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Law Enforcement Agencies as Multiproduct Firms: Correcting Some Misconceptions

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LAW ENFORCEMENT AGENCIES AS MULTIPRODUCT FIRMS: CORRECTING SOME MISCONCEPTIONS

by

M. N. DARROUGH AND J. M. HEINEKE*

The comment by Pyle and Deadman [PD] on our paper deals with several points which arise regularly in empirical applications of economic theory and especially in applications in which “firms” do not operate in traditional market places. Their first point concerns the appropriate definition of output in law enforcement agencies: Is the final output deterrence of future crimes, solving existing crimes, both, or something else? PD argue that deterrence (crime prevention) is the primary output of law enforcement agencies, and from society’s perspective, this is undoubtedly true. But as we attempted to make clear in our paper, we were interested in modeling the decision process of an individual agency. Conversations, both with academics working in the area of law enforcement and with practitioners, convinced us that on a day to day basis, police departments were much more likely to be interested in solving crimes than in deterrence. The reason for this is clearly that city, county and state officials, newspaper reporters and the populace in general, find it much easier to evaluate agency performance as a function of crimes solved rather than as a function of crimes deterred. The point here is that we chose our measure of output to be solutions of crimes of various types because the decision makers most immediately involved in the operation of agencies have strong incentives to focus on precisely these measures.¹

PD also suggest that clearances by conviction would be a better measure of crime “solutions”. We agree, but unfortunately these data are not generally available.

There are several misinterpretations and inaccuracies in the PD comment in addition to the above. We comment on each in the order they appear. It is not accurate to say that our paper “concentrates on property crime solutions to the exclusion of all else”. The fifth and sixth outputs are solutions to crimes against the person and “other” police services, respectively. In fact, the marginal cost of solving crimes against the person as well as rates of transformation between this

output and solutions to the various property crimes were calculated and displayed in Table 2.

PD believe that a cost minimization model would have been a more appropriate vehicle for estimating agency production technologies. Perhaps so, but the required assumption that all outputs are fixed and taken by law enforcement agencies as parameters in their decisions appears to be empirically untenable. In addition, granted that a number of interesting questions can be addressed in the context of cost minimization, these questions are, for the most part, entirely different from those that arise in the value maximizing framework — questions concerning the optimal output mix. It is these questions we sought to address in the paper.

PD take us to task for not utilizing the “seriousness indices” developed by Anderson and by Sellin and Wolfgang. It is our considered opinion that the methodological weaknesses of these indices are severe enough to preclude their consideration. In addition, even if one did use such indices, law enforcement agencies still end up being “price” takers — an assumption PD argue against.

We assumed that police agencies are price takers in both input and output markets. PD are concerned that *pure competition* leads to indeterminacy in constant, and decreasing cost industries. But clearly, being a price taker does not imply pure competition. For one thing law enforcement agencies are subject to the financial constraint of the agency budget (note 7), which in turn implies increasing marginal costs whenever the constraint is binding. In addition, in our sample, technology in various agencies exhibits decreasing, constant, and increasing returns to scale as the city size increases. This suggests that larger cities have cost advantages, but does not necessarily imply that these economies continue indefinitely. And even if economies, theoretically, persisted this is not inconsistent with price-taking behavior, since political and legal boundaries limit the scale of operation in the law enforcement industry.

Our model deals primarily with short run problems where capital (i.e., police stations, equipment, patrol cars, etc.) is fixed. Variable inputs in the model are the several types of labor. PD complain that only one input (labor) price is included in the estimated cost function. Yet we clearly indicated that wages for eight types of labor were available and *used* to test for the existence of a Hicksian price index. This index is our variable w . Nothing is gained and much is lost if one were to attempt to include all wages in the estimated function.

Finally, PD worry lest there be insufficient wage variation across the sample to identify the cost function. City police salaries are set by city governments for the most part, and not by a national salary board and vary considerably from city to city.

The overall thrust of the remarks by PD is well taken. We agree wholeheartedly

that in order to make significant progress in this area, better data are needed in addition to a better theoretical framework to deal with non-marketed outputs.

NOTES

* The authors are Assistant Professor and Professor of Economics, University of Santa Clara, California.

¹ We did not argue, as PD mistakenly allege, that crime prevention activities of agencies are proportional to population size. Rather we argued that non-crime-solving activities, e.g., administering first aid, mediating family quarrels, quieting barking dogs, etc., were proportional to the size of the population.