I will discuss the differences and perceived pros and cons of both the reduced form approach and structuralist approach in econometric analysis as displayed in Angrist et al's and Robin et al's papers, respectively. As noted in Keane 2010, the reduced form approach generally uses instrumental variables to help identify causal effects in the presence of endogeneity. It requires few assumptions other than of course the validity of the instrument. In contrast the structuralist approach makes many assumptions about the world in order to construct a model from which generally more complex economic interpretations can be made.

Angrist's et al's paper, Explaining Charter School Effectiveness, seeks to identify the difference in the effect of charter schools in urban and nonurban settings. They then look at student and school-level characteristics to explain these differences.

Angrist notes that OLS estimates will be biased due to endogeneity that is present if the decision to apply or attend charter school is correlated with unobserved student characteristics that are also correlated with test scores (ex. ability, family background). Because of this he uses the charter school lottery as an instrument as it should imply random assignment. This lottery is ideal in that it creates a natural experimental setting.

After determining that there is a significant difference between the effects of urban and nonurban charter schools, Angrist uses a potential outcomes framework to determine possible causes of the heterogeneity. He lets Yio and Yi1 denote potential test scores for charter and non-charter schools and describes the outcome for student i as $Y_i = Y_{io} + (Y_{i1}-Y_{i0})D_i$, where Di i is 0 or 1 depending on charter

attendance. Then letting Zi denote offers from the lottery, he uses Zi as an instrument to determine the LATE, the effect of charter schools for students who won the lottery. The paper then looks at several possible sources of student-level and school-level heterogeneity.

Angrist's style of analysis generally does not require making very strong assumptions about the world and instead draws inferences looking just at the data. However, certain assumptions are still needed. As mentioned above, it is of course necessary that Zi is a valid instrument. Also it must be the case that Di1>=Di0 with strict inequality for some students.

I believe Angrist is also assuming that the difference in treatment effects can be obtained by conditioning on observable characteristics. For example, he concludes that when controlling for urban and other school characteristics, charter schools using a No Excuses approach are more effective than those that use other methods. This assumes that there are no other unobservable characteristics of schools or students influencing the difference in test scores. If the assumption is incorrect then it may be that the effect of the No Excuses approach is not properly identified.

In the end, Angrist's paper seems to clearly answer the initial questions regarding the effectiveness of charter schools (in particular the difference in effects between urban and nonurban charters), and it does so making minimal assumptions. That being said, the questions that could be analyzed using Angrist's method seem fairly limited to comparisons of differences in means. Because of this it seems that the lack of a model limits his ability to capture dynamics of charter school effectiveness. I

think it is clear from the paper that there is a significant difference between the effects of urban and nonurban charter schools, but it is still difficult to definitively identify the underlying causes why. This could make policy implementation difficult if it's not clear from where the difference in effectiveness stems.

In Matching, Sorting, and Wages Robin et al create a search-matching model in order to help understand the effect of policy intervention on the labor market. They create an equilibrium model that aims to be consistent with data on employment dynamics, wage dispersion, and wage dynamics. Their model includes search frictions, heterogeneous workers, productivity shocks, and on the job search possibilities. Individuals maximize discounted lifetime utility and sorting takes place based on the surplus that results from the match: if the surplus is negative they keep looking, and if it is positive they are matched. Wage negotiation can then take place after productivity shocks occur.

Robin et al then proceed to estimate the model using Simulation Method of Moments and look at how labor market policies such as the minimum wage impact social welfare.

One immediately obvious difference between the two papers is that Robin spends most of the first half of the paper detailing assumptions about the labor market, how sorting occurs, how workers can renegotiate wages, etc. As we discussed in class, all models are ultimately wrong and so we know that Robin's model is not perfectly describing the real world. He addresses for instance that the model overestimates the cost of job loss, underestimates within job wage growth, etc.

However, making these assumptions allows Robin to analyze a broader spectrum of relationships than Angrist while estimating coefficients that have clear economic interpretation. Based on the detailed description of the fit of the model we can also believe that for the most part the model is a good predictor of the data. Although constructing the model is complicated and probably much more time consuming than the reduced form approach, once the model is complete it seems there are a vast range of relevant questions that can be answered and analyzed. These features should be beneficial for policy decisions as it means clear conclusions can be reached about what is causing the change in social welfare.

In general, I think Angrist's paper is easy to understand, clearly shows the difference in effects of urban and nonurban charter schools, and is intuitive to read. However, I think at the same time it doesn't identify with relative certainty the exact causes behind the difference in effectiveness. Perhaps there exist reasons behind these differences that are not observed purely on the surface of the data. Robin's paper is much more complex and requires sorting through a long list of assumptions about the framework of the labor market. But, the model closely fits the data and allows for a more detailed and dynamic assessment of the questions and underlying causes in the paper. Based on these papers, it seems that both the structural and reduced form approach could be justified depending on the nature of the question being studied.