

STILL AROUND? BARRIERS TO ENTRY IN SOLO MEDICAL PRACTICE IN SUBURBAN SETTINGS

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ABSTRACT

BACKGROUND

Unlike many other countries, only 19% of physicians remain independent or solo practitioners in the United States. This study seeks to determine if entry barriers to solo practice exist in physician services markets with a predominantly suburban patient base. Any entry barrier will play a critical role in a wide variety of competition and income-related issues in these markets.

MATERIALS AND METHODS

This study hypothesizes that substantial deterrence to entry is present in suburban settings where physician competition is typically much less than metropolitan areas. Information about their competitive position was obtained from solo primary care physicians (PCPs) and specialists in southern New Jersey municipalities. Two-sample *t*-tests ($\alpha = 0.05$) ascertained whether the means differences of these two groups are statistically significant for the population from which they were sampled. Regression coefficients were computed for the magnitude of differences in barrier impact between samples.

RESULTS

Adapting the Orr model, $E = \beta_0 e^{\beta_1(\pi_p - \pi^*)} e^{\beta_2 Q} S^{\beta_3} \mu$, to this study allowed us to estimate the overall height of entry barriers to suburban solo practice. The study finds that entry barriers tend to have moderate effects on PCPs, with the exception of legal and regulatory compliance which are just as burdensome to specialists. Risk and insurance, capital, advertising, research and development (R & D) as well as market concentration are far more challenging to solo specialists mainly due to overuse of already costly tests, procedures, and medications by specialists for "defensive medicine," and heavy reliance on specialists by PCPs. Labor costs are associated with several barriers.

CONCLUSION

Despite their declining population, market entry (and presumably survival) of solo physicians is not as straightforward of a phenomenon as conjectural and anecdotal evidence might suggest. Medical specialty offers an explanatory variable. Specialists opting to go solo might consider whether they possess certain competitive advantages relative to large group practices in their field. In view of these considerations, the hypothesis of this study is qualified to account for the statistical significance of field of practice and substantial differences in overall barrier height for solo practitioners in suburban areas.

KEYWORDS

Barrier Height, Competitive Advantage, Economies-of-Scale, Medical Specialty, Physician Services Markets, PCPs, Suburban.

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BACKGROUND

Problem Statement

Because health economics addresses questions of efficiency, effectiveness, and value in the production and consumption of healthcare, barriers to entry in healthcare markets constitute one of its overriding concerns.¹⁻² These barriers refer to high "start-up" costs and other obstacles that tend to prevent or delay new entrants from competing with incumbents, thereby adversely affecting the price, quantity, and quality of as well as consumer access to healthcare.³⁻⁴

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Barriers may be natural (or "innocent") arising from differences in healthcare production costs and demand, artificial if intentionally erected or enhanced by incumbents, and statutory if borne out of law or regulation. They may or may not adversely affect welfare.⁵

In this study, we inquire into entry barriers to physicians who opt for independent or solo practice in suburban locations. Solo practice consists of a single practitioner or one who employs another licensed practitioner with the same license or a license with a smaller scope than that of the employing practitioner.⁶ Solo practitioners typically affiliate with local area hospitals but are not direct hospital employees. A group practice typically consists of three or more physicians who deliver patient care, make joint use of personnel and equipment, and divide income by a prearranged formula. It is organized around a particular medical specialty or encompass several specialties.⁷ It can be a partnership, professional association, or limited liability company (LLC), where the physician is an owner, partner or

associate. It can also be a medical business corporation where the physician is an employee (e.g., managed care organization, hospital, academic center, ambulatory care facility, non-profit group).⁶

The questions for investigation in this study are: Which barriers to entry exist in solo suburban practice, how do they operate, and to what extent is the barrier mechanism possibly influenced by the characteristics of the entrant? Grounded on location theory, these questions permit us to test the conjectural and anecdotal hypothesis that solo physicians face substantial entry barriers even in suburban areas where competition is expectedly much less than metropolitan areas with their oversupply of physicians.⁸⁻⁹

Related Literature

Research on competition in physician services markets is scarce due to lack of empirical data.¹⁰ One major finding is that a minimum population is necessary for any given area to support a physician of a particular specialty. Hence, the smaller the number of physicians within a field of practice, the greater the critical value of population.¹¹⁻¹² It has also been conjectured that competition in physician services markets depends considerably on product markets. For instance, entry in a physician services market requires entry in at least one insurer's provider network, which creates a more substantial cost associated with entry than previously existed.¹⁰ Finally, entrant perceptions of barrier intensity are determined by their attributes and proximity, and strongly influence their relative strength and competitiveness vis-a-vis market rivals.¹³⁻¹⁵ Geographically proximate individuals and firms, for example, tend to compete more intensely than distant ones.^{14,16}

Since barriers to entry directly affect entry decisions,⁵ one implication is that if barriers are quite high, physicians will likely opt not to practice independently. Higher costs of provision, less access to care, and limited innovation will count among the spillover effects. Another implication is that market competition is a subjective and relational phenomenon. Surveying entrant perceptions can help establish the effects of entry barriers on competition and income rates.

MATERIALS AND METHODS

Statistical Tests

Aided by physician directories and postings as well as websites of medical practices on sale, we selected all 12 physicians who either opened up or closed their solo practice over the last six to seven years (2010-2016) in adjacent southern New Jersey municipalities (Cherry Hill, Collingswood, Evesham, Haddonfield, Haddon Heights, Medford, Moorestown, and Voorhees). These municipalities form part of the Philadelphia Metropolitan Statistical Area (MSA). Almost all of these physicians were previously employed by group practices in the Philadelphia MSA. About half rejoined a group practice following their brief solo stint. Three of the 12 physicians declined to participate in our electronic survey. Of the remaining nine, one-third are primary care physicians or PCPs (covering family, general

internal, and pediatric medicine), which matches their nationwide representation.¹⁷ The rest are specialists in cardiology, dermatology, OB/GYN, ophthalmology, and orthopedics.

Each survey participant was asked to rate 12 entry variables on a set of bipolar adjective pairs contained in a five-point, semantic differential scale (1=entry "incentive," 5=entry "disincentive"). A "3" was considered "neither." These variables were derived from our literature review. Two of them (pricing strategy and exclusive contracts) were subsequently disregarded because their sample means hovered around "3" which suggest irrelevance to solo practice.

Two sample *t*-tests ($p=0.95$; $\alpha=0.05$) compared survey results against the null hypothesis that no significant differences exist between the means for solo PCPs and specialists in suburban areas. Regression coefficients were computed for the magnitude (or "height") of differences in barrier impact between samples.

Delimitation

This study is delimited to entry barriers (and incentives) to solo practice. It was not designed to evaluate their welfare consequences.

RESULTS

Trends in Medical Practice

Solo medical practice still exists but it is on the decline in the United States, unlike many other countries. From over 44% three decades ago,⁸ only 18.6% of physicians reported solo practice in 2016.¹⁷ Suburban and rural areas appear to be better suited for solo practice "because of significant medical need and less competition from other medical resources."⁹ The number of physicians identifying as independent practice owners or partners decreased nationally from 53% in 2014 to 50.8% by 2016. Conversely, those identifying as employees of a medical corporation, hospital or other entities increased from 47.0% in 2012 to 49.2% by 2016.¹⁷

In New Jersey, the last six to seven years since 2010 have seen many physicians joining hospitals/multi-hospital systems or large, multi-specialty groups. Others have elected to retire early. These developments have been prompted by increasing regulations and cumbersome or uncertain physician reimbursement models (third-party authorizations, complicated treatment protocols, reduced reimbursements under the Affordable Care Act). Less than 20% of New Jersey PCPs remain as practice owners or partners.¹⁸ Less than 18% of all New Jersey physicians continue to practice solo.⁸

Nationwide and statewide trends indicate "the evolution of medical practice away from the traditional private, independent practice model and toward the employed model" (p.19).¹⁷ Growth in the number of employed physicians owes to the proliferation of group practice mergers and the formation of increasingly larger group practices for the same reasons: Financial security, a back-up or coverage system, regulatory compliance, insurance-related complexities, mandated use of information

technology, and competition for large population health management contracts.^{8,17} One long-time solo practitioner in southern New Jersey calls these the "economics of medicine."⁸ However, it should be noted that some of the disincentives do not constitute entry barriers *per se*. Rather, they are the expected consequences of practicing solo (e.g., absence of a back-up and total responsibility for arranging and managing hospital care) or the direct costs of some barriers (e.g., higher costs of technical expertise in information technology and insurance to solo entrants).

Incentives and Barriers

Table 1 shows the PCP and specialist sample averages for entry variables rated on a five-point, semantic differential

scale. With mean scores closer to 5 (denoting a negative attribution for the entry factor), specialists find the following entry disincentives or barriers more burdensome compared to PCPs: Capital requirements (e.g., office, equipment, technology), advertising intensity, research and development (R & D) intensity, risk and insurance management, and concentration (especially market domination or "saturation" arising from the number, size, and healthcare production share of large group practices). Mean scores from the PCP sample indicate their more moderate adverse effects.

Field of Practice	Entry Factors									
	Capital (K)	Market Size (S)	Market Growth (Q.)	Advertising (A)	Reputation (P)	R & D (R)	Legal/Regulatory (L)	Risk & Insurance (r)	Concentration (C)	Income Rate (π_p)
Primary Care*	3.7	1.3	2.0	3.3	1.3	3.7	4.0	3.7	3.3	1.3
Medical Specialty	4.5	1.7	1.3	4.5	1.2	4.5	4.0	4.8	4.5	1.3

Table 1. Sample Means for Entry Factors in Solo Practice

*Includes family medicine, general internal medicine, and pediatrics.

However, sample means converge when it comes to legal and regulatory barriers. With a 4.0 average, solo PCPs consider these their toughest barriers. The same mean score for the specialist sample places these statutory barriers below all other barriers in terms of negative impact. These barriers consist of the myriad of laws and regulations governing or affecting medical practice. Their associated costs include the staffing (labor) costs of technical expertise in health insurance and mandatory electronic medical records. Statutory barriers also impose transaction costs to solo practitioners, which account for the work required to bring a (healthcare) good or service to market, giving rise to the costs of facilitating exchanges. They include the costs of search and information (e.g., producing and updating compliant forms and documents, comparing and purchasing medical malpractice insurance), contracting and decision-making (e.g., recruiting and retaining competent staff), and enforcement and monitoring (e.g., setting up and maintaining electronic medical records, reviewing screening protocols).

Sample means for the two physician groups also converge when it comes to three entry factors which both rated very positively: Income rate expectations (based on historical experience and median practitioner rates), market size (largely conditioned by patient base and volume of payments/reimbursements), and the doctor's professional reputation (including patient loyalty and strong "brand"). Along with suburban market growth, these supply the incentives to solo practice. Income rates could nonetheless be influenced by practice locale, as the suburban areas from which our samples were drawn are, coincidentally, affluent (e.g., Cherry Hill, Evesham, Haddonfield, Medford,

Moorestown, Voorhees), with 2010 median family incomes in excess of \$104,000, or considered above-average for family income (Haddon Heights).

Divergence between PCPs and Specialists

In testing for significant differences in sample means as well as estimating barrier impact per sample, Orr.¹⁹ provides a useful, generalized model of market entry with an index of overall level of entry barriers. We adapted Orr's model to a physician services market by adding the following entry factors: Legal and regulatory compliance, health insurance, and physician's reputation. We also delineated market size in terms of patient quantity and payments (including reimbursements) and concentration based on the number, size, and market share of competitors (especially large group practices) within a physician's field of practice. The adapted model follows:

$$E = \beta_0 e^{\beta_1 (\pi_p - \pi^*)} e^{\beta_2 Q} S^{\beta_3} \mu \tag{1}$$

Where:

$$\pi^* = f(K, A, R, r, L, P, C) \tag{2}$$

And hence,

E = rate of solo entry.

π_p = past/historical rate of income.

Q. = past/historical rate of growth of physician services market.

K = capital requirements.

A = advertising intensity.

- R = R & D intensity.
- r = risk and insurance management, the standard deviation of solo income rates.
- L = legal and regulatory compliance.
- P = professional reputation.
- C = concentration.
- S = market size.

Space limitations only permit us to outline how we arrived at a final estimable equation for Orr’s model.¹⁹ Entry into solo practice was initially configured as a function of the gap between the observed physician income rate and some entry limiting income rate, observed growth of the physician services market, and market size in suburban settings. Thus, π_p indicates the extent of rents enjoyed by incumbents (particularly large group practices), which might offer incentives for solo practitioners to enter, as their expectations are based in part therefrom. Another incentive is Q., the growth rate of market “output,” as this is also based on past growth. Capital, advertising, R & D, risk and insurance, legal and regulatory compliance, and concentration tend to be perceived as entry barriers in Table 1. On the other hand, π_p , Q., P, and S are likely entry incentives to solo PCPs and specialists.

To econometrically estimate Orr’s equation in (1), we derived its appropriate functional form, partially modified it, and arrived at π^* in equation (2). Babu²⁰ uses the log form of the dependent variable E, which we replicate in anticipating the response to a change in the barrier or incentive to be less among PCPs on account of their lower supply and entry.⁵ In crafting the log form, Babu²⁰ asserts that it is misleading to consider the effects of entry barriers separately in thwarting competition to enhance or sustain the gains and competitive advantages of market incumbents (especially large group practices). That is because “there exists the possibilities of synergies arising out of the joint effect of all the types of barriers taken together. This prompts an examination of the overall barriers” (p. 19).²⁰ Rewriting equation (2) produces equation (3):

$$\pi^* = \alpha_0 + \alpha_1 \log K + \alpha_2 A + \alpha_3 R + \alpha_4 r + \alpha_5 L + \alpha_6 P + \alpha_7 C \tag{3}$$

Because solo entry can be construed as the difference between π_p and π^* , equation (1) is henceforth be expressed as:

$$E = \beta_0 e^{\beta_1 (\pi_p - \pi^*)} e^{\beta_2 Q} \mu_1 \tag{4}$$

Where:

$$\mu_1 = \text{log normal error term}$$

To produce the final equation, we also multiplied equation (4) by $S \beta_3$. We then substituted equation (3) for (4) and took logs as Babu²⁰ did. This yielded equation (5), from which we computed sample means coefficients and projected overall barrier height:

$$\log E = \log \beta_0 + \beta_1 \pi_p \beta_1 \alpha_0 - \beta_1 \alpha_1 \log K - \beta_1 \alpha_2 A - \beta_1 \alpha_3 R - \beta_1 \alpha_4 r - \beta_1 \alpha_5 L - \beta_1 \alpha_6 P - \beta_1 \alpha_7 C + \beta_2 Q + \beta_3 \log S + \mu_2 \tag{5}$$

How statistically divergent are the survey results? Because a *t*-value of 0 indicates that the sample result equals the null hypothesis, the farther an absolute value registers from 0, the greater is the difference between the sample data and the null hypothesis (i.e., the greater the evidence against the null hypothesis). All variables in Table 2 appear to be significant at $\alpha = 0.05$; their respective *t*-values exhibited considerable distance from 0. Hence, one finding is that solo entrants “converge” when considering entry factors either as incentives or barriers, *ceteris paribus*. That is, solo entrants tend to perceive them as mutually exclusive, rather than overlapping, even if they might bear interrelated benefits and costs. For example, notwithstanding the possibility of insufficient patient referrals, solo PCPs and specialists clearly rated market size (or small patient base) as a positive. Market size, in turn, is a determinant of practice income based on past growth as well as the rate of growth in suburban physician services markets. Survey respondents did not also seem to encounter difficulties in comprehending and rating incentives and barriers (judging from the comments they made under each one).

Field of Practice	Incentives and Barriers										
	Constant	Capital (Log K)	Market size (S)	Market growth (Q.)	Advertising (A)	Reputation (P)	R & D (R)	Legal/regulatory (L)	Risk & Insurance (r)	Concentration (C)	Income rate (π_p)
Primary Care**	-1.05 (-1.99)	-0.37 (-2.32)	0.41 (2.25)	0.23 (1.80)	-0.23 (-1.80)	0.39 (3.18)	-0.21 (-1.87)	-0.74 (-3.78)	-0.38 (-3.20)	-0.17 (-1.48)	0.37 (3.11)
Medical Specialty	-1.83 (-3.68)	-0.78 (-3.69)	0.59 (2.78)	0.36 (2.59)	-0.62 (-3.51)	0.24 (2.70)	-0.54 (-3.56)	-0.67 (-3.83)	-0.77 (-4.21)	-0.69 (-3.86)	0.45 (3.89)

Table 2. Econometric Estimates*: Incentives and Barriers to Solo Entry

*Econometric estimates of equation (5) for upper figures (*t* ratios in parenthesis).

**Includes family medicine, general internal medicine, and pediatrics.

Another finding is that incentive effects on solo entry also appear to be widely shared by PCPs and specialists in contrast to the perceived negative effects of entry barriers. These incentives are past rate of growth of physician services markets, market size, anticipated income rates, and reputation. However, econometric estimates derived from equation (5) suggest that incentives may have more moderate effects on PCPs. In any case, survey participants' comments as well as anecdotal information point to a limited patient base and the autonomy of being the only physician as key to designing and growing their unique style of healthcare relative to other practice settings. It also gives them the opportunity to develop close, personal relationships with patients and a small staff.⁹ Because these incentives are fairly determinable (i.e., they do not normally contain hidden or long-term costs), they aid practitioners in anticipating prospective returns and competitive advantages vis-a-vis market incumbents should they opt to establish or grow a solo suburban practice.

Both *t*-values and econometric measures in Table 2 indicate the strong negative impact of statutory barriers on the two physician groups. The burden of documentation for compliance and regulations considerably increase the risk of legal exposure or liability of doctors.⁹ Moreover, small practices "cannot compete with larger practices when it comes to meeting certain quality and efficiency targets that lead to better payments."⁸ The net effect of statutory barriers is to deter many physicians from pursuing or continuing in solo practice.

We find that PCPs and specialists widely differ in their perceptions of all other entry barriers in Table 2. While frequency and duration of adult primary care visits have increased with modest gains in quality of care,²¹ risk and insurance create strong barriers to solo specialists. This is likely because of the longer and more frequent duration of patient visits coupled with the more complicated nature of patient indications and treatments in specialty practices.²² In addition, specialists tend to overuse costly procedures, tests, and medications owing to "defensive" medicine by doctors trying to avoid lawsuits, a reluctance on the part of doctors and patients to accept diagnostic uncertainty (thus leading to more tests), lack of consensus about which treatments are effective, and the pervading belief that newer, more expensive drugs and technology are better. However, perhaps the most important factor is the overspecialization of the American physician workforce and the high frequency with which these specialists are called by primary-care physicians for help.²³ While health insurers have sought to restrict the use of specialists, their ratio to PCPs continues to rise. One report underscores how in the American market-based system "patients can get lucrative (specialty) procedures rapidly, even when there is no urgent medical need."²⁴

The foregoing magnify the cost of any insurance to medical practitioners, particularly to the more financially risk-exposed specialists,²⁵ even assuming they face less competition in suburban areas. Besides growing fixed costs (e.g., malpractice insurance which exceeds \$100,000

annually, or the disproportionate transaction costs of billing, coding, and dealing with insurance issues), there are seemingly unmanageable disincentives. These include shifting patient allegiances due to health insurance issues and reduced Medicare and Medicaid reimbursements under the Affordable Care Act, which has led many doctors, particularly specialists, to reject covered patients beyond their prescribed quotas. On the other hand, large medical groups can negotiate higher insurance reimbursements and lower costs involving malpractice and property insurance as well as staff hires.⁸ Finally, there are spillover consequences to contend with. Although not an entry barrier *per se*, the total patient responsibility of a solo specialist is considerably higher than a PCP due to more tests, procedures, and follow-ups required on average. Unlike other specialists in a (large) group practice, a solo specialist is unable to pool this type of risk.

Capital is a common natural or structural barrier in industry.²⁶ The divergence of econometric estimates for fixed capital requirements in Table 2 likewise points to field of medical practice as an independent, explanatory variable. LogK has a moderate impact among PCPs but it exhibits strong adverse effects on specialists. The difference might largely be attributed to the higher set-up and operational costs of specialty offices (e.g., larger space, storage provisions), laboratories, medical supplies, diagnostic equipment, and more advanced technology, particularly in orthopedics, cardiology, urology, and OB/GYN.²⁷ One solo ophthalmologist in our survey even runs an eyeglass store in his office. Absent higher fixed capital requirements for specialty practices, Log K variance in sample coefficients would likely be insignificant. All physicians will then be equally disadvantaged by medical groups that can pool their capital expenses, benefit from economies-of-scale, and negotiate lower costs involving rent, supplies, equipment, and electronic conversion of medical records.

Another way in which market incumbents innocently raise barriers to entry is by discovery and innovation. Like most industries, the route to medical discovery and innovation is through R & D.²⁶ The extent of economies-of-scale in the R & D process underpins this set of natural barriers.²⁸ They create many competitive cost advantages for large group practices that can pool their talent, resources, and associated costs (e.g., scientific/technical support), while simultaneously minimizing transaction costs, in order to innovate. In contrast, their solo counterparts face higher costs in specialty training, continuing education, and certification (including time constraints). R & D also tend to be more burdensome to solo specialists because new treatment approaches and techniques and technology often evolve at a higher cost and more diverse pace in specialty fields than in family medicine, internal medicine, and pediatrics.²⁷ These challenges help account for the nearly three-fold difference in R & D coefficients for solo specialists and PCPs.

Advertising is among the most efficiently utilized artificial or strategic barrier by group practices, particularly those owned by medical business corporations. These practices

have an interest in “product” differentiation. They continuously seek to increase the perceived difference or quality advantage of their doctors, treatments, and services by the use of branding and marketing strategies to bring in more patients, retain their loyalty, and deter entry of and reduce competition with market peers. It is in this context that advertising creates a strong deterrence to solo specialists who have to match, if not exceed, the level of spending for promotional purposes to compete with their counterparts in large group practices. PCPs, on the other hand, tend to foster loyalty among their patients through family networks and by building up their reputation as “family doctors.”⁸ These help explain the higher estimates for reputation and the lower disincentive effects of advertising for the PCP sample.

Concentration reflects the degree of market competition. Even without collusion among incumbents, concentration leads to higher prices and lower consumer welfare.²⁹ Survey respondents were asked to rate how the number, size, and healthcare production share of incumbents within their fields might encourage or deter solo practice. Concentration posted the lowest econometric estimate for all PCP barriers. We assume that much of it has to do with the small and diminishing number of PCPs relative to aggregate suburban demand. Yet, it presents a strong deterrence to solo specialists. Single- or multi-specialty group practices, especially those run by business entities and mega-hospitals, can better take advantage of natural barriers arising from economies of large-scale healthcare production, high set-up costs, and high R & D costs. They can also erect artificial barriers through marketing strategies and vertical integration that tie up the “supply chain” in physician services markets (for example, group practices with their own laboratories, nursing staff, and out-patient surgical facilities). These underscore the overlapping attributes and spillover consequences of many entry barriers to solo medical practice.

Overall Barrier Height

In establishing overall barrier height to account for their “joint effect” on competition and income,²⁰ we isolated barriers from incentives, regardless of their moderate or strong impact on entrants, *ceteris paribus*. Figure 1 graphs the index for the weighted value of each of these barriers which, in turn, is based on their regression coefficients in Table 2. The higher the value of the index, the higher is the anticipated adverse impact of overall barriers.¹⁹

While any solo entrant faces many barriers, Figure 1 shows that specialists are disadvantaged nearly twice as much as their counterparts in primary care. Overall barrier coefficient for specialists was 1.93 and 0.96 for PCPs. We posit the view that the lower overall barrier height for PCPs owes essentially to three factors. First, it is a function of suburban supply-and-demand. A smaller (and declining) PCP population benefits from a more stable or increasing aggregate demand for its treatments and services. Second, entry barriers registered lower intensities because PCPs are generally less disadvantaged by artificial barriers that create

competitive advantages for large group practices (even of PCPs). The distinguishing element appears to be the family network that fosters loyalty to a “family doctor” and offers a more stable, albeit smaller, patient base and/or income rate in contrast to solo specialists. Third, specialty practice, by its nature, demands more resource allocations that group practices can better explore, exploit, and utilize to their advantage.

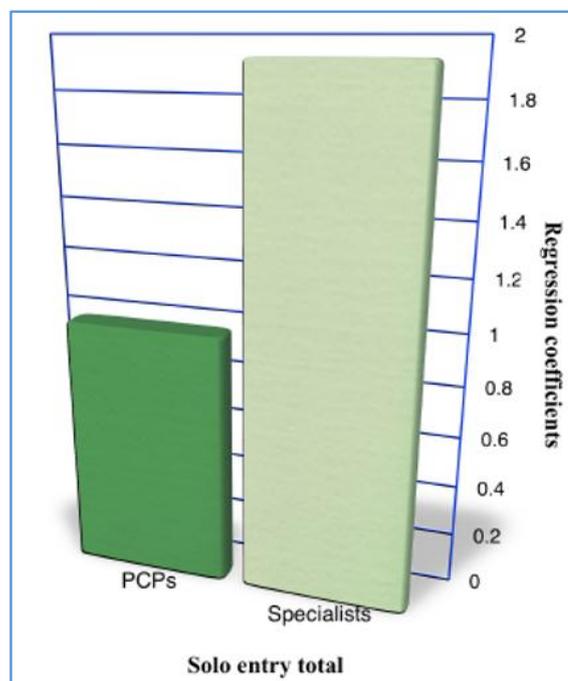


Figure 1. Index of Overall Entry Barriers to Solo Practice

DISCUSSION

The economic literature has extensively discussed the conditions for barriers to entry in various markets as well as their direct and unintended consequences on welfare, save for physician services markets. While there are differing definitions concerning what creates a barrier to entry, these barriers doubtless play a critical role in a wide variety of competition issues. Research shows that how players, particularly potential entrants, perceive and assess these barriers can affect their relative strength and competitiveness and their decision to enter or remain in any given market.

Healthcare costs in the United States are driven in part by an undersupply of doctors, particularly PCPs. It leads patients to seek more expensive, specialized medical treatments and services. In inquiring further into their implications on medical practice, this study sought to determine if certain factors substantially deter solo practice (and how), and whether deterrence to entry affect the competitiveness of solo PCPs and specialists in the same magnitude and direction. Guided by research done on market participants’ perceptions of their competitiveness, we surveyed physicians who established their solo practice in several suburban New Jersey municipalities, several of whom eventually left to join group practices. We find the following:

- 1) While the economic literature considers the absence of entry barriers as fundamental for welfare, natural, artificial, and statutory barriers exist and deter solo practice even in suburban markets where competition among physicians is much less in contrast to metropolitan areas. These barriers act to impede competition by legally restricting the supply of physicians.
- 2) Entry barriers and incentives do not typically overlap in the perception of solo practitioners. Their associated costs, whether direct or incidental, might overlap as exemplified by the high labor costs of legal and regulatory compliance, risk and insurance, and R & D. These associated costs are also more challenging to solo practitioners, whether specialty or not.
- 3) Of the several entry barriers, only statutory compliance bears strong adverse effects on PCPs. The rest tend to have moderate impact on PCPs likely as a result of their undersupply and relatively stable level of patient supply, loyalty, and activity (e.g. regularity of check-ups and screenings).
- 4) In contrast, five barriers present specialists with strong disincentives to solo entry (and survival): Fixed capital, risk and insurance, concentration, statutory compliance, and advertising. Although not as strong of an entry barrier, R & D nonetheless imposes substantial costs to solo specialty practice. The greater overall height of these barriers, along with their significant transaction costs, can be attributed to the costlier demands and overuse of specialty medicine and the efficiency in exploring, exploiting, and utilizing economies-of-scale on the part of single specialty and multi-specialty group practices. They drive many physicians away from solo practice into larger group practices.

Premises considered, our hypothesis that barriers to entry have similar effects on PCPs and specialists is modified. In doing so, we take into account contrasting barrier heights based on the attributes of the solo entrant's field of practice. Statistically significant *t*-test results suggests that the difference between our two-sample averages is most likely representative of a meaningful difference in the suburban population from which they were drawn. Regression analysis reveals that the overall negative impact of barriers on solo specialty practice is nearly twice as much as its impact on solo practitioners in family medicine, internal medicine, and pediatrics. Such differences are also unlikely to have occurred because our small samples happened to be atypical.

Yet, we hasten to point out that these barriers may not necessarily prevent solo practitioners from pursuing and keeping their suburban practice. How barriers might be counterbalanced by incentives to solo entry still needs to be explored. Our findings suggest at least four factors that contribute a positive impact of about equal magnitude to solo PCPs and specialists in suburban settings: Past rate of market growth, anticipated income rates, market size, and the doctor's reputation. Hence, this study further qualifies

conjectural and anecdotal information that tend to disregard or deny the role incentives might play in a physician's decision to establish or retain an independent practice. After all, despite their declining number, solo practitioners still represent 1 of every 5 American physicians who assume full responsibility for running their practice from both a medical care and business standpoint.

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