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Comment   Hilary Sigman

Metcalf, Mathur, and Hassett's chapter (henceforth, MMH) significantly improves understanding of the effects of climate policy on households. Two advances relative to the previous literature stand out. First, MMH do not assume all carbon price effects are borne by consumers. In some of their scenarios, carbon prices may be partly shifted to capital in the form of lower returns or to labor in the form of lower wages. Second, they consider the distribution of the value of allowances in prominent policy proposals.

The MMH chapter has several key findings. First, relative to the standard assumption of full-forward shifting, all other distributions of the burden make a carbon price less regressive. Since full-forward shifting is unlikely, this result suggests a more positive picture of the progressivity of climate policy. Second, all the specific proposals considered (Waxman-Markey, Kerry-Boxer, and Cantwell-Collins) allocate allowances in ways that increase progressivity. Finally, lower income groups may gain quite a lot under these policies. The households in the lowest income decile may gain 3 to 4 percent of their income (or even 5 percent for some policies and scenarios). Gains often extend to the middle of the income distribution. Thus, gains are not restricted to households reporting very low income, who may have poor-quality income data, or be socioeconomically idiosyncratic. Instead, the policies seem to confer gains systematically to lower income households.

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Metcalf, Mathur, and Hassett's analysis is careful and gives the reader a good sense of its "moving parts," despite the sophisticated thinking and complex data work that underlie its results. For example, the authors carefully render the bewildering allowance allocations in Waxman-Markey into their incidence framework.

Several complications need to be kept in mind in interpreting these results. Some of these complications are mentioned in the chapter and result from the standard assumptions of incidence analysis. Many reflect intentional simplifications by the authors, who chose not to force readers to have faith in a specific general equilibrium model.

First, a focused policy intervention, such as a carbon price, may hit a few households especially hard. We may worry about uncommon but severe impacts more than about the average effects of the policy. Some analysis of this problem might be possible within the current framework. For example, the model might be used to determine how many households lose more than 10 percent of their income. However, the Consumer Expenditure Survey (CEX) may not have sufficient observations on the few households with extreme burdens. In addition, employment effects may loom larger than price increases, so chapter 2 by Deschênes in the current volume also addresses the question of concentrated burdens.

Second, MMH use annual income to measure relative well-being. As these authors and others have demonstrated in previous work, annual income may not reflect longer-run well-being. Some households have only temporarily low income or are at lower income stages of life. In the CEX, many households have expenditures well above income, suggesting a fairly substantial mismatch between reported annual income and actual well-being. This mismatch also raises some concerns about the quality of the CEX income data.

Metcalf, Mathur, and Hassett argue that a longer-run measure of well-being would make a carbon price even less regressive. If the carbon price is passed forward, this argument seems valid. However, it is unclear that this rule of thumb holds with backward incidence or when distributing the value of allowances.

Third, behavioral responses are limited in this analysis. Following standard tax incidence models, MMH assume no elasticity of demand. Changes from other aspects of climate policy are not considered, although they may be significant. For example, if public policy generated a large shift to electric vehicles, incidence might change substantially. The possibility of longer-term demand shifts makes the results far more convincing for the short run than the long run.

Finally, the burden of the carbon price always sums to the value of allowances, again following standard tax incidence analysis. However, the total burden may be higher than the value of allowances if we consider the losses from reduced output. It may also be less than the value of allowances, for example, if the benefits from reducing local pollution externalities or coun-

teracting inefficient subsidies are large enough. Considering the benefits of reductions in climate change might also lower the net burden.

In traditional incidence analysis, one might counter that losses from reduced output just mean the level of burden is too low, but the slope of the income-burden relationship will be preserved. For the current analysis, however, these considerations may make it difficult to draw conclusions from the comparison across scenarios. The amount of burden may differ across MMH's scenarios because losses from reduced output depend on price responses.

Despite these caveats, MMH have produced compelling results that can help guide climate policy.