This dissertation consists of three chapters exploring the impact of technical change on labor markets. In the first chapter I conduct a forensic analysis of wage sorting: an observed tendency for high-earning workers to match with high-paying employers, which over time has contributed to rising wage inequality. I evaluate competing causal mechanisms using matched employer-employee data from Germany and find that (1) wage sorting is entirely a between-industry/-occupation phenomenon, and inconsistent with models of assortative matching within markets; (2) increased wage sorting over time can be fully accounted for by declining employment in low-skill, high-paying manufacturing sectors, and rising wages in skill-intensive jobs more common in high-paying firms; and (3) wage sorting is poorly predicted by measures of anti-competitive rents in output and labor markets, but strongly associated with job and workplace characteristics related to technology, which proxy for two well-known dimensions of wage variation: worker skill and employer scale.

In chapter 2, I study the quantitative implications of firm-wage premia for theories of skill-biased demand. I develop a search-based, assignment model of labor markets that accounts for equilibrium interactions between labor demand and supply, skill premia, and firm premia, while remaining sufficiently tractable that the key distributional parameters can be non-parametrically identified from empirical wage effects. I structurally estimate using matched data from West Germany, and find that more than half of the rise in wage variance associated with industry and occupation demand is the result of interactions with firm premia. I show that the "firm-bias" of demand confounds the relationship between skill-biased shocks and wages, and I shown in addition that because skill and firm premia are highly correlated across labor markets, policies that seek to reduce wage dispersion by targeting firm premia are generally skill-biased, partially offsetting their aggregate wage impact.

In the final chapter I study the effects of task-level automation when jobs consist of multiple tasks. I consider an environment with endogenous assignment of workers to occupations, and of worker time across tasks, and I characterize the aggregate effects of a technology that replaces labor at a low-skill task. The model predicts a reverse pattern of automation: the low-skill task is first automated in high-skill occupations, where labor costs are higher. In the short-run this creates wage and employment polarization. In the long-run, automation has ambiguous implications for wage inequality and employment. I use panel survey data on occupational tasks and computerization to test the model's short-run predictions, and I estimate a structural version of the model in order to obtain long-run labor market predictions. Further declines in IT-related costs are predicted to have little effect on wages, but to increase employment in low- and middle-skill occupations.