

## VIII. Supplemental Analyses

Several supplemental analyses were conducted to test the reasonableness of assumptions made throughout the modeling process. Two analyses that may be of particular interest to users of these data are an investigation of the heroin, salt-undetermined series and an investigation of the importance of observations from the Washington DC Metropolitan Police.

### **An Examination of Heroin, Salt-Undetermined**

As explained previously, there was some concern about constructing a price series for heroin, salt undetermined, given the heterogeneous mix of forms that are included in this category. However, nearly 30 percent of the heroin observations fell into this category, so one might wonder whether the average price for this mix would behave differently from the series constructed for heroin base and hydrochloride. To consider this, we constructed a separate price and purity index for the heroin, salt-undetermined category.

Appendix G contains four charts comparing the price (Figures G.1 and G.2) and purity (Figure G.3 and G.4) of heroin, salt-undetermined with the heroin base sample. The prices for the heroin, salt-undetermined sample (Figure G.2) are generally higher than those for the heroin base sample (Figure G.1), especially prior to 1990. The purity, meanwhile, is much lower for the heroin, salt-undetermined sample (Figure G.4), especially for the highest quantity level (amounts greater than 10 grams). These results suggest that the heroin, salt-undetermined sample follows different trends from those observed for the main series and reinforces the decision to keep them separate.

### **The Influence of Observations from the Washington D.C. Metropolitan Police Force**

Previous research suggests that observations obtained by the Washington DC Metropolitan Police Force (DCMP) follow a different pattern from those obtained by the DEA.<sup>25</sup> Because the DCMP observations represent a large percentage of observations from Washington DC, and in some cases all the observations, there may be concern that their inclusion biases the estimates of the national price and purity indices.

The revised methodology employed in this report should be less susceptible to these sorts of city-specific data differences, as the inclusion or exclusion of observations from DCMP would directly influence only predicted prices in Washington DC and would have an indirect influence on those for other cities through their effect on the DC city-specific estimates. However, if there is a large difference in the DC mean when the DCMP observations are excluded, it is still possible for the overall results to look substantially different, because the random coefficient model borrows explanatory power from other cities when it estimates a city estimate and the global mean.

To explore this, additional models were run excluding observations from the DCMP. For

---

<sup>25</sup> Horowitz, J. 2001. "Should the DEA's STRIDE Data Be Used for Economic Analysis of Markets for Illegal Drugs?" *JASA*, Vol. 96, No. 456, pp. 1254–1271.

powder cocaine, crack cocaine, heroin, and marijuana, price and purity models were run for only the lowest two quantity levels because these levels accounted for the vast majority of DCMP observations. There was no noticeable difference in the overall level of the national price and purity index at the second quantity level for any of the drugs evaluated except marijuana. However, minor differences did exist for the first quantity level for these drugs; these differences are presented in Appendix H. First, as shown in Figure H.1, only minor differences exist in the level of the national price index for powder cocaine when the DCMP observations are excluded. The similarity in trends is truly surprising in light of the more-measurable differences in the national purity index for powder cocaine (see Figure H.2). When the DCMP observations are excluded from the models, the national purity index is higher between 1985 and 1988 and lower in 1991–1994 than when these observations are included. However, the same broad trends for cocaine powder prices and purities remain, regardless of whether the DCMP observations are included or excluded.

In the case of crack cocaine, the inclusion of the DCMP observations influences the level of the national price index (Figure H.3) but not the purity index (Figure H.4). When the DCMP observations are excluded, the national price index is lower in almost every year, suggesting that the DCMP observations raise the average price per pure gram of crack cocaine in Washington DC in every year. There is virtually no difference in the national purity index, however, when these observations are excluded.

The exclusion of the DCMP observations does not substantially influence either the national price or the purity index of heroin (Figures H.5 and H.6, respectively). There are very small differences in particular years, but these differences do not significantly change the price and purity series. The DCMP observations appear to have the largest impact on the estimated price series for marijuana, which is not particularly surprising, in light of the significantly smaller overall sample size. When DCMP observations are excluded (Figure H.7), the national price index for marijuana, first quantity level, is much more volatile, with large spikes in 1991 and 2002. The national price index for the second quantity level is also sensitive to the exclusion of these observations, but the differences are not nearly as pronounced as those in the first quantity level.

Overall, the supplemental analyses suggest that the inclusion of the DCMP observations in the main analyses does not substantially influence either the level or the trends of the national price and purity indices presented in the main report for powder cocaine, crack cocaine, or heroin. They do, however, influence the national price indices for marijuana, suggesting that the price series for marijuana at the first quantity level is even more volatile than is indicated in the main report.