ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL
Available Online: https://assajournal.com
Vol. 03 No. 02. April-June 2025.Page#.2239-2249
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems

Provincial Comparative Analysis of Household Catastrophic Health Expenditure in Pakistan

Muhammad Waqar
Institute of Social Sciences, Economics Department, Gomal University Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan
waqar.1127@gmail.com
Shama Suleman
Lecturer Department of Economics University of Gwadar
shama.suleman@ug.edu.pk
Muhammad Rizwan Saeed
Institute of Social Sciences, Economics Department, Gomal University Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan
rizsaeed07@gmail.com
Shah Nawaz
Lecturer Department of Commerce, University of Gwadar
shahnawaz.baloch@ug.edu.pk

ABSTRACT
This paper looks at how much money Pakistani families spend on health issues. Using data from PSLM for the years 2018–19. It investigates the components and variables that influence how much money families spend on different health diseases. The estimation results show that the cost of a family's catastrophic expenditure varies depending on a number of factors, including the nature of diseases, people living in different provinces, the location either urban or rural. Such factors drives an increase or decrease in household health spending. However, policy recommendations for health expenditure are influenced positively by ends in light of all factors. In addition, any revelation may infer a wide range of health implications in Pakistan. Each of these factors play a specific role that how the government decides how much money to spend in health sector. Regression analysis and the ordinary least squares (OLS) method were used to carry out the regression. When a model's dependent variable is quantitative, then this method and technique are applied in specified situation. The policy and a solution to all the problems that can be explained by the variables and household health spending will be achieved through estimates and outcomes.
Keywords*: Health Expenditure, PSLM, Region, Province, Age of Household, OLS, Regression.*

Introduction

As a nation becomes wealthier, people begin to value life more, which increases demand for health services and inevitably drives up health care expenses. The older population has increased dramatically, requiring more medical care, and those who are wealthier tend to be more concerned about their health. Recent projections suggest that global health spending could rise from US$8 trillion in 2018 to USD 18 trillion in 2040, accounting for nearly 9% of global GDP in that year, according to the Institute for Health Metrics and Evaluation (IHME).

Investment in Pakistan's health sector is a critical factor in improving the country's overall well-being and economic growth. Pakistan is the world's fifth most populated nation, yet its healthcare system still confronts several obstacles, such as underprivileged infrastructure, a deficiency of capable medical personnel, and limited approach to high-quality healthcare., especially in rural areas. Increased investment in healthcare can lead to improved medical facilities, better-trained professionals, and advanced technologies, ultimately enhancing the quality of life for millions of citizens. Public sector investment in healthcare remains insufficient, with Pakistan spending less than 3% of its GDP on health. This low level of investment results in overcrowded hospitals, a lack of essential medicines, and outdated medical equipment. To address these issues, the government has introduced programs such as Sehat Sahulat Program, which provides free health insurance to low-income families. However, more financial resources and efficient management are needed to strengthen the healthcare system and ensure access to medical services for all. The private sector performs an important part in Pakistan’s healthcare system, filling gaps left by public healthcare institutions. Private hospitals, pharmaceutical companies, and diagnostic centers provide better medical services, but often at a higher cost, making them inaccessible to a large segment of the population. Encouraging public-private partnerships (PPPs) can bridge this gap by leveraging private sector efficiency while ensuring affordability for the public. Investment-friendly policies, such as tax incentives for healthcare businesses, can also attract more private investors to the sector.

Foreign investment and international aid also contribute to Pakistan’s healthcare sector. Organizations like the World Health Organization (WHO), UNICEF, and the World Bank have supported healthcare initiatives through funding, vaccination programs, and technical assistance. Moreover, foreign direct investment (FDI) in pharmaceuticals and medical research can introduce modern treatments and improve healthcare standards. However, political stability and regulatory transparency are essential to attract sustained foreign investments. Investing in healthcare is not just a social necessity but also an economic strategy. Increased productivity, decreased absenteeism, and lower healthcare costs are all benefits of a healthier workforce in the end. Pakistan needs a comprehensive approach that includes increased government funding, private sector involvement, and foreign investments to build a resilient healthcare system. By prioritizing healthcare investment, Pakistan can ensure better health outcomes for its people and foster sustainable economic development.

Long-term benefits can result from investments made in the health sector. It helps to improve health outcomes, reduce poverty, and boost economic growth. Even so, public health spending has stagnated in developing countries, leaving the public with no choice but to pay for medical care out of pocket, which has continued to be the primary source of funding for healthcare. In 2015, out-of-pocket expenses accounted for 32% of global health spending. The World Health Organization estimates that 4100 million people are forced into poverty annually because of out-of-pocket expenses for medical facilities. However, out-of-pocket medical expenses cause financial hardship for almost 150 million people (WHO, 2015). Health care costs or out-of-pocket expenses that exceed a predetermined threshold level of a household's annual non-food consumption or total consumption are referred to as catastrophic health expenditures. According to a 2010 WHO report, a country's public health spending of about six percent of Gross Domestic Product will reduce out-of-pocket expenses and make catastrophic medical costs infrequent. In contrast, Pakistan's average total health spending as a percentage of GDP from 2000 to 2016

stayed at 2.78%, with the lowest being 2.36% in 2011 and the highest being 3.34% in 2007. With out-of-pocket expenses accounting for 65.2% of existing health costs and 2.8% of total health expenses (as a percentage of GDP), Pakistan, a lower-middle-income nation, had health expenditures per capita of US dollars 40 in 2016. When compared to other South Asian nations, Pakistan's health metrics present a worrisome picture. The nation has the lowest life expectancy in the region, a rapidly expanding population, and a high infant mortality rate. Pakistan continues to have one of the highest infant mortality rates in South Asia, with a considerable proportion of newborns dying within the first year of life, according to international health statistics.

Pakistan's health indicators paint a concerning picture, especially when compared to other countries in South Asia. The country struggles with high infant mortality, a rapidly growing population, and the lowest life expectancy in the region. According to global health statistics, Pakistan's infant mortality rate remains one of the highest in South Asia, with a significant number of newborns not surviving past their first year. Similarly, the total fertility rate in Pakistan is among the highest in the region, contributing to rapid population growth and placing additional strain on healthcare resources. Life expectancy in Pakistan is also significantly lower than in neighboring countries such as India, Bangladesh, and Sri Lanka, reflecting overall poor health outcomes. A key factor contributing to these poor health indicators is Pakistan's low health expenditure. The country has consistently allotted less than or around two percent of its Gross Domestic Product to the health sector, which is far lower than most other countries in the region. In comparison, India spends approximately 3.2% of its GDP on healthcare, while Bangladesh and Sri Lanka allocate even higher percentages. Low public sector investment leads to underfunded hospitals, a shortage of medical staff, and a lack of essential medicines and equipment. Without adequate funding, the healthcare system struggles to provide even basic services, particularly in rural areas where medical facilities are limited.

Because of low government spending, out-of-pocket (OOP) expenditures by citizens play a disproportionately large role in Pakistan's healthcare system. In fact, 65% of current health expenditures come from out-of-pocket payments by individuals, which is alarmingly high compared to the global average of 18.5% (2015-2016). This means that most people have to pay for medical services directly, leading to financial hardships for low-income families. In many cases, individuals avoid seeking medical care due to the high costs, which worsens health outcomes and increases preventable diseases. This financial burden pushes many households into poverty, further deepening social inequalities. The heavy reliance on out-of-pocket expenditures also exposes Pakistan's healthcare system to inefficiencies and inequities. Unlike countries with robust public healthcare systems that provide universal coverage, Pakistan's healthcare model forces people to seek treatment in private facilities, which are often unaffordable for the majority of the population. While private hospitals offer better medical services, they are concentrated in urban centers, leaving rural populations with minimal access to quality healthcare. This urban-rural divide further exacerbates health disparities, making it essential for the government to step in with stronger public health initiatives.

Background and Significance of the Study

Current research links family spending considerations to health outcomes. But the researcher thus flash has tried to figure out how household spending affects health. Both food-related and unrelated costs are included in this health expenditure. Since no other researcher has ever employed or utilized those features, the researcher chose them as the main determinant.

Researcher Contribution

The factors influencing family health spending are related to the current study. However, the researcher has made an effort to identify the factors that influence family health spending. Both food-related and unrelated costs are included in this health expenditure. Since no other researcher has ever employed or utilized those features, the researcher chose them as the main determinant.

Objectives of the Study

1. To quantify the extent of household expenditure on health in Pakistan.
2. To use these experiential conclusions and figures for strategy inference on health policy reformation in Pakistan.

Review Literature

In a recent study, Bunyaminu et al. (2022) looked at the connection between health spending and life expectancy in low- and middle-income nations. The scientists discovered that a 1.2% rise in health care spending was linked to a one-year increase in life expectancy, and that the correlation was larger in nations with more developed economies. According to the authors, spending money on healthcare can be a useful tactic to enhance population health outcomes in nations with low and intermediate incomes. Using a fixed-effects model, Onofrei et al. (2021) predicted a statistically significant relationship between increased health spending and longer life expectancy at the 5 percent level. This claim indicates that a rise in total public health expenditures reduces the population's overall mortality rate.

Rous and Hotchkiss (2002) to look at OOP payment determinants used the Nepal Living Standards Survey. The authors of this paper highlight the issue of provider choice and health status indigeneity. Some common unobserved characteristics linked to healthcare costs, disease, and provider choice were determined to be statistically significant by the authors using a multiple-equation model. If left unchecked, it might be the cause of bias in other comparable studies. According to the authors, income affects health care costs directly and indirectly through factors including the choice of provider and the chance of disease. Urban dwellers are also observed to pay less, although they typically take use of more costly health care.

Aziz et al. (2021) discovered that an estimator using the Fully Modified Ordinary Least Squares (FMOLS) model, In their investigation of the relationship between health spending and maternal deaths, a regression model that offers optimal estimates of reintegrating regressions by modifying least squares to account for serial correlation effects, increased the maternal mortality rate by 1.95% for every 1% increase in health spending and by 0.16 percent for the dynamic ordinary least squares (DOLS) estimator. Additionally, nations with lesser public health spending had higher rates of maternal death. This is because public spending on health care (Thaddeus and Maine, 1994) significantly influences access to high-quality maternal health services, such as trained birth attendants, emergency obstetric care, and family planning services.

Kiross et al. (2020) published confirmation from a panel data analysis of the connection between infant mortality and health spending in sub-Saharan Africa. At the 5% level of significance, the random effects model's findings indicate that massive health expenditure reduced infant mortality. Infant mortality and overall health spending per capita were inversely correlated. For every 1% increase in total health expenditure per capita, there was a 1% (CI: 0.392, 0.241) decrease in newborn deaths.

Shikuro et al. (2020) found a significant proportion of individuals with CHE, In their investigation of Western Ethiopia's disastrous out-of-pocket medical costs Additionally, the study discovered that work, the sex of the household head, and the presence of family members with chronic illnesses are important factors among families. In a similar vein, Attia-Konan et al. (2020) examined the determinants linked to catastrophic health expenditures by working on the Household Living Standard Survey of Côte d'Ivoire. People over 65 and those with chronic illnesses made up the majority of households dealing with CHE. However, the least impacted were households without health insurance. Ahmed et al. (2021), who investigated the factors that influence catastrophic health expenditures in Bangladesh, obtained similar results. Geographical location, chronic illness, and older individuals were observed to be significant.

Material and Methods

The foundation of research is data and technique. Without this idea, there can be no research objectives. Data provide the research project its direction, while methodology ensures the tools & procedures for model estimate.

Data Range and Data Source

This study is based on a household survey to determine the amount of money Pakistani households spend on catastrophic health expenses. The data utilized to reach this conclusion came from the PSLM (Pakistan Social and Living Standard Measurement) Survey Round-VII 2018–2019. The four provinces of Pakistan—KPK, Punjab, Sindh, and Baluchistan—are included in the data gathering. In Pakistan, a cross-sectional survey was randomly conducted with a sample size of 48968 individuals. Information on catastrophic medical costs and other socioeconomic factors, such as income, region, income, family head age and employment status, province, household head education, number of children, and gender, are available from surveys conducted at the household level.

Research Design

A linear regression methodology and the ordinary least square (OLS) approach are used to estimate the equation. The estimate strategy will rely on the type of dependent variables. Since the dependent variable in this case is quantitative in nature, we use regression analysis and the OLS Method. The dependent variable in this case is qualitative in nature, hence the previously mentioned Method and Technique are no longer applicable. Regression analysis is a well accepted method for estimating models. The estimated model will provide the reliability of all the explanatory variables as well as their measurable statistics. A variable is considered statistically significant if its probability, or P value, is less than five percent (5%) or 0.05 or ten percent (10%) 0.10; if not, it is considered statistically insignificant.

To evaluate the overall performance of the Model, we also use the F statistic. If the probability value of the F test is less than 5%, the explanatory variable's power is adequate to sustain the model. Additionally, the significance of each variable is assessed using the T Test. Regarding instance and circumstance, the P value is identical to what was previously mentioned. The computed coefficients will quantify the explanatory factors' contribution to the mean household spending on catastrophic health expenses for the dependent variable. The model's coefficient will explain the degree of influence on the dependent variable.

Econometric Model

Prior to starting estimation and data analysis, it is essential to define the variables and form the model's structure. The model provides the framework and estimation techniques while illustrating the kind and nature of variables. This multiple linear regression model will look somewhat like this.

Dependent variable = $C + B_1X_1 + B_2X_2 + + e$

Dependent variable (Y) = Health Expenditure

Constant = CX_1

= Age of the family head

X_2 = Number of Province

E = Error term

This model must also explain the categorical variables that will show up throughout the regression process. In the aforementioned structure, for example, the age of the family head is the first variable, which is a quantitative variable that does not change. All other variables will be further recoded into single variables that make up a single category variable. We align all of the categorical variables into their new variables, which will greatly aid in understanding the model's regression and true shape by removing the model's outcomes.

To find out what percentage of regions we consider four provinces, for example, province variable that is compared to household expenditure on catastrophic health expenses. Since we wish to test and analyze household spending based on the patterns of people living in Pakistan's four provinces,. This categorical variable includes the provinces of Punjab, KPK, Sind, and Baluchistan.

Model Summary				
Model	R	R Square	Adjusted R Square	**Std. Error of the Estimate**
1	**0.723**	**0.522**	**0.522**	**0.560**

Table 4.1 (Researcher's own contribution, PSLM 2018-19)

Table 4.1 displays the R square and adjusted R square values that illustrate how each explanatory variable accounts for the variance in the dependent variable. The variation in health spending that accounts for all independent factors is shown in the regression mode. This indicates that 52.2 percent of the variation in education expenses can be explained by the independent factors.

ANOVA						
Model		Sum of Squares	df	Mean Square	F	**Sig.**
1	Regression	16276.646	64	254.323	812.384	**0.000**
	Residual	14878.666	47527	0.313		
	Total	**31155.312**	**47591**			

Table 4.2 (Researcher's own contribution, PSLM 2018-19)

This summary of table 4.2 shows the F test statistic, which comprises the power and strength of each independent variable as well as their impacts on the dependent variable. With a probability value of 0.000, the F statistic is statistically significant and indicates that the regression model is significant overall. The statistical significance of the R square value is demonstrated by this F test. The overall F-test determines whether this association is statistically significant. If the whole F-test P value is below the significance level, we can say that the R-squared value is significantly different from zero. We previously covered the Model Summary and ANOVA table, which solely deals with the model's credibility and performance. The study's current focus is on analyzing and

understanding the extent to which each variable affects health spending. It will give more details about how each factor affects the overall cost of health care. We will plot the comparative means and coefficients table to help you understand the main idea of this research paper, which was created to understand the element of family health spending.

Mean Health Expenditure			
Illness	**Mean**	**N**	**Std. Deviation**
Liver Disease	4438.70	1486	9758.109
Road accident	9538.65	440	28937.912
Fractures	6065.82	386	13421.599
Diarrheal Disorder	1108.19	2175	2839.639
Pneumonia	3083.41	205	3558.030
Fever	555.42	20637	1210.279
Malaria	2592.38	1992	2828.314
Typhoid	3344.48	841	4602.456
Chest infection	2190.75	1020	6185.740
Asthma	2950.57	763	2887.986
Liver/Kidney diseases	6603.80	1271	15836.594
Measles, Polio	2292.97	238	5777.237
Stroke/paralyses	7762.93	274	12486.781
Muscular pain	2481.32	3401	6163.183
Depression	4917.18	388	5674.610
Eye infection/disorder	4258.92	559	8913.710
Ulcer disease	3215.33	790	5368.542
Hepatitis infection	6367.23	835	10636.218
Tuberculosis	4689.30	305	6930.515
Diabetes	2968.67	2644	4870.299
Heart disease	10884.47	1044	60215.636
High BP	2259.98	2007	3509.145
Guyenne issue	6698.61	850	11651.124
Dog bites/snake	5895.00	15	11173.589
Dental care	1992.47	232	4233.100
Burns	4652.79	24	5389.061
Brain hemorrhage	12863.29	63	14136.881
AIDS	6420.00	5	8425.188
Cancer	53695.33	99	136132.440
Don’t Know	2482.96	104	3289.326
Others, Specify	4017.59	3875	13880.834

Table 4.3 (Researcher’s own contribution, PSLM 2018-19)

Given the nature of the sickness and the behavior of the family head or member, the exclusive table, Table 4.3, clearly shows the mean amount spent on health care by each disease-bearing home. The disease names and associated costs are shown in this table. In terms of household expenses, there are thirty-one disorders in all. In order to access household patterns and behavior for determining health expenditures, we shall take into account every ailment in the article. The

complete summary of each variable is shown in the above table. It displays each disease's name, average cost, number of measurements or observations, and standard deviation. A quick look at table 4.3 above reveals that it begins with liver and finishes with other, specific condition. It emphasizes how each family head or home is prepared to pay a certain sum of money for their own medical condition. We can see that the average household is willing to pay 4439 rupees annually for liver disease. The cost of each ailment by household or family head can also be accurately analyzed. The data and patterns of family members' spending on health concerns are visible if we examine table 4.3 in its whole.

Model		Unstandardized Coefficients		Standardized Coefficients	T-Values	P-Values
		B	Std. Error	Beta		
1	(Constant)	2.942	0.060		48.658	.000
	KPK	0.262	0.007	0.127	36.346	.000
	Sindh	-0.096	0.002	-0.153	-42.927	.000
	Baluchistan	-0.103	0.002	-0.148	-42.918	.000
	Age of the family head	-0.031	0.009	-0.017	-3.488	.000

Table 4.4 (Researcher's own contribution, PSLM 2018-19)

Because this section will document the models' full presentation and implementation. Each factor's importance in relation to health spending will be inferred. Finding an overhead table will help us understand each variable, its scope, and how it affects the dependent variable (4.4).

To show how different provinces differ from one another in terms of family health spending, the first variable considered in the discussion of household health expenditures is province. Using Punjab province as a reference, we can ascertain that there is a disparity in the spending levels of citizens in Punjab and KPK. Residents of Khyber Pakhtunkhwa spend 0.127 units more than they spend those in the Punjab province, in comparison. However, the provinces of Sindh and Baluchistan show different trends in terms of health care spending. Families in Sindhi spend 0.153 units less than those in Punjab on average. Similarly, compared to Punjab Province, the residents of Baluchistan spend, on average, 0.148 units less on medical care.

This study has produced a comparative analysis of health expenditures by province. We can draw the conclusion that it can aid in the formulation of national health policy plans.

The age of the households is the final consideration in this analysis, regardless of its impact on health care costs. Table 4.4 shows that the average cost of health disorders decreases by 0.017 units for every unit or year of age increase in the household. Given that the household's income and resources may rise over time, there could be a variety of reasons.

Conclusion

Because this study examines family spending on different health diseases. In this paper, we looked at a variety of socioeconomic and demographic variables to see how much a family spends on heath related issues. If we look at the situation in the provinces, we can see that there is a big difference in spending between outlying areas and states should give more health facilities to fix these health problems. In this paper, we looked at a variety of socioeconomic and demographic variables to see how much a family spends on medical diseases. It will also help to formulate the heath policy regarding increasing age of the household. This analysis finds out that one-year

increase in the age causes to decrease on average health expenditure by 0.017 units. This conclusion may be supportive in many ways by the policy makers streamline the health policy in Pakistan.

References

Abul-Naga, R. H., & Lamiraud, K. (2008). Catastrophic health expenditure and household well-being. *LSE STICERD Research Paper No. DARP098*.

Ahmed, S., Ahmed, M. W., Hasan, M., Mehdi, G. G., Islam, Z., Rehnberg, C., ... & Khan, J. (2021). Assessing the incidence of catastrophic health expenditure and impoverishment from out-of-pocket payments and their determinants in Bangladesh: evidence from the nationwide Household Income and Expenditure Survey 2016. *International Health*, (ihab015).

Akram, M., & Khan, F. J. (2007). *Health care services and government spending in Pakistan* (No.22184). East Asian Bureau of Economic Research.

Aregbeshola, B. S., & Khan, S. M. (2018). Determinants of catastrophic health expenditure in Nigeria. *The European Journal of Health Economics*, *19*(4), 521-532.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58, 277-297.

Atkinson, A.,1987. On the Measurement of Poverty. *Econometrica* 55, 749-764.

Attia-Konan, A. R., Oga, A. S. S., Koffi, K., Kouame, J., Toure, A., & Kouadio, L. (2020). Assessing Factors Associated with Catastrophic Healthcare Expenditure in Côte d'Ivoire: Evidence from the Household Living Standard Survey 2015. *Health Economics*, *6*(3), 006-010.

Azzani, M., Roslani, A. C., & Su, T. T. (2019). Determinants of household catastrophic health expenditure: a systematic review. *The Malaysian Journal of Medical Sciences: MJMS*, *26*(1), 15.

Banks, J., Blundell, R., Lewbel, A., 1997. Quadratic Engel Curves and Consumer Demand. *Reviem of Economics and Statistics* 79, 527-539.

Berki, S. E. (1986). A look at catastrophic medical expenses and the poor. *Health Affairs*, *5*(4), 138-145.

Bhutta, Z.A., & Hafeez, A. (2015). What can Pakistan do to address maternal and child health over the next decade? *Health Research Policy and Systems*, 13, 1-49.

Brenner, M.H. (1979). Mortality and the National Economy.*The Lancet*, 314(8142): 568-573.

Brenner, M.H. (1987). Economic Change, Alcohol Consumption and Heart Disease Mortality in Nine Industrialized Countries. *Social Science and Medicine*, 25(2), 119-132.

Buchanan, J.M. (1965). The Inconsistencies of the National Health Service: A Study in the Conflict Between Individual Demand and Collective Supply. *The Institute of Economic Affairs Occasional Paper*.

Buigut, S., Ettarh, R., & Amendah, D. D. (2015). Catastrophic health expenditure and its determinants in Kenya slum communities. *International Journal for Equity in Health*, *14*(1), 46.

Cleopatra, I. & Eunice, K. (2018). Household Catastrophic Health Expenditures: Evidence from Nigeria. *Microeconomics and macroeconomics, 6(1): 1-8.*

Cook, P.J., & Zarkin, G.A. (1986). Homicide and Economic Conditions: A Replication and Critique of M. Harvey Brenner's New Report to the U.S. Congress. *Journal of Quantitative Criminology*, 2(1), 69-80.

Cromwell, J., & Mitchell, J.B. (1986). Physician induced demand for surgery. *Journal of Health Economics*, 5, 293-313.

Cutler D. and R. Zeckhauser, 2000."The anatomy of health insurance" in Cu- lyer A. and J. Newhouse eds.: *Handbook of Health Economics*, Elsevier.
Devlin, N., & Hansen, P. (2001). Health care spending and economic output: Granger causality. *Applied Economics Letters*, 8(8). 561-564.
Di Matteo, L., & Di Matteo, R. (1998). Evidence on the determinants of Canadian provincial government health expenditures: 1965-1991. *Journalof Health Economics*, 17,211-228.
Doherty, J. & McLeod, H., 2002. Medical Schemes. *South African Health Reviem*. Durban: Health Systems Trust.
Erdil, E., & Yetkiner, I.H. (2009). The Granger-causality between health care expenditure and output: a panel data approach. *Applied Economics*, 41, 4, 511-518.
Feenberg, D., Skinner, J., 1994. The risk and duration of catastrophic health care expenditures. *fhe Reviem of Economics and Statistics* 76(4), 633- 647
Flores, G., Krishnakumar, J., O'Donnell O., Van Doorslaer, E., 2008. Cop- ing with Health Care Costs: Implications for the Measurement of Catastrophic Expenditures and Poverty. *Health Economics* (forthcoming)
Flores, G., Krishnakumar, J., O'Donnell, O., & Van Doorslaer, E. (2008). Coping with health-care costs: implications for the measurement of catastrophic expenditures and poverty. *Health economics*, *17*(12), 1393-1412.
Fraser, R.D. (1978). An international study of health and general systems of financing health care. *International Journal of Health Services*, 3, 369-396.
Freeman, D.G. (2003). Is health care a necessity or luxury? Pooled estimates of income elasticity from US state-level data. *Applied Economics*, 35, 495-502.
Gerdtham, U.-G., & Jönsson, B. (1991a). Price and quantity in international comparisons of health care expenditure.*Applied Economics*, 23, 1519-1528.
Gerdtham, U.-G., & Jönsson, B. (1991b). Conversion factor instability in international comparisons of health care expenditure. *Journal of Health Economics*, 10, 227-234.
Koenker, R., & Bassett Jr, G. (1978). Regression quantiles. *Econometrica: Journal of the Econometric Society*, 33-50.
Lamiraud, K., Booysen, F., Scheil-Adlung, X., 2005. The Impact of Social Health Protection on Access to Health Care, Health Expenditure and Impoverishment: A Case Study of South Africa. International Labor Office, Department of Social Security, Extension of Social Security No. 23.
Laporte, A. (2004). Do Economic Cycles Have a Permanent Effect on Population Health? Revisiting the Brenner Hypothesis, *Health Economics*, 13(8), 767-779.
Tapia Granados, J. (2005b). Recessions and Mortality in Spain, 1980-1997. *European Journal of Population*, 21(4): 393-422.
Townsend, R.M., 1995. Consumption Insurance: an evaluation of risk-bearing systems in low-income economies. *Journal of Economic Perspectives* 9 (3), 83 102.
Van Doorslaer, E., O'Donnell, et al., 2007. Catastrophic payments for health care in Asia. *Health Economics* 16(11), 1159–1184.
Viren, M. (1996). Suicide and business cycles: Finnish evidence. *Applied Economics Letters*, 3, 737-738.
Wagstaff, A. (1985). Time Series Analysis of the Relationship Between Unemployment and Mortality: A Survey of Econometric Critiques and Replications of Brenner's Studies. *Social Science and Medicine*, 21(9), 985-996.

Xu, K., Ravndal, F., Evans, D. B., & Carrin, G. (2009). Assessing the reliability of household expenditure data: results of the World Health Survey. *Health policy*, *91*(3), 297-305.
Yang., B., & Lester, D. (2005). New directions for economics. *Journal of Socio-Economics*, 24, 433-446.