REACHING EQUILIBRIUM IN THE MARKET FOR OBSTETRICIANS AND GYNECOLOGISTS

JESSICA WOLPAW REYES

Amherst College and NBER

Author Information:

Name: Jessica Wolpaw Reyes

Affiliations: Assistant Professor of Economics, Amherst College

Faculty Research Fellow, National Bureau of Economic Research

Address: Department of Economics, AC 2201, Amherst College, Amherst, MA 01002-5000

Telephone: (413) 542-8517

Facsimile: (413) 542-2090

Email: jwreyes@amherst.edu

ASSA Session Information:

Title: Understanding the Gender Gap in Wages (sponsored by CSWEP)

Date: January 6, 2007, 8am

Chair: Francine Blau, Cornell University

Discussant: Kenneth Troske, University of Kentucky

Acknowledgements:

I am grateful to colleagues for valuable advice, in particular Claudia Goldin and Walter Nicholson. I am also indebted to the Department of Health Economics at the American College of Obstetricians and Gynecologists for generously providing the Socioeconomic Survey data. This research was supported by the Mellon Foundation, the National Bureau of Economic Research, and the National Institute on Aging. All errors and omissions are my own.

Reaching Equilibrium in the Market for Obstetricians and Gynecologists

By Jessica Wolpaw Reyes

In the past 30 years, more and more women have become physicians, receiving training that is indistinguishable from their male counterparts. This standardization of human capital accumulation, together with the existence of well-defined specialty categories and clear productivity measures, renders the physician labor market well-suited to economic analysis of gender discrimination. The literature indicates that gender gaps in income have faded somewhat, but still persist even within medical specialties. However, much of this literature uses older data, does not look at trends over time, or does not take appropriate account of medical specialties or shifts in the age and gender composition of physicians.

This paper focuses on a single medical specialty – obstetrics and gynecology – to gain insight into gender discrimination among highly educated men and women and how it has evolved in the last 20 years. Obstetrics and gynecology (ob-gyn) is an attractive choice for a number of reasons. First, human capital and production can be measured consistently and accurately. Second, the number of women in the specialty has grown dramatically: while only 12% of ob-gyns were female in 1980, that share reached 22% by 1990 and 40% by 2005 (AMA). Third, ob-gyn is a surgical specialty with an arduous training process: such specialties have traditionally been male-dominated, stressful, and challenging (Bickel, 2000). Fourth, there may be pro-female discrimination on the part of patients: all patients are female and many prefer a female physician.

This paper investigates the operation of the market for ob-gyns and their services. I start by noting the existence of an initial excess demand for female ob-gyns relative to male ob-gyns (arising from patient preference), and continue to investigate its consequences in the short-run and the long run. In the short-run, a competitive market would likely evince higher prices female ob-gyns. The inelasticity of supply (attributable to low annual turnover, a fixed number of residency

positions, an eight year production time for new physicians) would most likely inhibit any supply response in the short run. In the long run, a greater elasticity of supply and the gradual easing of barriers to women's entry might permit a supply response: the supply of female ob-gyns could increase, mitigating price differentials by gender. However, non-competitive features of the markets interfere with these adjustments: prices are often set by third-party payers rather than by the market, and quantities are slow to adjust for reasons just mentioned. It seems unlikely that the competitive equilibrium would be reached easily or quickly.

Using two separate datasets with a high level of detail about medical practice, this paper finds that the market for ob-gyns and their services is surprisingly flexible, though certainly not perfectly so. In the short run, there are price differentials and queuing: female ob-gyns charge higher fees and have longer waiting times. In addition, during the time period in which managed care was on the rise (the late 1980s and early 1990s), these effects were mediated by institutional structures: in a traditional third-party-payer framework in which money prices were flexible, physician fees adjusted; whereas in contract settings such as managed care in which money prices were relatively rigid, waiting times adjusted instead. Over the long run, the supply of women increased dramatically, possibly (though not necessarily) in response to the excess demand for female ob-gyns, and unexplained income gaps disappeared.

I. Background and Theory

There is evidence that many female patients prefer to be treated by a female physician, that these preferences are more pronounced in gynecology, psychotherapy, and in areas of sexual abuse, and that these preferences intensified as gender attitudes evolved (Chandler et al 2000, Thorne 1994, Weyrauch 1990). By the late 1990s, patient preference for female ob-gyns and the ways in which it affects ob-gyn practice and disadvantages male physicians had become a topic of much discussion in the ob-gyn community (Lyon 2002). There is also mixed evidence that female

physicians provide quantitatively and qualitatively different care (e.g. tests ordered, procedures performed, interpersonal approach). Lastly, research indicates that female physicians experience discrimination and receive incomes that are 30-40% lower than male physicians (Langwell 1982, Baker 1996). Physician characteristics and production (e.g. hours, patients) explain about half of the income gaps, and possibly more in recent years (Ohsfeldt and Culler 1986, Pearse 2001).

In this paper, I first investigate the market for ob-gyn services in the short-run. Demand is the number of patients desiring visits with ob-gyns of each gender. Supply is the number of available such visits, and is relatively inelastic – physicians have finite time and production of new physicians is slow. Prices have both a monetary and a time component: fees and waiting times for appointments. In the monopolistically competitive market for physicians' services, price differentials can persist. Moreover, managed care and other insurance contracts can greatly inhibit the free adjustment of physicians' fees. Thus, two things may happen in the short run: the inelasticity of supply will likely cause most adjustment to occur in prices rather than quantities, and price-rigid insurance contracts may cause most adjustment to occur in waiting times rather than fees. Patients may queue up to wait for the physician they prefer, but this is inefficient.

Second, I investigate the market for ob-gyns in the medium to long run, examining changes relative incomes and in the supply of physicians over a 13-year period from 1990 to 2002. In the long run, supply is more elastic and there may in fact be a supply-side response to the strong demand for female ob-gyns. Furthermore, as women entered ob-gyn in great numbers (even achieving dominance among new resident physicians), it is likely that changes occurred in the structure of ob-gyn practice and the relative performance of male and female ob-gyns.

II. Data and Empirical Approach

The first data set is the Practice Patterns of Young Physicians (YPS). These surveys were conducted in 1987, 1991, and 1997 and contain data on 8,797 physicians of all specialties, aged 45

years or less. In addition to data on practice characteristics (such as patients, hours, income), the YPS includes data on fees (for a visit with an established patient) and waiting times (in weeks, from call to appointment) for 1987 and 1991. The YPS sample includes 850 young ob-gyns, of which 299 are female. The YPS provides an excellent picture of the market in the short-run.

Compared to male physicians, female physicians in the YPS receive incomes that are 30% lower, work 17% fewer hours per week, see 10% fewer patients per week, and have 40% longer waiting times. An Oaxaca decomposition shows that more than half of the income difference can be explained by differences in characteristics, particularly specialty choice. Within the ob-gyn specialty, most of the gender gaps are smaller: 20% in income, 5% in hours, none in patients seen. The gap in waiting times, however, is quite large: on average, patients wait only 2.2 weeks to see a male ob-gyn compared with 4.0 weeks to see a female ob-gyn (a 70% premium). There is also a slight and insignificant 10% differential in standard fees (women's fees are higher).

The second data set is the Socioeconomic Surveys of Fellows of the American College of Obstetricians and Gynecologists (ACOG). These surveys were conducted in 1991, 1994, 1998, and 2003 and contain data on 3,698 ob-gyns of all ages, of which 1,501 are under the age of 40, and of those 722 are female. The data include information on practice characteristics as well as data specific to ob-gyn practice (e.g. subspecialization, deliveries, and surgical procedures), and cover a much longer time period, and one during which women entered ob-gyn in great numbers.

In the ACOG data, female ob-gyns are younger than males, earn lower incomes ($196,000 vs. $257,000), and produce less (e.g. hours, patients, procedures). Even when considering only young ob-gyns (40 years old or younger), there are gaps of 23% in income, 10% in hours, 9% in patients, and 21% in procedures performed. This large difference in procedures performed (which widens in later years) is the most striking new information provided by the ACOG data.

The short-run analysis uses the YPS and regresses prices or quantities (fees, waiting times,

hours, patients) on physician characteristics, practice characteristics, and physician activity. The long-run analysis uses the ACOG data and regresses log weekly income on an analogous set of explanatory variables, also incorporating measures of production such as hours, patients, and procedures. While one might wish to study fees and waiting times in the long run as well, data is not available for this task. The regressions are estimated as weighted least squares with Huber-White robust standard errors, year dummies are included as appropriate, and dollar figures are adjusted using the CPI. Focusing on young physicians provides a sample that includes more women and eliminates bias that would arise from the difference between the installed base of physicians (older and primarily male) and the flow of new physicians (younger and primarily female). In all cases, the figure of interest is the gender differential within ob-gyn.

III. Results and Discussion

A. Short Term

Table 1 shows the regression results for spot prices. The analysis for fees suggests that patients pay more to see a female ob-gyn rather than a male ob-gyn, but the results are not statistically significant. The within ob-gyn gender differential in fees is estimated as a premium of $3.34 (insignificant with a p-value of 0.20) on an average fee of approximately $45 in 1987. When including year interactions (results not shown), the within ob-gyn gender fee premium is significant ($4.81, p-value < 0.05) in 1987, but is entirely insignificant in 1991, possibly attributable to the higher penetration of managed care and its greater role in setting prices. Most interesting, splitting the sample by whether or not physicians have a contract with a managed care organization yields striking results. Female ob-gyns without such a contract, who are relatively free to set their fees, do indeed receive higher fees, while those without a contract do not. The within ob-gyn gender differential is $10.22 for those without contracts, and entirely insignificant for those with contracts. (This result is slightly but insignificantly amplified in 1991 relative to

1987.) It is important to note that, because the YPS data covers the period of time during which managed care was on the rise, the sample is relatively evenly split between physicians in contracts and those not in contracts. This diversity is precisely what provides the opportunity to investigate the role these organizational structures play in affecting market equilibration.

Turning to waiting times, the results in Panel B indicate that patients wait substantially longer to see a female ob-gyn: 0.48 weeks more (as they would for a female physician in any specialty), and 1.49 weeks longer specifically for a female ob-gyn. The waiting time (weeks from an initial inquiry to the soonest available appointment) represents the length of the queue, and the within-ob-gyn gender differential indicates that patients do in fact wait longer for an appointment with a female ob-gyn as one manner of paying for this desirable good. In addition, contract setting has precisely the effect one would expect. Physicians not in contract settings are better able to charge patients more using traditional fees, and do not experience substantially longer waiting times. In contrast, physicians in contract settings, relatively unable to use fees to ration demand, experience significantly higher waiting times – patients wait 2 weeks longer to see a female ob-gyn. These results are not substantially different between 1987 and 1991.

Overall, the results in Table 1 confirm that spot prices adjust, and reveal that fees adjust for physicians not in contracts while waiting times adjust for those constrained by such arrangements. Investigation of quantities that might be flexible in the short run, such as hours and patients, yields the result that, while female physicians in most specialties generally produce less, female ob-gyns match their male colleagues quite closely in production.

B. Long-Term

I now consider the market for ob-gyns in the long term. Between 1990 and 2002, the female share of ob-gyns rose from 22% to 37% – this expansion of supply could be expected to alleviate the pressure of an excess demand and reduce price differentials. While I do not have data

on spot prices in the later years, I am able to examine income throughout this time period. Results using the ACOG data (Table 2) show that young female ob-gyns earned 19% less per week throughout the 1990s. Analysis of the YPS data (which includes all specialties) provides the insight that, while they were still doing worse than male ob-gyns, female ob-gyns in 1987 and 1991 were in fact closing the gender gap more successfully than female physicians in other specialties: the gender gap in ob-gyn was about half as large as that in other specialties (12% in ob-gyn vs. 24% in other specialties). Looking at trends over time in the ACOG data, the negligible compression of the raw income gap shown in Table 2 suggests little change in the relative performance of female and male ob-gyns. However, adjusting for practice characteristics and production shows a substantial narrowing of the gender gap: in the 1990s the point estimates range between 8.4% and 11.1%, but by 2002 the estimated gap is an entirely insignificant 1.5%. It appears that the relative performance of female ob-gyns improved enough after 1997 that by 2002 gender *per se* was an insignificant factor in explaining income. In this most recent data, the raw gender income differential of 18% is largely explained by female physicians choosing to see fewer patients, do fewer surgical procedures, or practice in less financially rewarding settings. An Oaxaca decomposition confirms that the portion attributable to differences in productive characteristics stayed relatively stable at about half in the 1990s (0.50 in 1990, 0.53 in 1993, and 0.54 in 1997), but rose dramatically to near unity by 2002 (0.96 in 2002). At least by this measure, discrimination made way for divergent labor supply responses. Analysis using alternate income measures, specifications, or samples yields similar results.

This disappearance of a measurable unexplained gender gap coincides with the rise to predominance of women in ob-gyn. Women became the majority of ob-gyn residents in 1992 and passed 70% in 2001. By the late 1990s, discussion of the feminization of the specialty of ob-gyn intensified. While it is not easily discerned, it seems possible that a tipping point was reached.

Perhaps women gained enough clout that they were able simultaneously to choose a practice style that more closely matched their preferences (e.g. doing fewer procedures) and also to eliminate any remaining anti-female discrimination in income. In this scenario, women's relative incomes would fall because they were doing less and rise because they were treated more equally. The net result would have been that the raw income gap remained the same but the unexplained gap fell to near zero. At the same time, ob-gyns experienced declines in real income that were three times as large as physicians in other specialties (17% vs. 5%, AMA data) – it is possible that the specialty's feminization did harm to its status and financial rewards. While female ob-gyns gained relative to male ob-gyns, the entire specialty may have suffered from becoming pink-collar. Managed care may have been an additional factor in reducing physician rents and narrowing differentials.

IV. Conclusion

This paper has afforded a unique opportunity to examine a single market from a variety of perspectives. Starting out of equilibrium, and confronted with inelastic supply, the short run market used traditional and non-traditional spot prices to clear an excess demand for female ob-gyns. Non-competitive institutions and contracts partially inhibited the adjustment of physician fees, producing a greater adjustment of waiting times for physicians bound by restrictive contracts. In the long run, the supply of female physicians increased and unexplained income gaps disappeared: while female ob-gyns first earned lower incomes than male ob-gyns (but did relatively better than female physicians in other specialties), by 2002 they suffered no unexplained income deficit. Moreover, it is possible that the income declines experienced by the specialty as a whole were associated with its feminization. Overall, it appears that the market has been surprisingly (though not perfectly) flexible, and that as a result female ob-gyns have been partially successful at capturing their scarcity value. Future work will investigate the evolution and anatomy of gender differences within this labor market in greater detail.

References

American Medical Association, 1980s to 2005, various years. *Physician Characteristics and Distribution in the U.S.*

American Medical Association, 1990s. *Socioeconomic Characteristics of Medical Practice.*

Baker, Lawrence C., 1996. "Differences in Earnings Between Male and Female Physicians," *The New England Journal of Medicine*, 334(15), p. 960-4.

Bickel, Janet, 2000. *Women in Medicine*. Thousand Oaks CA: Sage Publications.

Chandler, P. J., C. Chandler, et al., 2000. "Provider gender preference in obstetrics and gynecology: a military population," *Military Medicine*, 165(12): p. 938-40.

Journal of the American Medical Association. "Graduate Medical Education." Sep 2002, 1151-64.

Langwell, Kathryn M., 1982. "Factors Affecting the Incomes of Men and Women Physicians: Further Explorations," *Journal of Human Resources*, 17(2), 261-275.

Lyon, Deborah S, 2002. "Graduate Education in Women's Health Care: Where Have All the Young Men Gone?" *Current Womens Health Report*, 2(3): p. 170-4.

Ohsfeldt, Robert L., and Steven D. Culler, 1986. "Differences in Income between Male and Female Physicians," *Journal of Health Economics*, 5(4), p. 335-46.

Ossorio, Pilar N, 1999. "No Boys Allowed?" *Journal of Gender Specific Medicine*, 2(2): p. 34-8.

Pearse, Warren H., William Haffner, and Aron Primack, 2001. "Effect of Gender on the Obstetric-Gynecologic Workforce," *Obstetrics and Gynecology*, 97(5), p. 794-7.

Thorne, S., 1994. "Women show growing preference for treatment by female physicians," *Canadian Medical Association Journal*, 150(9): p. 1466-7.

Weyrauch, K. F., P. E. Boiko, et al., 1990. "Patient Sex Role and Preference for a Male or Female Physician," *The Journal of Family Practice*, 30(5): p. 559-62.

Table 1. Standard Fees, Waiting Times, and Contract Setting.

	All	No Contract	Contract
A. Standard Fee ($)			
female	0.19	0.42	0.00
	(0.98)	(1.65)	(1.22)
obgyn	6.30 **	3.07	8.16 **
	(1.43)	(2.25)	(1.79)
female*obgyn	3.34	10.22 **	-0.66
	(2.61)	(5.03)	(2.79)
B. Waiting Time (weeks)			
female	0.48 **	0.44 **	0.53 **
	(0.09)	(0.13)	(0.11)
obgyn	1.49 **	2.18 **	1.00 **
	(0.16)	(0.27)	(0.18)
female*obgyn	1.48 **	0.75	1.92 **
	(0.27)	(0.45)	(0.32)

Notes. Results shown are from the pooled OLS regression (YPS data) of fee or waiting time on a female dummy, dummies for thirteen major medical specialty categories, an interaction of the ob-gyn category with the female dummy, and other variables (age, experience and its square, and indicator variables for year, race, marital status, children, AMA membership, board certification, private practice, contract arrangement (in col 1), and salaried pay). Contract arrangement is determined by association with an HMO, PPO, or IPO.

Table 2. Gender Gaps in Log Weekly Income.

	No Controls	With Controls
All Years	-0.195 **	-0.069 **
	(0.027)	(0.024)
1990 only	-0.208 **	-0.084 *
	(0.059)	(0.047)
1993 only	-0.205 **	-0.111 *
	(0.076)	(0.064)
1997 only	-0.190 **	-0.110 **
	(0.038)	(0.035)
2002 only	-0.180 **	-0.015
	(0.050)	(0.049)

Notes. Results from a weighted OLS regression (ACOG data) of the logarithm of weekly income on variables indicating gender, age, race, subspecialization, board certification, years in practice, salaried practice, private practice, deliveries, surgeries, hours, patients seen, census region, and county population category. Analysis using all years of data together also includes year dummies. The coefficient on the female dummy is shown.