

On the Efficiency of Public Hospitals in Turkey*

Burcay Erus [†]and Ozan Hatipoglu[‡]

March 10, 2013

Abstract

Recent evaluations of the impact of Turkish healthcare reforms on the efficiency of public hospitals suffer from simultaneous structural changes in the healthcare sector as well as from lack of data on some of the key ingredients of the reform. In this note, we analyze the major obstacles in a fair evaluation of the efficiency of public hospitals taking Sulku(2011)'s data envelopment analysis as a benchmark.

JEL classification: *I10, I11, I18, C33, C52*

Keywords: Efficiency of public hospitals, health transformation program reform, data envelopment analysis, structural change, model evaluation, part-time work

*We would like to thank session participants at International Congress on Performance and Quality in Health Services Conference, Antalya, Turkey. This work is part of a project that was funded by Scientific and Technical Research Council of Turkey, (TUBITAK) Project Nr. 108K455.

[†]Corresponding Author. Department of Economics, Bogazici University, Bebek, Istanbul 34342 Turkey. burcay.erus@boun.edu.tr. Phone:+902123597638

[‡]Department of Economics, Bogazici University. ozan.hatipoglu@boun.edu.tr.

1 Introduction

Starting in 2003, Turkish Ministry of Health initiated a Health Transformation Programme (HTP) which incorporated a series of reforms aiming to increase access to healthcare services and to improve efficiency of providers. While fundamental changes in the system took place in this period, there exists very limited research assessing the impact of various components of the reforms¹. A major problem hindering evaluation of the reforms has been lack of adequate data to disentangle impact of simultaneous reforms in different parts of the system. In this work we attempt to portray importance of data for proper evaluation of the reforms focusing on an area, hospital productivity, for which data is usually easier to collect. In the period since 2003, number of patients cared in public hospitals in Turkey doubled from 114 thousand to 254 thousand (Ministry of Health 2012). A successful estimation of the effects of various facets of HTP on the efficiency of public hospitals as well as clinicians is crucial in assessing the success of the new system. Effective estimation of the efficiency gains brought about by the new system requires taking into consideration a number of important aspects of the overhaul that has taken place in the Turkish health system in early 2000s, such as a shift from part-time practice to full-time practice in public hospitals, a substantial increase in demand for public hospital services due to changes in the public health insurance scheme, and reforms in public hospitals.² Previous attempts at evaluating the reforms impact on hospital efficiency, such as Sulku (2012) and Sahin et al. (2011), appear to miss complications caused by the multifaceted structural character of the reforms and hence present a misleading picture. Here we focus on the most recent and comprehensive one, Sulku (2012) and discuss how those missing elements might have biased the results.

¹See, for example, responses to Baris et al. (2011) for a discussion on the lack of evidence regarding achievements of the reform.

²See OECD/World Bank[1] and Yenimahalleli-Yasar[2] for a thorough discussion of the reforms in Turkish healthcare system since 2003.

2 Background

As part of the Transformation in Health program, there have been important changes concerning public hospitals, such as transfer of hospitals operated by Social Security Organization to the Ministry of Health, upgrade of health information systems, and increased healthcare spending on patient treatment. These are all expected to have a positive impact on hospital efficiency. There were however two important developments that had an impact on the number of patients treated in the public hospitals but not necessarily on efficiency. One of the main pillars of the reform was the Performance Based Supplementary Payment System (PBPS). Under the new regulation physicians working in public hospitals are paid according to a fee-for-service scheme based on the number of patients they take care of and a measure of the effort the operations require. In addition to providing an incentive to increase productivity of physicians, new system also punished part-time practice in public hospitals by providing them substantially reduced payments compared to full-time physicians. Coupled with the continuing attempts by the government to pass a new law banning part-time practice for physicians working in public hospitals (first drafted in 2007 and became effective in 2010), PBPS has gradually caused a tremendous structural shift in the provision of health services in Turkey. The new incentive scheme caused a substantial increase in the number of physicians working full time in public hospitals, but also lead to a significant decrease in the number of private practices. While 89 percent of public hospital physicians worked part-time in 2002, this figure dropped to 38 percent by 2007 (Ministry of Health 2007). Another aspect has been a surge in demand for hospital services after a large portion of insured population gained access to public hospitals. Previously those formally employed in private sector and their relatives were restricted to hospitals operated by Social Security Institution (SSK). Starting with 2004, however, they were allowed access to larger network of public hospitals. Also during the same period, through a means-tested public health insurance scheme that covered poor population, a considerable portion of population

received health insurance coverage.

3 Impact on the measures of efficiency

We believe that the shift in favor of full-time work in public hospitals due to the simultaneous effect of the PBPS as well as the sudden shift in demand we described above, distorts the statistics on efficiency measures for the new system in the absence of necessary data which would allow the researcher to control these aspects. A recent study utilizing data envelopment analysis (DEA) by Sulku (2012) shows HTP to have a positive effect on public hospital efficiency. Her study is an attempt to estimate the efficiency of hospitals where the number of physicians and beds are used as input variables. Estimation procedure identifies the changes in the number of patients that are correlated with input variables as increase in efficiency of the hospitals. A major shortcoming of the analysis is that the input variables used in DEA fail to capture the change from part-time to full-time practice in public hospitals. Therefore the measure of the physician hours, proxied in the study by the number of physicians, becomes incorrect because average hours worked per physician in 2003 (where only 11% of specialists were full-time) is less than average hours worked per physician in 2006 (where 62% of specialists were full-time). This in turn creates a bias by attributing the increase in number of patients cared by physician to the increase in efficiency of physicians, omitting the impact of increased work hours in public hospitals. Moreover, since there is no information regarding the number of patients treated in private practices prior to reforms, some of the increase measured by the analysis could simply reflect reallocation of patients from private clinics to public hospitals. A second caveat in the analysis is that it does not control for the demand shift from overcrowded SSK hospitals towards public hospitals, neither increased use of healthcare services by the poor population after receiving health insurance coverage. Since increases in the output variable lead to a higher efficiency score using DEA methodology, results of the shift in demand may well be misinterpreted as an

increase in the efficiency of public hospitals.

4 Results from an alternative model

Turkey lacks the figures on the share of part-time physicians, even at provincial level, in the years prior to 2008. This makes any attempt to distinguish among potential mechanisms behind the substantial shift in hospital workload unlikely to succeed. The change in the composition of part-time vs. full-time physicians from 2003 to 2006 renders the total number of physicians an inappropriate measure of physician input. Moreover methods such as DEA where the estimation results are usually presented in an aggregated way has the potential to be misleading when there is substantial heterogeneity among individual hospitals. Regarding the sudden shift in demand, however, the problem is rather more tractable. There exist proxies for demand variables. As a case in point and to display the problems with the estimation methodology in the absence of demand variables, we present results from a slightly modified reduced form model where we include an additional variable, population, in the analysis. Specifically, we run two sets of simple regressions. The first set imitates Sulku (2012) and regress outpatient figures at provincial level on same input variables, namely number of beds, number of specialists, and number of practitioners. The second set adds population as an additional regressor. Columns 1 and 2 in Table 1 below present the results with Sulku (2012)s input variables. Based on these we could reach similar conclusion as her. The coefficient of beds is higher in 2006 indicating an increase in productivity of the hospital. In columns 3 and 4, we introduce population figures as an additional variable and the results shift. Now, there is no significant change in the input coefficients neither in the constant term but only in the coefficient of population. While population is only a proxy for introducing demand side into the analysis yet it illustrates the fragility of the results obtained by the analysis. It should also be noted that in all regressions coefficient for the number of practitioners turns out to be negative and significant as a surprising result. This,

Table 1: Cross-province regressions (dependent variable: number of out-patient visits)

Regressors	Sulku[5]		With population	
	2003	2006	2003	2006
<i>Number of beds</i>	0.437** (0.61)	0.901** (0.92)	0.323** (0.67)	0.333** (0.98)
<i>Number of specialists</i>	3.828** (0.412)	4.278** (0.628)	4.392** (0.446)	5.452** (0.486)
<i>Number of practitioners</i>	-2.965** (0.371)	-3.083** (0.499)	-3.412** (0.384)	-4.121** (0.387)
<i>Population</i>			0.097 (0.79)	0.88** (0.12)
<i>Constant</i>	245.616** (0.371)	175.407** (0.499)	256.430** (0.384)	195.742** (0.387)
<i>R-square</i>	.98	.97	.98	.98
<i>N</i>	81	81	81	81

(Standard errors in parenthesis. ** indicates significance at 1% significance level.)

we believe, is also a result of omitted variables bias in the model.

5 Conclusion

Although Turkey has implemented a major reform program in its healthcare system, evaluations are rather rare and missing. While simultaneous changes that happened in various aspects of healthcare system makes the assessment of the components difficult, lack of necessary data is rendering it almost impossible. In the lack of data, it is important to be cautious reaching unsubstantiated conclusions regarding the reforms impact on healthcare provision.

6 References

Baris E, Mollahaliloglu S, Aydin S. 2011. Healthcare in Turkey: from laggard to leader. *BMJ* 342: 579-582

Ministry of Health. 2007. Performance management in health, performance based supplementary payment system, transformation in health series 2. Ministry of Health, Ankara, Turkey.

Ministry of Health. 2012. The Statistical Year Book of Inpatient Health Care Organizations of Turkey. Ministry of Health, Ankara, Turkey.

OECD/World Bank. 2008. OECD Reviews of Health Systems: Turkey. Paris: OECD Publishing.

Sahin I, Ozcan YA, Ozgen H. 2011. Assessment of hospital efficiency under health transformation program in Turkey. *Central European Journal of Operations Research* 19(1):19-37.

Sulku SN. 2011. The health sector reforms and the efficiency of public hospitals in Turkey: provincial markets. *European Journal of Public Health* 22(5):634-638.

Yenimahalleli-Yasar G. 2011. Health transformation programme in Turkey: an assessment. *International Journal of Health Planning and Management* 2011;26: 110-133.