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PHYSICIANS' EMPLOYMENT STATUS
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INTRODUCTION

During the last 15 years, women have substantially increased their share of traditionally male professional jobs. As recently as 1975, only 15 percent of the law degrees and 3 percent of the dentistry degrees were earned by women. In 1985, however, women earned 38 percent of the law degrees and 21 percent of the degrees in dentistry. Just as dramatic has been the increase in the number of women physicians. In 1975, women received 13 percent of the

medical degrees and by 1985 this figure had increased to 30 percent. It is currently estimated that one-third of all medical students today are female.

Generally, these types of figures are used to illustrate that gender differences in professional occupations are narrowing. However, in spite of the increase in the number of female physicians, there still exist several differences between male and female physicians. A number of studies have noted that differences exist across gender in physicians' choice of specialty, board certification, and work hours (Becker et al. 1984; Culler and Oshfeldt 1987; Mitchell 1984; Silberger et al. 1987). The factors that cause these gender differences in incentives are also going to affect the physician's choice of employment status. In fact, female physicians are nearly twice as likely to be employees than their male colleagues. Only 23.5 percent of male physicians were employees in 1985 compared with 45.5 percent of female physicians (Cotter 1986). The purpose of this study is to examine the role of gender with regards to physicians' employment status.

All physicians, male and female, face a much wider range of practice styles than physicians did ten years ago. Alternative health care delivery systems now compete with the traditional self-employed, fee-for-service office-based practice. As a result, a growing number of physicians are working as employees in a variety of these non-traditional settings. This includes employment by hospitals, state and local governments, other physicians, clinics, or Health Maintenance Organizations (HMOs). Physicians that work in the traditional self-employed, fee-for-service office-based practice will have more autonomy in medical decision making and greater responsibility, but may have to work longer, more irregular hours and face a more variable income stream.

Thus the choice of employment status will affect the physician's income and non-pecuniary benefits such as autonomy and hours of work. There are two ways gender may affect the physician's choice of employment status. First, women may have different preferences than men over income, leisure time, and professional autonomy. Systematic differences in employment status may reflect these preferences. Second, differences may exist across gender in the incentives provided by the market for physician services. This could include differential access to being self-employed versus an employee. Alternatively, it might be that women physicians face different preferences from the consumers of medical services than their male counterparts, affecting their choice of employment status. The purpose of this study is to examine the role of gender in the physician's choice of employment status.

Data and Analysis

Data for this study were drawn from the American Medical Association (AMA) Socioeconomic Monitoring System (SMS) survey of the AMA Masterfile of Physicians. SOS is a semi-annual survey of non-federal patient care physicians stratified by specialty and census division. In the second quarter of each year, a core survey is conducted of approximately 4,000 physicians. Data collected include information on physician incomes, hours worked, and other socioeconomic indicators. The AMA Masterfile is a census of all physicians in the United States. It provides information on the physician's specialty, sex, experience, board certification, and employment status.

Logit and multinomial logit models are used to predict the employment status of individual physicians, based on a set of personal characteristics. The specific form of the estimation equation is

$$\ln e^{P_i/P_0} = a_i + b_i X + e_{i+1,5}$$

where P_0 refers to the probability a physician is self-employed and the P_i 's

refer to the probability the physician is either employed or in one of five types of employment arrangements. In the first case, the choices are either self-employed or employed. Then, to expand the alternatives, the second case uses a multinomial logit model where the physician can be either self-employed or employed in one of five different employment settings. This expanded model is included to see if, given additional choices in employment status, the results are consistent with the two choice (employed or self-employed) model. In the expanded model the physician can either be self-employed or employed by a hospital, the government, another physician, a clinic or HMO, or other employee arrangement. In both models the employment types are mutually exclusive, and the sum of the probabilities is constrained to sum to one. The vector of independent variables, which includes physician characteristics, is designated by X. The parameters estimated enable one to determine the effect of the independent variables on the relative probabilities. The set of physician characteristics includes the physician's years of experience, whether the physician is board certified, the number of hours spent in patient care last year, the physician's specialty, the physician's sex, average wage earned per hour spent in patient care last year, and the physician-population ratio.

Experience of the physician is measured by years since the physician completed medical school. [1] Experience is likely to influence the choice of employment status in a number of ways. Young physicians, those just starting their medical career, are entering an increasingly competitive market, making self-employment more difficult. As physicians establish their practices and base for referrals, the option of financing their own practice may increase. At the same time, these younger physicians face more employment choices than did their older colleagues upon completing medical school. Thus younger physicians may be able to choose employment options not readily available to their older colleagues when they first began to establish practices. At the same time, these older physicians (which now have established self-employment practices) are apt to find that the benefits of switching to the more readily available alternative type of employed practices are outweighed by the costs. Thus it is expected that more experienced physicians would be more likely to be in a self-employed practice. As one might expect, there are gender differences with regard to the average level of experience. On average, women physicians have fewer years of experience, as they have only recently begun to enter the medical profession as physicians.

Physician board certification indicates more specialized training and may proxy for higher quality of physician services. Although it will vary by physician specialty, the returns for self-employment are likely to be greater for the more specialized higher quality physician. Board certified physicians should therefore tend to choose a self-employed practice over an employee arrangement. Gender differences do exist regarding board certification. The 1986 SMS survey of non-federal patient care physicians found that 70 percent of the male physicians are board certified compared to 58 percent of the female physicians.

Hours worked in patient care in the last year are also included as an explanatory variable. Those physicians preferring more leisure time and/or regular hours would be less likely to choose self-employment. Gender differences also exist with regards to hours worked (see Table 1). Mitchell (1984) has shown that women physicians, regardless of specialty, work fewer hours than male physicians. Thus one might argue that because women physicians choose to work fewer, and possibly more regular hours, they would be less likely to be self-employed. Therefore, this variable is included to control for gender differences specifically related to hours worked.

Wage, defined as the average earnings per hour spent in patient care last year, is included to capture wage differentials between employed and non-

employed status and the complexity of physician services. Across specialty, physicians can offer a variety of services. The physician offering greater depth and variety of services will receive greater returns. Similar to the quality variable of board certification, one would expect that the greater the complexity of physician services, the greater the potential return with self-employment. There are gender differences with regards to earnings per hour in patient care. Table 1 shows that self-employed male and female physicians earned \$49.19 and \$35.66, respectively, per hour worked last year in patient care. The difference between male and female employed physicians was \$39.63 and \$32.84, respectively. By including wages as an explanatory variable, one is able to control for different types of services a physician may offer that may vary systematically by gender. Although Kehrer (1976) found that gender differences in hours worked is one of the most important sources of the lower annual incomes of women physicians, that source of variation, hours, is included as a separate explanatory variable.

Physicians are grouped into four specialty categories: general practitioners; medical specialties; surgical specialties; and other specialties. The physician's specialty has clear implications for employment status. Specialty determines the physician's dependence on referrals, the delivery site of the physicians services (hospital versus office) and the need for complementary physician services (surgeons and anesthesiologists). Gender differences exist with regard to physician specialty, as well. Table 2 shows that employment status varies by specialty in our sample. Women physicians are more likely to be in general practitioner specialties (such as pediatrics or

Table 1
Physician Employment Status by Sex and Specialty
(total percentage and percentage by sex
in each employment status)

Specialty	Male		Female		Total	
	Employed	Self Employed	Employed	Self Employed	Employed	Self Employed
General Family	16	84	50	50	19	81
Internal Medicine	18	82	40	60	19	81
General Surgery	8	92	71	29	8	91
Otolaryngology	8	92	0*	100*	8	92
Orthopedic	14	86	25*	75*	14	86
Ophthalmology	8	92	44	56	10	90
Urological Surgery	10	90	**	**	10	90
Pediatrics	21	79	43	57	25	75
Obstetrics/Gyn	9	91	33	67	11	89
Psychiatry	25	77	24	75	24	76
Radiology	22	78	50	50	24	76
Anesthesiology	21	79	39	61	23	77
Pathology	38	62	80	20	41	59
Other	38	62	54	46	40	60

* Less than 3% of the physicians sampled in this specialty are female

** None of the physicians sampled in this specialty are female

Table 2
Hours and Wages by Gender and Employment Status

Hours Worked Per Week in Patient Care	Average Income Per Hour in Patient Care
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Employment Status	Male	Female	Male	Female
Self-Employed	53.87	48.82	\$49.19	\$35.66
Employee	47.90	43.86	39.63	32.84
Hospital	45.69	39.33	39.93	35.31
Government	44.94	48.50	32.73	31.81
Other Physician	51.85	47.51	39.39	32.45
HMO or Clinic	48.10	45.78	41.00	30.57
Other	46.27	43.80	42.52	30.24

general-family practice), and other specialties (such as anesthesiology or psychiatry). These same specialties also have some of the highest percentage of physicians as employees, regardless of the sex of the physician.

The physician-population ratio in the county in which the physician practices is included to reflect market conditions facing the physician. On the one hand, a higher ratio might indicate a more competitive working environment for the physician. Alternatively, it might represent a market where greater opportunities exist, attracting the large physician population. In either case, with a higher concentration of physicians greater employment options are apt to exist for physicians. Therefore, one would expect that the higher the physician-population ratio, the less likely a physician would choose self-employment. It is interesting to note that women physicians, regardless of employment status, practice in areas with a higher physician-population ratio. It might be that women physicians are more concerned than male physicians in establishing their practices in areas providing the greatest employment opportunities for their spouse. Or, alternatively, they might face greater barriers in establishing their practices in more traditional, rural areas. [2]

The final variable included is gender. All of the independent variables--experience, board certification, wage, physician specialty, physician-population ratio, and gender--are hypothesized to influence the choice of employment status. In addition, all of these variables differ themselves by gender. Relative to men physicians, women physicians on average have less experience, are less apt to be board certified, have lower earnings per hour, are more highly concentrated in certain specialties such as pediatrics, and practice in areas with a higher physician-population ratio. Therefore, they exhibit all of the characteristics which indicate a greater propensity to be employed, rather than self-employed. If, however, the estimation results yield a non-zero coefficient on gender, this would indicate that sex itself affects one's employment status, regardless of the gender differences in the other explanatory variables.

Table 3 shows the means and standard deviations of all the variables. The sample includes 3,813 male physicians and 375 female physicians. The first estimation results for the logit model are displayed in Table 4. The multinomial logit results are displayed in Table 5. The coefficients can be interpreted as the change in the natural log of the odds ratio with respect to a unit change in the independent variables. The coefficients thus enable one to determine the direction of effect of each independent variable. For example, since the dependent variable is P_i/P_o in the first model,[3] a negative coefficient on a variable can be interpreted as a lower probability of being employed relative to being self-employed, given an increase in that independent variable, and controlling for differences in the other independent variables.

The results are significant and as expected in all cases. Even after controlling for differences in the independent variables, the results indicate that sex itself affects the physician's employment status. Women physicians

have a higher relative probability of being self-employed compared with being employed. When differentiating between the different types of employment, Table 5 indicates that women physicians had higher relative probabilities of being employed by hospitals, by other physicians, by a clinic or HMO, or by some other employee arrangement than of being self-employed.

In examining the results of the other independent variable, as hypothesized, experience significantly reduces the probability a physician is employed. In 1985, 47 percent of the younger physicians, those under 36 years of age, were employees. This compares to 20.9 percent of those physicians between the ages of 46-55 working as employees (Cotter 1986). The reasons for younger physicians choosing employment have been discussed above. They include increased competitive pressures, increased alternative employment options, and possibly that employment is simply a first step in a physician's career followed later by self-employment. The fact that women physicians are concentrated at the younger end of the age distribution might therefore explain why women physicians are more likely to be employed. However, the results indicate that significant gender differences exist with regard to employment unrelated to gender difference in experience.

Board certification also significantly decreases the probability a physician is employed. In the multinomial logit model this was true except for those physicians employed by other physicians. In that case, board certification is insignificant. Board certification was included as a proxy for higher quality, more specialized, physician services. Since self-employment is generally regarded as more risky, the potential rewards, either monetary or non-monetary, must be greater than those on average associated with employment. The results indicate that the returns on self-employment are likely to be higher for the more specialized, board certified physician. Although male physicians are more likely to be board certified than female physicians, these

Table 3
Physician Characteristics by Sex and Employment Status
(variable means with
standard deviations in parentheses)

Variables	Employed		Self Employed	
	Male (n=713)	Female (n=160)	Male (n=3100)	Female (n=215)
Years of Experience	18.72 (11.03)	15.48 (9.99)	22.90 (11.23)	18.29 (10.27)
Board Certification (yes = 1)	.67 (.47)	.57 (.50)	.73 (.45)	.65 (.48)
Hours worked last year	2269.77 (797.67)	2066.46 (766.32)	2561.70 (810.93)	2326.79 (780.75)
Income per hour worked	39.63 (23.51)	32.84 (19.00)	49.10 (38.96)	35.66 (26.44)
General practice specialty (yes = 1)	.15 (.35)	.15 (.36)	.17 (.38)	.11 (.32)
Medical specialty (yes = 1)	.24 (.43)	.33 (.47)	.24 (.43)	.34 (.48)

Surgical specialty (yes = 1)	.14 (.35)	.11 (.31)	.32 (.46)	.12 (.32)
Other specialty (yes = 1)	.47 (.50)	.41 (.49)	.27 (.44)	.43 (.50)
Physician-population ratio	0.0022 (.0018)	0.0025 (.0018)	0.0019 (.0011)	0.0021 (.0014)

Table 4
Determinants of Employment Status
of Men and Women Physicians
(logit results)

	P1/P0 (N=4188)
Constant	-2.1917* (.2416)
Experience	-0.0434* (.0039)
Board Certification	-0.2219* (.0901)
Hours Worked	-0.0007* (.00006)
Income per hour	-0.0179* (.0019)
General specialty	-0.6062* (.1272)
Medical specialty	-0.6151* (.1070)
Surgical specialty	-0.9939* (.1201)
Physician Population ratio	178.4539* (30.0397)
Sex	0.5098* (.1242)

Notes:

P0 is the probability of being self-employed

P1 is the probability of being employed

Standard errors are in parentheses

Significant at 1%

Table 5
Multinomial Logit Results

	P1/P0	P2/P0	P3/P0	P4/P0	P5/P0
Constant	2.3482* (.3254)	0.2746 (.6805)	0.9398* (.3582)	-0.3881 (.5379)	-0.3518 (.5824)
Experience	-0.0359* (.0057)	-0.0272* (.6805)	-0.0634* (.0072)	-0.0519* (.0096)	-0.0132 (.0096)
Board certification	-0.2682* (.1301)	-0.6265* (.2639)	-0.0917 (.1447)	-0.0948 (.2084)	-0.0436 (.2370)
Hours worked	-0.0009* (.00009)	-0.0009* (.0002)	-0.0004* (.00009)	-0.0009* (.0001)	-0.0007* (.0002)
Income per hour	-0.0207* (.0029)	-0.0256* (.0073)	-0.0160* (.0033)	-0.0119* (.0043)	-0.0168* (.0051)
General specialty	-1.5062* (.2168)	0.0949 (.3425)	-0.6404* (.1963)	0.9516* (.3148)	-1.0435* (.3547)
Medical specialty	-0.8912* (.1527)	-0.2122 (.3348)	-0.8498* (.1768)	0.9721* (.2846)	-0.8375* (.2807)
Surgical specialty	-1.5236* (.1962)	-1.0572* (.4683)	-0.9957* (.1946)	0.5994 (.3055)	-1.1879* (.3308)
Sex	0.3706* (.1746)	0.5215 (.3458)	0.4631* (.1921)	0.8182* (.2476)	0.8844* (.0051)

Notes:

P0 is the probability of being self-employed
P1 is the probability of being employed in a hospital
P2 is the probability of being employed by the government
P3 is the probability of being employed by another physician.
P4 is the probability of being employed by a clinic or HMO.
P5 is the probability of being employed in another arrangement.

Standard errors are in parentheses
Significant at 1%

variations themselves cannot fully account for the gender differences in employment status.

As expected, total hours spent last year in patient care significantly reduces the probability a physician is employed. This was also true when different types of employment arrangements were examined. One might argue that self-employment offers greater flexibility in hours worked, yet it usually implies longer, less regular hours. Although it is true that women physicians work fewer hours than men physicians across all types of employment settings (except for those employed by the government), the hours differential does not

fully explain the fact that women physicians are less likely to be self-employed.

It was also found that higher wages significantly reduce the probability of a physician being employed in both the logit and multinomial logit models. The results indicate that even after controlling for wage differentials associated with self-employment and employment, gender differences in employment status are still significant.

Physician specialty, among other things, will determine the physician's dependence on referrals, the types of services rendered, and the type of patients seen. Since both gender and employment differences exist with regard to physician specialty, it is important to control for this variation. The results indicate that physician specialty in the logit and in the multinomial logit models has a significant effect on employment status in most cases.

The physician-population ratio in the county in which the physician practices captures market conditions facing the physician. As expected, those physicians located in the more highly concentrated counties have a lower probability of being self-employed. Once again, the fact that women physicians are more likely to be located in those counties with greater physicians per capita does not fully explain why women physicians are more likely to be employed.

As stated in the beginning of this paper, there are significant differences by gender in employment status. Only 23.4 percent of male physicians were employees in 1985 compared with 45.4 percent of female physicians. Explanatory variables were included in a logit model and multinomial logit model to explain this differential. It was hypothesized that the more experienced board certified physician, working more hours, receiving a greater return per hour, and practicing in an area with a lower physician-population ratio would, on average, be more likely to be self-employed. In addition, certain physician specialties lend themselves toward self-employment. The empirical results confirmed these hypotheses. Thus the fact that women, on average, are less apt to have these characteristics of self-employment would therefore explain why women are not as likely to be self-employed. Yet the results indicate that even after controlling for these gender differences in the explanatory variables, the sex of the physician is still a significant determinant of employment status.

Conclusion

Although it has been shown that gender itself is an important determinant of employment status, one can only speculate as to why. There might still be real differences between male and female physicians that were not accounted for. These differences might be in the form of certain preferences pertaining to the choice of employment status. For example, one might argue that women, on average, want mobility to relocate given a change in their husband's job location. Therefore they would be less likely to choose self-employment. In addition, if women physicians are more apt than male physicians to plan career interruptions, they would be less apt to choose self-employment. On the other hand, there might be differences in opportunity facing male and female physicians. It might be more difficult for women physicians to establish a self-employed practice if they face barriers in the form of limited referrals from other physicians, in financing a self-employed practice, or from patients if gender is used as a quality signal.

One of the most significant changes in the labor market in recent years has been the shift by women from work in the home to work in the market. The number of women in the labor force has increased dramatically, with women's real earnings rising and women increasingly entering higher paid occupations. Since 1980 women physicians have increased at a rate approximately three times

greater than the rate of increase of male physicians. Yet even though more and more women are becoming physicians, there still exist substantial gender differences in the medical profession. This paper has focused on one differential, that of employment status. As more women physicians establish their practice, further research will be needed to sort out the role between preferences and opportunities in determining their employment status choice.

1. Years since finishing medical school may be a better measure of experience for men than women since women physicians may be more likely to have interruptions in their careers (Kehrer 1976).
2. It should be noted that this measure is not strictly a measure of population density, i.e., rural versus urban. There might be counties that have a larger number of physicians, yet are not necessarily considered urban. Examples might be rural counties which contain a large medical research facility, or in which there is greater consumer demand for physician services per capita, such as a retirement community.
3. As stated above, P_0 refers to the probability the physician is self-employed. In the first model the P_i refers to the probability the physician is employed. In the second estimation model, the P_i 's refer to the probability that the physician is employed in one of the five types of employed settings.

REFERENCES

- Becker, Edmund R., Steven D. Culler and Robert L. Ohsfeldt
1984 Economic Advantages of Board Certification by Sex. Chicago: Center for Health Policy Research, American Medical Association. mimeo.
- Cotter, Patrick S.
1986 An Analysis of the Changing Patterns in Physician Employment Status 1983 to 1985. Chicago: Center for Health Policy Research, American Medical Association. Mimeo.
- Culler, Steven D. and Robert L. Ohsfeldt
1987 Differences in income between male and female physicians. Journal of Health Economics (forthcoming).
- Kehrer, Barbara H.
1976 Factors affecting the incomes of men and women physicians: an exploratory analysis. Journal of Human Resources 11:526-545.
- Mitchell, Janet B.
1984 Why do women physicians work fewer hours than men physicians? Inquiry 21:361-368.
- Silberger, Ann B., William D. Marder and Richard Wilke
1987 Practice characteristics of male and female physicians. Health Affairs.

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