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Job Characteristics and Labor Mobility

It is generally accepted that three factors influence an individual's decision to change jobs: wages, fringe benefits, and nonpecuniary job characteristics. Yet most studies of job turnover have concentrated only on the first two elements. In **Wages, Nonwage Job Characteristics, and Labor Mobility**, *Working Paper No. 552*, Research Associate **Ann Bartel** extends previous investigations to consider how important various nonpecuniary returns are to individuals at various stages of their lives.

There are two reasons for assuming that nonmonetary compensation will affect job turnover. First, Bartel notes, "It is usually more difficult to obtain information about nonpecuniary job attributes unless some time is spent on the job. Therefore much job turnover may take place as a way of learning about the characteristics of various types of jobs." Second, "As an individual ages, his preferences for nonmonetary as opposed to monetary forms of compensation may change. To the extent that the relative mix between monetary and nonmonetary returns could not be changed on a given job, a separation would occur."

To simplify her analysis, Bartel concentrates on male primary workers, not students or retired people. Those classified as young men were ages 14 to 24 in 1966; the group of older men were ages 45 to 59 in that year. Bartel uses data on those who quit their jobs in two two-year periods, 1967-69 and 1969-71.

As anticipated, wages prove to have a negative and significant effect on the probability of these men quitting their jobs. Fringe benefits also have a negative effect on the probability of quitting, but they do not have a significant effect on the younger men. Bartel observes that "young men are more likely to stay on jobs that are 'physical,' jobs that are stressful, or jobs that are nonrepetitive and involve the control over an entire activity." For older men, the converse is true.

Bad working conditions influence older men to quit, but the repetitiveness of the job does not.

What happens after the men quit? For one thing, they get jobs with higher compensation, both monetary and nonmonetary. The young men also generally move to less repetitive jobs and the older men to jobs that are less physical.

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Why do these age related differences exist? It might be that older men have health problems that force them to leave physically demanding jobs. Bartel's analysis, however, does not support that hypothesis. It may be that wages grow more rapidly in jobs that are physically demanding or have bad working conditions. Rapid wage growth would be more important to the younger men who have longer working lives ahead of them. In fact, Bartel finds that wage growth is larger, both in dollar and percentage terms, in the more strenuous jobs and significantly smaller in the less strenuous, repetitive jobs. Therefore, "Young men quit in order to improve their opportunities for wage growth."

Bartel's work demonstrates that the decision to quit is multifaceted. The age differences she observes "have important implications for the role that labor mobility plays in allocating human resources within the economy." If young men want to move into jobs that the older men consider undesirable, then "opportunities for mobility can improve an economy's pro-

ductivity." Similarly, seniority rights may actually benefit younger workers, since these rights allow older workers to choose jobs they prefer and thereby create vacancies in the very jobs that the young men want.

Prices and Market Shares in the International Machinery Trade

Over the last twenty-five years, there have been extensive changes in world markets for exports of manufactured goods. Perhaps most obvious have been the rise in German and Japanese shares of these markets, and the decrease in United States and United Kingdom shares. At some times, there are large changes in shares that are not easily explained by price movements; at other times during this same period there have been large changes in the relative prices of these four countries' exports with apparently little effect on demand for them. NBER Research Associates **Irving Kravis** and **Robert Lipsey** and Research Economist **Dennis Bushe** suspect that relative prices really do have a strong effect on exports, but that the effect has been obscured by poor measurement. In **Prices and Market Shares in the International Machinery Trade**, *Working Paper No. 521*, Kravis, Lipsey, and Bushe use new price measures that they have calculated for machinery and transport equipment to explain changes in total German, Japanese, and U.S. exports and export shares for these products.

The authors use data for the period 1953-77 to determine the relationship between German and Japanese export quantities (relative to U.S. exports) and prices (relative to U.S. prices). Comparing variations in quantity with concurrent price changes, they find that price changes explain very little of the observed quantity variations. In Germany and Japan, in fact, most of the quantity change "is accounted for by a very large, but unexplained, trend increase in Japanese and German exports relative to those of the United States." Why is this so?

Explanations that the authors consider include the following:

1. It may be necessary to take account of time lags

between price changes and their impact on quantities.

2. It may be inappropriate to calculate current quantities using current prices.
3. Supply elements, as well as the usual demand variables, may need to be considered.

They therefore incorporate lags (from a price change to its effect on the quantity exported) into their equations, and they experiment with calculating export quantities assuming that the goods imported today were sold at last year's prices. With these adjustments, the authors find that "for both Germany and Japan . . . a one-percent change in relative prices will, over a four-year period . . . be accompanied by something like a two-percent change in relative quantities." Kravis, Lipsey, and Bushe suspect an even stronger response over a longer time period. Their tentative conclusion, therefore, is that relative price changes have a substantial impact on relative export quantities, but one that takes years to unfold. Price effects appear to stretch out over five years, possibly longer.

The authors find that the usual method of calculating export quantities (that is, dividing today's values by today's prices) may be seriously inaccurate. The problem of matching values to prices over time is a vexing one, even with the annual data they use, and quarterly data may suffer even more serious distortions. By adjusting for some of the factors mentioned earlier, Kravis, Lipsey, and Bushe find that prices account for nearly 60 percent of the change in German-U.S. exports and over 40 percent of the Japan-U.S. change.

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The authors next analyze each country's exports in terms of foreign incomes as well as relative prices. They find the highest price elasticity of demand (that is, change in demand in response to a change in price) for U.S. exports and the lowest, quite consistently, for German exports, with Japan usually in between. Estimates of income elasticities of demand (that is, demand responses to changes in income) appear to depend upon the particular equation used. Some equations show much higher income elasticities for Japanese than for U.S. or German exports, with the income elasticities calculated for U.S. exports being the lowest of the three. However, that finding may result from the difficulty of separating the effects of the steady increases in buyers' incomes from trends in

other variables, such as supply influences. Other equations that include a time trend show very different income elasticities, with the highest for the United States and the lowest for Germany.

Finally, the authors incorporate supply as well as demand influences into their calculations. They assume that a country's supply of exports depends on both the domestic and the export prices of the goods in question and on the country's growth in real income. Estimates of supply elasticities (responses to price changes) range from 2.5 for Germany to over 7 for the United States. This means that sellers are very sensitive to changes in the relationship between domestic and export prices. They are quite willing to shift their sales to the more profitable of the two markets. The authors also find that sellers respond about equally to a rise in export prices or a fall in domestic prices.

Women's Work in Manufacturing and the Clerical Sector

One of the most dramatic changes in the history of women's employment was their rapid entry into the clerical sector and exit from manufacturing between 1880 and 1930. NBER Research Associate **Claudia Goldin** analyzes that change in **The Historical Evolution of Female Earnings Functions and Occupations**, *Working Paper No. 529*.

At the end of the nineteenth century, most working women were single, and they expected to leave the labor force when they married and not to return. In 1870, 24.6 percent of working (nonfarm) women were in the manufacturing sector; by 1890, that figure was 31.8 percent. There were few women in the clerical sector, where off-the-job training and education were prerequisites and wages were higher than in manufacturing. By 1920, though, about one half of all clerical workers were women, and in 1930, more women were employed in clerical occupations than in manufacturing. Early in the twentieth century, women began to stay in school longer, complete high school, and pursue clerical occupations. Women's employment in the clerical sector grew five times as fast as their employment in manufacturing, and clerical wages fell relative to manufacturing wages.

Goldin uses data from surveys conducted in 1888, 1907, and 1940 to estimate the earnings profiles of women in clerical work and in manufacturing in order to explain the differences between the two. Typically, women started working in manufacturing at age 15, and their earnings peaked about fifteen years later. According to Goldin, "Earnings profiles for employment in manufacturing in 1888 and 1907 rose steeply with experience and peaked early, while those in the clerical sector at a later period were much flatter and did not peak within the relevant range."

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Goldin suggests that four major factors accounted for the shape of the manufacturing earnings function: maturity, on-the-job training, depreciation due to aging, and depreciation due to job-related causes. These factors caused the earnings profile to rise steeply with job experience, peak early, and then reach a plateau or decline.

The profile for clerical workers was flatter in the early period of employment and rose about 3.4 percent per year throughout the range of experience. The clerical sector provided greater rewards for vocational and high school education than manufacturing, while each year away from work (at home after marriage, for example) resulted in a 1.8 percent decline in subsequent earnings. Goldin observes that "clerical work was the first numerically important occupation for women, other than teaching, that required some educational commitment and gave, in return, a higher wage and the promise of an earnings profile that made intermittent labor force participation a feasible option."

Goldin concludes that with the rises in real income and the spread of vocational and high schools after 1900, "Young women delayed their entrance into the labor force and opted in greater numbers for clerical work." The ability to substitute off-the-job training for on-the-job experience, and the apparent lesser decline in income with time out of the labor force meant that "as high school education spread and as the labor force participation rates of older women rose, particular characteristics of the clerical occupation gave it an advantage over manufacturing work." The shift to clerical work was also influenced by the changing expectation of women that they would return to the labor force or continue in it after marriage. Clerical work was viewed as offering women a set of occupational characteristics that became more valuable over time.

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