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The Rising Price of Physicians' Services: A Clarification

Abstract
Several years ago, one of us presented a model of the market for physicians' services (Feldstein, 1970). In a subsequent comment, Brown and Lapan (1972) raised several questions about the model and the conclusions. Unfortunately, this comment and the reply by Feldstein (1972) left a number of issues unsettled. Some of the disagreement was based on misunderstanding and on drawing infer ences from different theoretical models. After the publication of the comment and reply, we continued to pursue the basis of our disagreements. The cur rent note is an attempt to clarify the issues that were raised but not resolved in the previous ex change.

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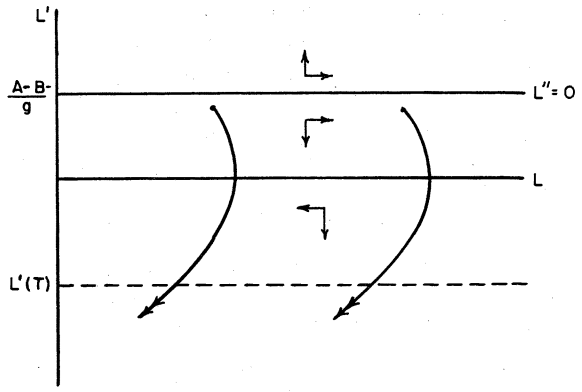
FIGURE 3. — $\alpha = 1$



and, from (18) and (29),

$$\frac{2q_2 A - W}{2gq_2} + \gamma e^{m\tau} = 0. \tag{31}$$

In this case the $L'' = 0$ locus is given by

$$L' = \frac{A - B}{g} \tag{32}$$

This is drawn in figure 3 on the assumption that $A > B$.

III. Summary

In the context of a cost of adjustment model it has been shown that the conditions for intertemporal maximization do not restrict the value of α, the returns to labour parameter, to be in any particular range. However, different ranges of values of α do have implications for the existence of equilibria and admissible employment paths. In particular, under certain simplifying assumptions, the only equilibrium in the range $0 < \alpha < 2$ was located in the subinterval $1 < \alpha < 2$ and was seen to be unstable.

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THE RISING PRICE OF PHYSICIANS' SERVICES: A CLARIFICATION

Douglas Brown, Martin Feldstein and Harvey Lapan

Several years ago, one of us presented a model of the market for physicians' services (Feldstein, 1970). In a subsequent comment, Brown and Lapan (1972) raised several questions about the model and the conclusions. Unfortunately, this comment and the reply by Feldstein (1972) left a number of issues unsettled. Some of the disagreement was based on misunderstanding and on drawing inferences from different theoretical models. After the publication of the comment and reply, we continued to pursue the basis of our disagreements. The current note is an attempt to clarify the issues that were raised but not resolved in the previous exchange.

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The behavior of the market for physicians' services is still an important issue. Physicians (and other health care providers) have been singled out for special and detailed controls under the several phases of the price control program that came into effect in 1971. The prospect of rapid inflation of physicians' fees continues to be a subject of concern and the complaint of shortage grows louder. To deal appropriately with these issues, and to provide suitable analysis of alternative proposals for national health insurance, requires a quantitative model of the market for physicians' services.

I. The Demand for Physicians' Services

Feldstein (1970) presented estimates of several alternative static and dynamic equations for the

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demand for physicians' services. The estimated elasticity of quantity demanded with respect to net price (i.e., price net of insurance) was always positive. Feldstein concluded from this and other features of the parameter estimates that the observed prices and quantities are not points on the demand function, and that the market does not follow a Marshallian or Walrasian process of adjustment to remove excess demand. In contrast, Brown and Lapan (1972) argued that the evidence of a positive elasticity with respect to net price does not establish the existence of excess demand.

We now agree that, because of the composite nature of the net price variable, it is possible to obtain a positive demand elasticity even if there is no excess demand. The "net price" is an average of the prices paid by the uninsured and by the insured. The price paid by the insured reflects both the gross price charged by physicians and the percentage of the bill paid by insurance. An increase in the *gross* price with insurance unchanged would raise the net price to both the insured and the uninsured and should reduce demand. Similarly, an increase in the extent of insurance coverage would lower the net price to the insured while not changing the net price to the uninsured; this fall in overall net price should increase demand. However, a simultaneous increase in both the gross price and the extent of insurance coverage has an indeterminate effect. For the uninsured, there is an unambiguous decrease in demand; for the insured, the increase in coverage can more than offset the increase in gross price, leading to a fall in net price and an increase in demand. If the fall in net price to the insured is greater than the increase in gross price to the uninsured, the overall net price will fall. If there are no restrictions on the relative sizes of the price elasticities of the insured and uninsured, the reduction in demand by the uninsured could be the dominant effect. A fall in overall net price would then be accompanied by a fall in total demand.

This example shows that the positive elasticity with respect to net price can be reconciled with traditional demand behavior and a market in which supply and demand are equal in every period. However, Feldstein (1970) presented equations with separate variables for price and for insurance; the insurance variable always had the wrong (negative) sign. Models of lagged price adjustment also implied anomalous coefficients, indicating that the positive price elasticity did not reflect the application of a static model to a dynamic process. In a different approach to avoiding the composite net price variable, Brown and Lapan (1972) estimated a variety of separate demand equations for insured persons and uninsured persons. Here again the estimated price elasticities were generally positive.

In short, a positive demand elasticity is consistent with either a clearing market or excess demand. The additional evidence that we have presented, however, points in the direction of excess demand. Because the analysis is based on a small sample of aggregate time series, any such inference must be regarded as tentative.[1] It indicates the need for additional research on this market and suggests that policies in this area should not be developed without considering the implications of a market with chronic excess demand.

II. The Supply of Physicians' Services

The models of the supply of physicians' services presented by Feldstein and by Brown and Lapan differ in a small but important way. Feldstein related the supply of services per physician to the price charged by physicians, the consumer price index, the quantity of inputs used in the physicians' practices, and other variables. The specification of Brown and Lapan differs from this primarily by using the *price* of the inputs used in the physicians' practices rather than the quantity. In Feldstein's model, a change in the output of physicians' services implies that the physicians' own labor has changed in the same direction. In the Brown-Lapan model, a change in the output of physicians' services is the net effect of changes in physicians' labor and in their use of inputs. The comment and the reply failed to indicate that much of the apparent disagreement about the appropriate signs of parameters was due to this difference in the models.

The key result in Feldstein's analysis is that an increase in the average gross price causes a reduction in the quantity of physicians' services that is provided. Because the quantity of inputs is included in the equation, the evidence implies that the supply curve of the physicians' own labor is negatively sloped. In contrast, Brown and Lapan found that an increase in the average gross price causes an increase in the quantity of physicians' services. The two sets of results are easily reconciled. The estimates of Brown and Lapan imply that a rise in fees induces doctors to increase the use of inputs by more than enough to offset the reduction in their own labor supply. The industry supply curve appears positively sloped even though the supply of physicians' own labor is negatively sloped.[2]

[1] A different issue about the interpretation of the positive price elasticity is raised by Fuchs and Kramer (1972); on this point see Feldstein (1973).

[2] Within the context of the Brown-Lapan model, the

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TABLE 1. — BROWN AND LAPAN MODEL OF THE SUPPLY OF PHYSICIANS' SERVICES

Equation	*CP*	*AP*	*CPI*	*R*	*G/Phys*	*t*	log *t*	Y_{Ref}	$\bar{R}^2$
1	3.60		2.69	—2.45	—0.103		—0.64		.97
	(1.32)		(0.77)	(0.79)	(0.023)		(0.19)		
2		0.10	1.36	—0.92	—0.07		0.31		.99
		(0.06)	(0.49)	(0.50)	(0.02)		(0.05)		
3		0.04	2.38	—3.09	—0.14	—0.001			.98
		(0.10)	(0.86)	(0.62)	(0.03)	(0.018)			
4	—0.021		0.99	—0.32	—0.10		0.35	0.55	.99
	(0.014)		(0.53)	(0.23)	(0.03)		(0.03)	(0.40)	
5		0.08	1.27	—0.90	—0.08		0.31	0.22	.99
		(0.07)	(0.53)	(0.52)	(0.02)		(0.06)	(0.45)	

The dependent variable is services per physician. The independent variables are: CP = customary price; AP = average price; R = index of input prices; $G/Phys$ = government health services per physician; t = time; Y_{Ref} = reference income. All variables are in logarithms. Equations are estimated for 1948–1966. Standard errors are shown in parentheses.

The supply elasticity in the Brown-Lapan model generally remains positive when the definition of price is altered and a measure of "reference income" is included. However, the actual parameter estimates are quite sensitive to the choice of specification. Table 1 shows that the elasticity of supply with respect to "customary price" (CP) is 3.60. Substituting "averaging price" (AP) lowers the elasticity to 0.10 and renders it insignificant (equation 2). An alternative specification of the time trend (equation 3) raises this elasticity to 0.40, now significantly different from zero. Adding the "reference income" (Y_{Ref}) variable to the initial specification introduces such collinearity that four of the six variables, including price, become insignificant (equation 4). The result is similar in equation 5 where average price is used.

The choice between the two models is difficult. Unfortunately, neither the price data nor the quantity data are good enough to permit rigorous testing.[3] We hope that the problems raised by our analysis will induce others to use new and richer bodies of data to examine the supply behavior of physicians and the effect of changes in fees on their demand for inputs.[4]

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positive elasticities with respect to both the price of physicians' services and the CPI can also be reconciled. A higher CPI increases physician effort while a higher price decreases physician effort but increases the input of other factors.

[3] Feldstein chose to use the quantity of inputs because he believed the data were better and was most interested in the physicians' supply of their own labor. Brown and Lapan used the price of inputs because it is a predetermined variable to the physician and because they were interested in the total supply of physicians' services.

[4] The recent studies of Fuchs and Kramer (1972), Reinhardt (1972) and Sloan (1973) provide useful analysis of physicians' behavior and of input demand but do not show the effects of changes in fees when input prices are held constant.

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