explicitly for jitney service, but some growth is probably due to the transit cutbacks that were going on at the time, because Proposition 13 had been passed the year before. The jitney industry serves a variety of markets in San Diego, and it fills some useful niches. For example, it provides late-night and weekend service to the military bases that transit cannot economically provide. It also provides service that is tailored to the needs of the special markets.

Airport passengers like the direct service to military bases, the downtown, and the hotel area. Jitneys offer some advantages over taxis. Unlike the taxi, which has variable rates of fare, a jitney has a set total fare to different places. So, for example, if you are going to board a jitney at the airport, you know what it is going to cost you to go to Hotel Circle. Jitneys play a significant role in the San Diego paratransit industry, but there are still many problems remaining to be resolved. These include the resolution of conflicts between jitneys and other modes and determination of how to provide a level of enforcement that is perceived as adequate by all concerned parties.

Impacts of Comprehensive Urban Transportation Deregulation in Arizona

ROGER F. TEAL

My paper has a somewhat broader focus than those of the previous presentations. So far we have talked primarily about taxicabs and jitneys. In Arizona the entire motor vehicle common carriage industry in the state was deregulated in mid-1982. This includes trucks, buses, taxis, airport vehicles, and the like. The deregulation was complete, and I do mean complete. There are no entry restrictions, no exit restrictions, no pricing restrictions, no service standards. Operators are still required to carry insurance. However, the oversight of those financial responsibility requirements is quite minimal, and there is a suspicion that many of the single-cab operators in the taxicab industry either do not carry adequate insurance or do not carry any insurance whatsoever.

In general, there is no regulatory oversight. Whatever you want to do as a transportation entrepreneur, you can do, as long as it doesn't break any other laws in the state. I am going to report on the paratransit aspects of Arizona's deregulation. That deregulation has been in effect now for about 2½ years.

I have identified several impact areas for which it would have been desirable to have gathered some information. These are entry, exit, prices, service innovation, industry structure, company and industry productivity, profitability, labor, and safety. For several of those areas we were able to gather sufficient information to come to some conclusions about what the impact of deregulation had been. For others, namely, safety and operator profitability, there is simply no information available.

I should emphasize what the data collection problems are in a completely deregulated economic environment. No operator records are required by the state. It is not like Seattle or San Diego where operators have to file fares and get a license from the city to go into business. There is no way of even knowing at the state level how many taxicabs are in the industry. All that is needed to join is a driver's license and a vehicle registration certificate.

Therefore, we had to resort to provider surveys to obtain most of our information. Only in extreme cases could we find out anything about the financial status of companies other than those who were willing to cooperate fully with us. By extreme cases I mean the sale of a company or a company going out of business. Thus I must emphasize the limitations in our data collection. We were forced to rely on provider surveys, and we were very much aware that this created some limitations, perhaps some significant ones, on the accuracy of the data. Given the situation, however, there was simply no other way to do it. In addition, we were not operating with a huge budget, it was not possible to spend months and months in the field to collect this information.

Those paratransit services for which we had at least some information about the key issues of entry, exit, prices, and service were the taxi industry, the demand-responsive transit industry (both subsidized and unsubsidized), airport transportation, commuter transportation (by which I mean vanpool and bus services), and any jitney services or their variants.

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First I would like to discuss the taxi industry impacts in Phoenix and Tucson. For those of you who are not familiar with Arizona, there are two large cities, Phoenix and Tucson. The rest of the state is very sparsely populated: there are only three cities in the rest of the state that have more than 50,000 population. We contacted individuals in those cities to try to determine what the impacts of deregulation were. With the exception of one town, Prescott, impacts were essentially nil. Therefore, I am reporting on Phoenix and Tucson because that is where the impacts occurred.

In Phoenix and Tucson there were some significant impacts in several of the paratransit services that I just listed. In Phoenix, as in Seattle and San Diego, there was a major increase in entry into the taxicab market as a result of deregulation. There are nearly twice as many active vehicles in the industry as before deregulation. However, the increase was much less significant in the radio dispatch or telephone order segment, whichever you wish to call it. As best we can track it, there was only a slight increase in the number of vehicles serving this particular segment, and even though two or three relatively large new companies entered, the large established provider reduced the number of cabs with which it was providing this service. The huge increase in the size of the industry was primarily in the taxi-stand segment, particularly at the airport, the hotels, and the resorts.

Relative to the question of turnover in the industry, there is substantial evidence that many single-cab operators left the industry. As I say, it is very hard to track these operators. We were able to do so only through the airport, but these operators only have to purchase quarterly permits. So we could simply track them over, say, a couple of quarters, but they might come back into the industry again in the winter, because there is seasonal fluctuation at the Phoenix airport: winter is the high season, and summer is the low season. So even if we found that they were out of the industry for a couple of quarters, that still would be absolutely definitive evidence that these operators had left the industry. Nonetheless, there was a lot of turnover on that basis.

In terms of prices, they increased quite substantially at the time of deregulation. Immediately after deregulation the price of taxicab service went from 85 cents a mile to $1.20 a mile. A 4-mi trip went up by 36 percent. That is for the telephone order segment. In the airport segment, prices have ranged from about $1.40 to $1.60 a mile. That is up from 85 cents a mile. You can see that there has been a rather substantial price increase in both of those markets.

However, some caveats are necessary vis-à-vis price increases. There have been no subsequent price increases in Phoenix; that is, the $1.20-a-mile fare or $1.40-a-mile fare for some of the other operators has been maintained over the past 2½ years. After adjustment for inflationary effects on a trend-line basis since 1971, fares are about 3 to 5 percent higher today than they would have been if the prederegulation trend had held. It appears that immediately after deregulation fares were about 10 to 20 percent higher than probably would have been the case under continued regulation. That evidence comes from conversations with people in the industry. The largest operator was planning to file a $1-a-mile fare if regulation had continued. In fact, he went to $1.20 because he knew he would lose market share, and he hoped to maintain his revenues in that way. Compared with those in other Southwest and Rocky Mountain cities, Phoenix fares were about 15 percent higher. Thus, there is evidence that prices in Phoenix increased somewhat more than they would have under regulation.

A significant fact relating to some of the hypotheses of the economists from the FTC about the role of competition in price setting is that there has been no downward pressure on fares in the radio dispatch market. The $1.20 rate that was established by the large company in the Phoenix area became the market rate for all new competitors. There was no downward pressure on fares, and in fact two or three companies in the radio dispatch market have $1.40-a-mile fares. At this point, at least, there is no evidence that the open entry provisions are leading to any particular downward pressure on fares or any particular fare competition.

I would like to comment on pricing innovations. Again, the economists from the FTC had anticipated that there might be some pricing innovations as a result of open entry and the lack of fare controls. Again, we have no evidence of that in the case of Phoenix. In fact, some firms practice short-haul refusal on a systematic basis. These tend to be the firms that actually have the higher fares, not the lower fares, somewhat contrary to anticipation. Yellow Cab is the only company that you can generally rely on for a short-haul trip, and it charges the same amount for that trip as it does for a long-haul trip.

In addition, no shared-ride services have been initiated. I think that there is a simple explanation for why there have been no shared-ride services in Phoenix, or anywhere else that has deregulated taxis for that matter. It is simply that the demand densities are insufficient to support such services.

I determined the demand density for taxis for the Phoenix area by assuming that 80 to 90 percent of all the trips were made during 14 hr of the day. The result was less than one trip per square mile per hour, a demand density that is insufficient to support any shared riding. Therefore, it appears to be a marketplace condition that shared-ride services are not operationally feasible, even if firms are predisposed to offer them.

In common, again, with the results from San Diego and Seattle, Phoenix registered a sharp decline in the productivity of the average cab in the industry. About one-third fewer trips per day were served by the average cab after deregulation compared with the number before.

Obviously, there has also been a decline in industry concentration. The taxi industry is no longer a monopoly, which is essentially what it was before. The market share of the large company measured in number of riders has gone from about 95 percent to about 65 percent. Nonetheless, in the telephone order market we are still dealing essentially with an oligopoly. Phoenix has gone from one firm to three or four firms in that particular market, surely nothing approaching the conditions for pure competition.

Another noteworthy impact has been a decline in quality of vehicles. This is particularly a problem at the airport.

The airport in Phoenix has attracted a large percentage of the new entries. It has experienced rather severe problems due to the fact that there are too many cabs that charge prices well above the average in the telephone order market. As Larry Doxsey said, it is simply a question of a queueing situation. The cabs are able to maintain these relatively high prices because the customers don't shop around and are under infor-

mal pressure to take the first cab in line. At one point there was even price collusion within the industry that led to a uniform fare, but apparently that price collusion has fallen apart. However, fares have not gone down as a result. Instead, they have gone up.

The impacts in Tucson are more limited. The industry has gone from monopoly to a duopoly. There have been about 15 new cabs at the airport, all independent operators. As in Phoenix, there has been no price competition. Prices were raised by the established operator just before deregulation. All new entrants have accepted those prices. There has been no downward pressure on prices. No new shared-ride services have developed in Tucson.

In both of these cities, then, the impacts have been relatively similar. The taxicab industry is, in fact, the industry in which there has been the most impact of deregulation in Arizona. The other industry with some significant impacts is the airport transportation industry.

There has been a large increase—approximately 50 percent—in the number of airport limousines. Many of these are vans. There was vigorous price competition between the shared-ride airport vans and the taxi industry for about a 6-month period before the airport authorities intervened.

During this 6-month period, drivers of taxicabs and airport vans could enter the terminal areas and go to a designated place where they could advertise their prices. Many of the drivers of the airport vans would practice time-of-day or demand-oriented pricing. There was vigorous price competition between the two modes, which often included bargaining with customers over rates. However, the airport authorities came under strong pressure from the tourist and convention interests in Phoenix, who thought that this bazaar-type atmosphere was inappropriate for their city, and a set of regulations was imposed that prohibited this sort of behavior. Under the new regulations, the drivers could no longer enter the terminal. Taxis were restricted to one terminal area and the airport vans to another. It became extremely difficult for consumers to get price or service information, and the airport vans were the definite losers in this situation. Their market share declined. Many of them left the industry, although there has been a continual renewal of entrants.

This 6-month experience is a very interesting example of potentially workable price and service competition. The taxis and vans offered a different type of service. With the vans there was a few minutes' wait while the load was picked up. The vehicle is not under the riders' control, and only certain destinations are served. The taxicab offers more personalized service. However, the experiment was aborted before we could see how it would work out.

In the demand-responsive transit industries, which include both subsidized and unsubsidized service, a very modest amount of new entry into the unsubsidized portion of the market occurred. The focus of unsubsidized service has been medical transportation and transportation for the handicapped. Two new companies have entered into the Phoenix market. Each, however, operates fewer than five vehicles.

The major impacts in demand-responsive transit have been on the subsidized service. In terms of contracting, there has been tremendous competition for the contracts because these are obviously secure revenues in an economic environment where no other revenue source is at all secure. There has been great downward pressure on the rates in those particular markets—rates that I cannot believe are economical—down to $10 or less per vehicle service hour in some cases. This is marginal cost pricing, probably short-run marginal cost pricing. It is quite unclear how companies could continue to operate these services over more than a 1- or 2-year period without sustaining losses. It will be interesting to see how this works out. To date, there has been considerable turnover of contractors. If agencies rebid their contracts, they can get a new contractor every 1 or 2 years. Contracting agencies can take advantage of contractors' willingness to bid short-run marginal prices.

In the other paratransit modes, absolutely nothing has happened. There have been no jitneys, no transitlike services. Remember that there are no nonmarket impediments to the establishment of such services. Anybody who wants to go out and buy minibuses or vans can run them up and down any Phoenix street. They can use the bus stops because the bus stops are public property. They can do whatever they want to. No one has chosen to do so, and obviously the barrier here is the presence of subsidized competition from the transit authority.

Potential entrepreneurs clearly have judged that is is not possible to make a profit by offering that service when you have to compete with Phoenix Transit, which has a 50-cent to 60-cent fare. In addition, Phoenix is an extremely automobile-oriented city. The modal share for transit is around 1 percent of all trips. Thus, there is very little transit market at all.

In this sense, then, deregulation has been a failure. That is, if it had been expected that new quasi-transit services would develop, the expectations have been shattered. In 2½ years they have not developed. I attribute this largely to the market conditions in these two cities. They are very definitely automobile-oriented, and there is little market for transit, subsidized or unsubsidized.

What can we conclude in terms of the overall pattern of deregulation impacts? The key policy question is the sort of benefits we as a society get from deregulating these types of urban transportation relative to any problems or costs that may be created. What can we point to, then, in terms of benefits from deregulation?

It is difficult to identify many firm benefits. Vigorous competition in the contract service market and decreasing contract prices are definite benefits. Entrepreneurs now have the ability to enter paratransit and transit markets without the regulatory restrictions that prevailed in the past. The industries are less concentrated, but concentration is nonetheless still quite pronounced. The taxi-van competition at the Phoenix airport offered some interesting potential for consumer benefits. Unfortunately, the airport authorities by their actions have largely made that potential moot.

In my view, one of the most important aspects of the pattern of impacts is that the focus of new entry has been on established markets. There was an existing market for common carriage urban transportation in Phoenix and Tucson, and deregulation has not enabled providers to expand the size of that market. It is still the same size and of the same character as it was before deregulation. That, to me, suggests something about the nature of these markets in automobile-oriented cities, namely, that it is not deregulation that is keeping those markets

small. It is simply the basic character of such urban transportation markets. There has been little or no service innovation in either Phoenix or Tucson. Again, I think that is a function of market conditions, because no matter what sort of innovations you propose, you are still going to have a price and service combination that is inferior to that of either the automobile or public transit. It is very difficult to imagine some service that will be superior.

There has also been little or no price competition within the industries themselves. I would suggest that this has to do with structural characteristics of the industry. Despite the decline in concentration, these industries are still quite concentrated. Overall, then, one is not able to find much evidence of consumer benefits in terms of either price or service aspects.

What sort of policy lessons can we derive from this? It seems to me that in automobile-oriented urban areas—except in special cases such as the military market in San Diego, where the jitney services have been quite successful—deregulation does not produce significant benefits to either consumers or providers. The one exception is the opportunity it presents to those who were previously excluded from the industry to move into the industry and compete. I should note, however, that all the evidence indicates that driver income is down after deregulation and company income is also.

It's probably not fair to lay the blame for these results on deregulation. It is simply that the market conditions are not appropriate to produce benefits from deregulation in many urban areas. Nearly half of all the large metropolitan areas in the country have a transit mode share for work trips that is less than 5 percent, and this mode share tends to be about twice as high as the mode split for all trips. In these automobile-oriented cities, the market conditions simply aren't appropriate for an increase in the size of the common carriage market. If the size of that market cannot be increased, the market is split up among more providers, and I think the impacts of that on the providers are obvious. It is merely going to result in less revenue for each one.

I think that subsidized transit represents an important potential barrier to new services. However, it is not likely that we are going to get rid of subsidized transit. Perhaps the amount of subsidy will be reduced, but transit as a subsidized mode is highly unlikely to go away simply so that we can deregulate—that is not an avenue by which to make deregulation work.

It therefore appears to me that the impacts and the benefits of deregulation are going to be very small in these automobile-oriented urban environments. I would suggest, also, that the benefits and the impacts will probably be considerably larger in transit-oriented environments. Nonetheless, the evidence from Arizona simply doesn't permit one to say that significant benefits will be produced by deregulating urban transportation in automobile-oriented cities.

COMMENTS

PARTICIPANT:

I am Paul Nagle, United Bus Operators of America. Will you please direct yourself to the topic of commuter transportation, which I did not hear mentioned.

MR. TEAL:

Basically nothing happened in the Phoenix and Tucson areas. We thought that something might develop in terms of an express transit service or perhaps transitlike service in vans. It did not. We talked to all the major bus operators we could find, and they were of the opinion that the market was not there. Phoenix Transit had tapped the small transit market that did exist, and unsubsidized services simply couldn't come in and provide profitable service. I think it has a lot to do with the fact that Phoenix is definitely an automobile-oriented city.

MS. LUPRO:

I wanted to comment on your final remarks about the benefits of deregulation not being that significant. You mentioned that the benefits have been for the contract services and the jitney market. I really think those should not be minimized, because the contract market deals with the elderly and the handicapped, who traditionally form a very large portion of the paratransit passenger trips, whereas the airport gets a considerable amount of attention. Perhaps airports have not benefited as substantially from deregulation. In San Diego, for instance, airport trips constitute 10 percent of taxi trips. In addition, the jitney market in San Diego is important, and the ridership that is served by the jitneys is significant.

MR. TEAL:

Those are, I think, very good corrections, Barbara. However, relatively few cities in my experience have the size of the military market that San Diego has. We expected, on the basis of San Diego's experiences, to find at least an attempt to provide some jitney services in Phoenix or Tucson. There was none, and we came to the conclusion that it was the presence of that large military market without ready access to automobiles, basically a transit-dependent market, that made the jitney services possible in San Diego. Absent those conditions, jitney services appeared much less promising in the typical low-density urban environment. Vis-à-vis your comments about the contract market, I wholeheartedly agree. I think it has a very important impact. It is unfortunate, however, that that type of impact does not appear to carry over into the common carriage type of markets, because there is not that same sort of price competition for the individual consumer.