Job Quality and the Distributional Effects of Environmental Policy

Extended Description for

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The impact of environmental policy on jobs is a fundamental concern of policymakers. One aspect of this concern deals with changes in involuntary unemployment. Another is about job quality: if policy causes some jobs to go away and creates some new jobs, will the newly created jobs be as attractive to workers as the old jobs lost? Reduced-form empirical studies find significant and persistent earnings losses for laid-off workers (e.g., Walker, 2013), even after those workers find new jobs (implying the new jobs are much worse than the lost jobs). However, these studies cannot account for general-equilibrium spillover effects – including potential high-quality jobs created in other industries in response to policy (e.g., new jobs in the wind and solar industries created by policies that discourage fossil-fuel-burning electricity). General-equilibrium models of environmental policy also generally struggle with these questions. Most of these models assume full employment: in response to implementing an environmental policy, wages adjust such that total labor supply (in aggregate hours worked) equals total labor demand across sectors (in aggregate hours worked). Moreover, almost all these models can't address concerns about job quality.

We build a new model to address concerns about job quality. To do so, we extend recent work that introduces search frictions to analyze the employment effects of policy. Hafstead and Williams (2018) and Hafstead, Williams, and Chen (2022) introduced two-sector and multi-sector "search-CGE" models, respectively, that utilize matching frictions to generate job flows into and out of employment through a job matching process between unemployed workers and vacant job opportunities. These models allow for unemployment (and for policy to affect the level of unemployment) and can more fully capture the dynamics of job creation and job destruction. Nevertheless, these models focused on the impacts of environmental policy on

aggregate job flows and unemployment. They cannot address the politically important question of *who* gains and loses from environmental policy.

Hafstead and Williams (2019) characterize the distributional impacts of environmental policy by examining how the labor-market effects of a policy vary across workers initially employed in different industries in a search-CGE model with industry switching frictions and sticky wages. They find that the effect of environmental policies on unemployment rates, earnings, and length of unemployment spells differ substantially across worker groups. Yet that model almost certainly underestimates the divergent impacts across workers: workers differ only in what industry they are currently employed in (or last worked in); beyond that, there is no skill heterogeneity, job- or occupation-specific human capital, or similar factors. Moreover, there are no significant long-run quality differences across jobs: in equilibrium, workers are (approximately) indifferent across different jobs. This contrasts with evidence of persistent wage differences across jobs (even for similar workers) and with the claim that "good jobs" are clustered in industries that will be disproportionately affected by regulation (such as mining and manufacturing).

We further extend the search-CGE models from the Hafstead and Williams papers by introducing job quality both within and across industries. Workers can move up the cross-industry job ladder through on-the-job search and within-industry job ladder through a promotion process. To introduce cross-industry differences in job quality, we introduce differences across sectors in matching difficulty (i.e., differences in the cost of recruiting workers, holding labor market tightness constant) and corresponding differences in job quality: jobs in sectors where matching is difficult will be harder to get and they will pay better than jobs in sectors where matching is easy. Within each industry, we then introduce two worker types: term, or temporary workers, have lower productivities and higher exogenous job-separation rates than tenured or permanent workers. Unemployed workers can find jobs as term workers in any sector, but cannot immediately become tenured workers. Term workers, with some probability, may become tenured workers, and may also search on-the-job for opportunities in other sectors (as term workers). This is somewhat similar to Fernandez Intriago (2019), which allows for within-industry job quality variation (via sectoral human capital accumulation and erosion). Our model here differs in that it includes much more sectoral detail and disaggregation (Fernandez Intriago

uses a highly stylized two sector model) and because it also allows for on-the-job search and cross-industry job quality differences.

This model with inter-and intra-industry job ladders will yield more realistic employment dynamics in response to policy and better capture the depth and persistence of post-job loss earnings losses observed in empirical studies than the previous literature on the employment impacts of environmental policy. This will also allow us to compare policies that affect workers with different attachment levels to regulated industries and compare the impacts of regulation on attached (tenured) and unattached (term) workers.

Initial results suggest that the welfare losses associated with job loss from environmental policy substantially depend on whether the policy affects low- or high-quality jobs. For example, policies that cause substantial reductions in tenured workers create much more significant welfare losses from job loss than policies that reduce term workers. Such effects depend both on characteristics of the policy (such as the stringency of the policy), and on underlying parameters of the industry affected (such as the substitutability of term and tenured workers in production).

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