Dissertation Abstract

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My dissertation is entitled *Skill Mismatch, Labor Market Institutions and Wage Inequality in the U.S.* It is an empirical investigation into the distributive effects of over- and under-education, defined as market outcomes such that some workers possess skills over or below those required at their jobs respectively. This type of market failure can arise in assignment and search equilibrium settings, as well as in the presence of asymmetric information regarding workers' performance on the job. The existence of permanent and sizable mismatch rates means that returns to education are depressed for over-educated workers and inflated for under-qualified workers. Thus, irreversible decisions to invest in human capital are made in a context of uncertainty regarding the exact outcomes that might arise. As in the Todaro model, where individuals decide whether to migrate to cities based on the expected values of the available alternatives, workers might decide it is worthwhile to keep investing in education even if the probability of finding appropriate employment is falling. The four chapters of the dissertation are entitled: "The Distributive Effects of the Minimum Wage: an Efficiency Wage Model with Skill Mismatch," "Measuring Skill Mismatch," "The effect of skill mismatch on earnings: A Panel Analysis of the U.S. Labor Force," and "Earnings Inequality and Skill Mismatch."

The Distributive Effects of the Minimum Wage: an Efficiency Wage Model with Skill Mismatch (co-authored with Peter Skott)
This chapter analyzes the effect of changes in the real value of the minimum wage on the wage distribution. Changes in the minimum wage and other labor market institutions affect workers in all groups and empirically appear to be good complement to standard supply and demand arguments in explaining overall inequality. We use an efficiency wage model but allow for mismatch between jobs and workers. This framework yields predictions not only on the skill premium but also on the extent of inequality within groups. To keep matters as simple as possible, we assume that high-skill workers can get two types of jobs (good and bad), whereas low-skill workers have only one type of employment opportunity (bad). As long as some matches of high-skill workers and bad jobs are sustained in equilibrium, changes in the exogenous variables will affect not only wages and employment rates but also the degree of mismatch. The paper has links to another strand of literature. In a perfectly competitive labor market, a binding minimum wage increases both the average and the marginal cost of labor, forcing profit-maximizing firms to reduce employment. In monopsonistic labor markets, the firm faces upwardly sloping labor supply and marginal cost of labor curves. Within a certain range, a binding minimum wage has the "unusual" effect of raising the average cost of labor but decreasing its marginal cost, thus generating an incentive for extra employment creation. In our model, efficiency wage considerations provide the rationale for both the existence of skill mismatch and monopsony power. As usual in these models, monitoring is imperfect and contracts are incomplete, forcing firms and workers into a principal–agent dilemma. Because workers have asymmetric information about

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their effort levels, they cannot convincingly pre-commit to not shirking once hired (we assume bonding is not an option). One solution is for firms to use the threat of dismissal as a way to elicit effort. For this threat to work, both good and bad jobs must be rationed to ensure that employed workers receive a rent over and above their best alternative. Good jobs pay more than bad jobs, which in turn must pay more than unemployment. In equilibrium there will be both un- and under-employment (some high-skill workers have bad jobs that do not utilize their skills), and inequality between groups will depend not only on the wage gap between good and bad jobs, but also on the degree of mismatch.

Measuring Skill Mismatch
In this chapter I compare two methods widely used to measure skill requirements and the resulting estimates for skill mismatch prevalence and depth. In the first method skill requirements are measured using the job-analysis approach. This measure relies on systematic evaluation by professional job analysts who specify the required level of skills for the job titles in an occupational classification. In the United States this information is available in the *Dictionary of Occupational Titles* (DOT). The DOT provides a variety of alternative measures of job-skill requirements. The most often used measure of workplace skills is called "General Educational Development" (GED), which I re-scale into years of education units. The second method estimates skill requirements by the arithmetic mean—or some other measure of central tendency—of the distribution of education within each occupation. Both methods require a methodological decision regarding the degree of tolerance to mismatch, i.e. how much an individual's education must deviate from skill requirements for her to be considered mismatched. I compare several variations, including using the standard deviation of education within each occupation as a cutoff point. During the period 1973–2002 the two measures behave quite differently. The DOT data suggests skill requirements have grown very slowly, so over-education rates have grown significantly due to the continuous increase of the supply of skills. Correspondingly, under-education decreased in time. Average and median education have increased in almost every occupation, so the second method yields mismatch rates that fluctuate around a more or less constant average. The chapter also investigates which groups are more exposed to mismatch. I use standard probit analysis with over-education and under-education and an ordered probit with years of surplus and deficit qualifications as the respective dependent variables. Women, service sector, and non-unionized workers appear to have higher probabilities of mismatch. I conclude the chapter with a discussion of policy options.

The effect of skill mismatch on earnings: A Panel Analysis of the U.S. Labor Force
This chapte examines the effect on earnings induced by a mismatch between workers' skills and the skills actually required on the job. It uses the Current Population Survey (CPS) for the period 1983–2002. The special re-interview methodology of the CPS is used to create a large panel, so that individual heterogeneity can be controlled for. Skill requirements are estimated by the median education level for each 3-digit occupation in the 1980 census occupational classification. The analysis, including the determination of skill requirements, is conducted for males and females separately. Cross-sectional analysis confirms the findings in the recent literature. Returns to required schooling are higher than the returns to attained education in standard earnings regressions. Also, for workers with similar educational attainment, over-education reduces earnings and under-education increases them. Contrary to what other studies have found, we conclude that these results are confirmed after controlling for individual fixed effects.

Earnings Inequality and Skill Mismatch (Job Market Paper)
This chapter shows that skill mismatch is a relevant cause of inequality in real earnings in the

U.S. and that a substantial fraction of the increase in overall and residual inequality during the period 1973–2002 was due to the increase in mismatch rates and mismatch premia. Standard human capital earnings regressions that do not decompose the education variable into required, surplus, and deficit years provide biased estimates of the relative importance of education in explaining dispersion in the wage distribution. In 2000–2002 surplus and deficit qualifications taken together accounted for 4.3 and 4.6 percent of the variance in earnings, around 15 percent of the total explained variance. The dramatic increase in over-education rates and premia accounts for around 11 and 32 percent of the increase in the coefficient of variation of log earnings during the 30 years under analysis for males and females respectively.