q2	–	0.9	0.0
Q3	–	0.6	–
Q4	–	0.5	–
Richest	–	0.6	–
2009			
Poorest	13.0	0.6	1.0
Q2	–	0.5	0.1
Q3	–	0.4	–
Q4	–	0.5	–
Richest	–	0.6	–
Health insurance schemes			
2003			
Public	0.9	0.5	0.0
Private	3.9	1.8	–
Green Card	21.5	1.7	1.2
Non-insured	12.2	1.3	0.7
2006			
Public	0.6	0.5	0.1
Private	3.4	0.8	–
Green Card	17.2	0.9	2.2
Non-insured	7.4	1.0	0.1
2009			
Public	1.0	0.4	0.1
Private	2.0	1.7	–
Green Card	14.2	0.9	1.0
Non-insured	3.3	0.5	0.7
Total households 2003	4.55 (4.29; 4.80)	0.75 (0.64; 0.85)	0.26 (0.20; 0.33)
Total households 2006	3.26 (2.89; 3.64)	0.59 (0.43; 0.75)	0.34 (0.22; 0.46)
Total households 2009	2.60 (2.29; 2.92)	0.48 (0.34; 0.61)	0.22 (0.13; 0.31)

Another limitation of the conventional measures of financial protection is the inability to capture the income losses associated with illness, injury and death. In fact, these losses may be more important in terms of their impact on household welfare (Wagstaff 2009). In Health Budget Surveys, some poor households may decrease food expenditures for meeting healthcare needs; therefore, presented figures could underestimate the real situation. These surveys collect data from

household heads not from the individuals. Therefore, the figures may overlook some actual situation on individual OOP health expenditures. Besides, Turkish tax system is not progressive and indirect taxes are the main source (69% in 2006) of public revenues (Arisoy and Unlukaplan 2010). In this case, some people who need health services may not utilize them due to financial constraints although they contributed their finance already. Besides, in Turkey, the size of the informal economy is 32.1%, so the people in informal sector have no social security (Ministry of Finance Turkey 2009), but we can expect that some of them are dependent for health insurance and can benefit from the health insurance pool without any formal contribution.

Conclusion

Using conventional measures of financial protection, we conclude that Turkey's healthcare system has provided important financial protection to the majority of its population even before the HTP as it is mainly funded by the public sources. However, this situation might be the case in the expense of underutilization of healthcare services by some population groups. The official data showing an ~3-fold increase in per capita health care use since 2003 and our study findings on decreasing CHE in this period can be interpreted as positive impact of HTP. On the other hand, increased household consumption as a share of OOP health payment and the deterioration in the progressivity of OOP spending in this period should be monitored closely. In conclusion, although metrics have some limitations to show the financial protection, they provide robust arguments to evaluate health system performance.

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