



## Competition, gatekeeping, and health care access



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### ABSTRACT

We study gatekeeping physicians' referrals of patients to specialty care. We derive theoretical results when competition in the physician market intensifies. First, due to competitive pressure, physicians refer patients to specialty care more often. Second, physicians earn more by treating patients themselves, so refer patients to specialty care less often. We assess empirically the overall effect of competition with data from a 2008–2009 Norwegian survey, National Health Insurance Administration, and Statistics Norway. From the data we construct three measures of competition: the number of open primary physician practices with and without population adjustment, and the Herfindahl–Hirschman index. The empirical results suggest that competition has negligible or small positive effects on referrals overall. Our results do not support the policy claim that increasing the number of primary care physicians reduces secondary care.

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## 1. Introduction

Many health care policy discussions are on primary care. In many European countries, each inhabitant must be enrolled with a primary care physician in order to receive national health services. In the United States, Title V of the Affordable Health Care Act provides subsidies for the training of primary care physicians and allied professionals (see <http://www.healthcare.gov/law/full/index.html>). Furthermore, Title IV of the Act promotes prevention, and it is expected that preventive care will be provided by primary care physicians.

Primary health care is less expensive than secondary and specialty care, so the emphasis on primary care for cost control is understandable. Perhaps, the most explicit cost-control perspective is the primary care physician's gatekeeping function. In many U.S. and European health plans, a patient can only obtain specialty care upon a referral made by her primary care doctor, also

referred to as a gatekeeper. In this paper, we model the primary care physician's referral decision, and empirically assess the relationship between physician market conditions and gatekeeping.

A referral decision by a primary care physician or general practitioner (GP) likely depends on many factors such as medical conditions, current medical practice guidelines, availability of secondary care, the GP's service capacity, and financial incentives. The current policy recommendation of increasing the number of GPs adds one more dimension to the complex referral decision. Given a population of patients, more GPs will ultimately mean a more competitive market for doctors. This paper studies the relationship between competition in the GP market and a GP's referrals of patients to specialty care.

Such a study faces a number of difficulties. First, the number of GPs in any market changes slowly, even under any policy intervention. For example, subsidies in the U.S. Affordable Care Act are for physician training. This “natural” experiment will generate data only after many years, or perhaps even a decade. Similarly, in an experiment of a long duration, confounding factors affecting referral decisions will change over time. These changes may be difficult to track or be unobservable to the analyst. Second, in a multi-payer system such as the U.S., different health plans use different

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incentive contracts. Referral decisions likely will be influenced by these incentives. However, information on physician payment contracts is seldom available.

Our strategy is to use a cross-sectional data set, which can be interpreted as a snapshot that captures long-run changes, because different locations have had unique experiences for some time. (For example, differences between two countries at a given point in time result from long-term developments.) We use data from a 2008–2009 survey in Norway as our primary source, and supplement them with register data from Statistics Norway and from the National Health Insurance Administration. Because data are collected over a one-year period, time-varying confounding factors are irrelevant. However, our data include repeated municipality and GP observations, so we can account for unobserved variables at municipality and GP levels. The details of the survey and data are in the next section. Here, we would like to point out that (i) all self-employed Norwegian GPs are paid by the same financial contract, (ii) 95% of all Norwegians GPs are self-employed, and (iii) each Norwegian should be listed with a GP who is a gatekeeper for secondary care. In sum, problematic selection issues in multi-payer systems are avoided.

In Norway, a GP either lets his medical practice be open or closed to new patients. We use the number of open practices (with and without population density adjustments) as a measure of competition intensity in the GP market. The GP market is more competitive when there are more open practices because consumers have more options and each GP faces a more elastic demand. We also use the more conventional Herfindahl–Hirschman index as an alternative measure. Our use of the number of open practices in a geographical area as a measure of competition is uncommon.

Our empirical work seeks to explain specialty referral by competition intensity. We start with a model of GPs' referral decisions. As in much of the literature, we assume that a GP is guided by a profit motive and a concern for the patient. A GP's practice style is how he values a patient's potential benefits from specialty care and profits from providing services himself. Practice styles are assumed to be affected by market conditions. When the GP market becomes more competitive, the patient has more options. A GP who wants to retain a patient should adopt a practice style that values the patient's benefits. Competition may have a second effect. As the GP market becomes more competitive, a GP has less patients. Therefore, the GP incurs less disutility when he treats the patient himself. For a fixed reimbursement rate, the net profit from providing services increases.

Competition in the GP market has two opposing effects on referrals. More competition encourages a GP to show more concern for the patient, and therefore increases specialty referral. More competition also raises a GP's net profit for providing service himself, and therefore decreases specialty referral. Our model offers this new perspective, and we are able to assess empirically the overall effects of competition on specialty referrals.

The data sets allow us to control for patients' socioeconomic status, age and gender, as well as self-assessed health and chronic illness conditions. We also control for general and specialty health care access at the market level. Our (multinomial logit, and logit) regressions also account for clustering at the municipality levels. We find that competition either has insignificant or positive effects on GPs' referrals for patients to specialty care. In other words, we find no evidence that more competition among GPs will reduce their specialty referrals. Our results do not lend support to the secondary-care-reduction effect envisioned by a policy that promotes primary care.

Our data do not let us estimate separately the two opposing effects derived from our theoretical model. This, however, does not make our results less relevant. Our model of referral does

capture the multi-faceted effects of competition on referrals, and an increase in primary care physician density results in more than a single change. This is an important aspect of the complexity in physician–patient interaction.

The literature on the primary and secondary health services is huge, whether that literature refers to health economics, health services research, or medicine. The health economics literature on the relationships between primary and secondary care is smaller but growing. In any case, the interest in primary care and health cost is topical. Using U.S. data, [Baicker and Chandra \(2004\)](#), and [Chernew et al. \(2009\)](#) find that the percentage of primary care physicians in a market is negatively associated with Medicare's reimbursement per beneficiary. [Chernew et al. \(2009\)](#), however, find no correlation between the percentage of primary care physicians and the growth in Medicare spending; thus Medicare policies that seek to reduce spending levels, but not growth rates, will ultimately fail to address cost issues.

[Bradley Wright and Ricketts III \(2010\)](#) use area-level data to show that within a location, a higher density of primary care physicians is associated with less inpatient admission and emergency room visits. [Fortney et al. \(2005\)](#) present results from a natural experiment at the U.S. Department for Veterans Affairs, in which the number of primary care facilities was increased in some districts but not in others. Using a difference-in-difference analysis of longitudinal data and instrumental variables for potential endogeneity problems, they find that an increase in primary care encounters is associated with a decrease in specialty medical encounters. Fortney et al. conclude that primary care is a substitute for specialist health care. Using survey data at the individual-patient level, [Atella and Deb \(2008\)](#) study whether primary care physicians and secondary specialists are substitutes or complements. They estimate a structural simultaneous-equation model where visits to different types of physicians are endogenous. When unobserved heterogeneity is appropriately accounted for, they find that primary care physicians and specialists are substitutes.

We model primary care physicians' referral decisions. The theoretical literature on referrals is quite rich. [Barros and Olivella \(2005\)](#) study cream skimming due to physicians in public services self-referring patients to their own private practices. [Biglaiser and Ma \(2007\)](#) examine the welfare effects of allowing dual practice and self-referrals. In our model the physician does not self-refer. Also, the referred specialists can reject referrals; existing papers in the literature have not considered this option.

[Allard et al. \(2011\)](#) consider how referral to secondary care is affected by incentive contracts for primary care physicians. [Jelovac and Mariñoso \(2003\)](#) compare optimal payment schemes with and without gatekeeping. [Brekke et al. \(2007\)](#) study the effect of GP gatekeeping on equilibrium quality in an imperfectly competitive secondary care market. [González \(2010\)](#) investigates the interactions between patients and GPs when some patients are informed about whether specialty care is appropriate. Our paper does not deal with the issues in these four papers. Our model is parsimonious, and focuses on competition in the GP market. Yet, it derives a set of predictions that we have taken to data.

The literature on competition in the health market is extensive; [Gaynor and Town \(2011\)](#) provide the latest review. It is fair to say that studies of competition have mainly focused on prices, qualities, costs, and health outcomes, and studies that use U.S. data outnumber those that use non-U.S. data. We are not aware of another paper that addresses the effect of competition in the primary care physician market on secondary care referral. Our paper therefore is the first to offer some evidence on this issue.

The common measures of competition in the literature are the number of providers (hospitals, physicians, nursing homes, etc.) within a geographical area, the  $n$ -firm concentration ratio, and the

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