The Japanese Economy, vol. 35, no. 3, Fall 2008, pp. 55–86.

ISSN 1097–203X / 2009 $9.50 + 0.00.
DOI 10.2753/JES1097-203X350303

SOUICHI OHTA, YUJI GENDA, AND
AYAKO KONDO

The Endless Ice Age

A Review of the Cohort Effect in Japan

Abstract: *The cohort effect in the labor market refers to the lasting impact on employment conditions, such as wages and job separation, of a group of people of the same age, gender, and educational background that is created by supply and demand in the labor market at the time of graduation and that group's population size. This article outlines conventional research findings on the*

Translation © 2009 M.E. Sharpe, Inc., from the Japanese original, Souichi Ohta, Yuji Genda, and Ayako Kondo, "Tokenai hyouga: sedai kouka no tenbou," *Nihon roudou kenkyū zasshi,* vol. 49, no.12 (December 2007): 4–16. Translated by Stacey Jehlik.

Souichi Ohta is a professor on the Faculty of Economics, Keio University. Yuji Genda is a professor of labor economics at the Institute of Social Science, University of Tokyo. Ayako Kondo is a Ph.D. candidate in economics, Columbia University.

The new empirical research portions of this article are largely based on "Continued Effects of Rising Unemployment on Youth Employment: A Reexamination of the Cohort Effect in the Labor Market," by Ohta and Genda for the Ministry of Internal Affairs and Communications, Statistics Bureau, Statistical Research and Training Institute (Research Paper no. 8, May 2007). The authors acknowledge the important assistance given in the preparation of this article by staff of the MIAC Statistical Research and Training Institute and the MIAC Statistics Bureau, including Fumihiko Nishi, Tetsuaki Sato, Kazuro Nemoto, and Mari Suga. All of the opinions and any errors contained in this article are solely those of the authors.

cohort effect, and presents the results of research conducted using long-term data, including data from the prolonged hiring slump known in Japan as the "employment ice age." During this time, rising unemployment rates at the time of graduation left graduates unable to find employment immediately after graduation or thereafter, increasing the likelihood that they would obtain provisional employment or remain unemployed altogether. A trend toward declining annual incomes was especially noticeable among high school graduates. This is attributable to the limited employment opportunities available to the less educated during a recession as well as to the effects of a structural pitfall of the Japanese labor market. That is, because of the weakness of the market's evaluation functions and the high level of mobility costs, the inability to find employment immediately after graduation makes it tremendously difficult to improve one's situation later. Helping the employment ice-age generation will require intensive skill development efforts and also efforts by the government and corporate sector aimed at improving the evaluation functions of the labor market.

Since the late 2000s, economic recovery has led to some slight improvements in employment conditions. However, many of those who graduated from high school during the economically stagnant 1990s and early 2000s continue, even in the late 2000s, to face employment uncertainty and unemployment.

Establishing financial independence has been challenging for people who graduated from school during the so-called employment ice age and thus lacked opportunities to be employed and develop their skills at a young age. There is concern that these individuals could face serious financial problems in the future. Urgent measures are needed to provide assistance to those who are having problems finding jobs. Programs must be adopted to help these individuals develop skills while they are young, when the effects of training are greatest. In addition, effective policy formulation requires accurate information regarding the people who are facing difficult employment conditions.

Since the late 1990s, analyses of the employment of young

people have reflected the deterioration of employment opportunities. Highlighting the key word "cohort," these studies have focused on the attributes of individuals distinguished by their entry into the labor market, and vigorous research has been conducted on young people and their subsequent behaviors. These are known as studies on the cohort effect in the labor market, and have yielded copious results.

The cohort effect in the labor market refers to the specific impact that groups of a specific gender, educational background, and year of graduation have on the determination of such factors as real wages, employment, job separation, and promotions. Each group is defined as a "cohort" or "generation," and the influence of shared factors in the labor environment for particular cohorts was a major theme of research on the cohort effect.

Genda has pointed out the significance of focusing on the cohort effect as a unique characteristic of the Japanese labor market, arguing that "the employment market conditions at the time of graduation and the number of individuals newly hired at this time has a lasting effect on the employment and wages of each cohort" (Genda 1997: 3). Market conditions at graduation, and the size of the cohort population are generally impossible for an individual to change later. Assuming that these factors have a lasting influence on a worker's lifelong employment situation, a significant gap emerges between those who belong to more fortunate cohorts and those who do not, and this gap reflects differences that go beyond skills and effort.

The social principle described by Otake is likely true, that is, that "cohorts that graduate during an economic recession or during times of poor employment conditions, and highly populous cohorts are going to be at a disadvantage as compared with other cohorts" (Otake 2005: 209) For members of the "second baby-boom generation," who faced fierce employment competition within the large population that came of age during the employment ice age, there is a strong sense that the tough times are ongoing. What kind of effect has the factor of cohort really had on employment opportunities and the treatment of workers?

In this article, we review the research that has been conducted thus far on the cohort effect, and present the findings of the research we have conducted using new data from the employment ice-age generation. We also examine the backdrop against which specific cohort effects have emerged in Japan from both an institutional and theoretical perspective. We then highlight the issues to be addressed in the future while outlining the points of contention regarding the cohort effect.

Empirical Research on the Cohort Effect

Empirical research on the cohort effect in the labor market is divided into two types: studies that analyze the effects of generational differences in cohort size, and studies that analyze the effects of supply and demand conditions in the labor market at the time of high school graduation. Common to both types of analyses is the question of what kind of generation-specific factors have lasting effects. Table 1 shows the major findings from studies conducted thus far on the cohort effect in the labor market.

The Cohort Effect up to the Mid-1990s

To examine changes in average wages by generation, Genda (1997) used the method described below. The rate of change in average wages can be attributed to both the "price effect," or changes in wage levels (compensation for labor services) and the "composition effect," or changes in the composition of the workforce. The National Census and Basic Survey on Wage Structure (Wage Census, vol. 1, table 2) from 1980 to 1995 contains figures on the age group, educational background, length of service, and real official wages by company size of regular male workers, as well as the number of workers, and calculates the price effect and composition effect by cohort.

The results show that while wages improved for the cohort that was job hunting during the high-growth period, long-term employment opportunities were hard to find for the cohort that was job hunting during the low-growth period, thus leading to a trend

toward serial job changing. The results also show that cohort size had an effect. The increase in the number of people in the same cohort due to the influence of the second baby boom and related temporary measures to increase university capacity ended up constraining wages among university graduates. One of the reasons that wage gap expansion in Japan has thus far been smaller than in the United States, where the wage gap rapidly expanded in the 1980s, is the increase in the size of the cohort of university graduates.

Labor supply and demand at graduation has an effect not only on wages and the ability to find a job but also on job separation rates. When employment opportunities shrink due to an increase in the unemployment rate, it becomes more difficult to find work that suits one's skills and interests, leading to greater mismatches between workers and jobs among new graduates. This tends to result in greater job separation later.[1] The harder it is for young people to find work with high wages, long-term employment prospects, and skill development opportunities, the easier it is for workers to decide to leave jobs that do not offer those benefits.

Because it takes a considerable amount of time for both workers and companies to get to know one another, and for workers to find alternative jobs, there is upward pressure on the separation rate among the generation of workers who graduate during economic downturns. Ohta (1999) conducted a rigorous examination of this notion using a theoretical model. A review of past labor supply and demand trends shows that the more job offers a worker received at the time of graduation, the higher was their level of current job satisfaction, and thus the lower their probability of changing jobs. Based on this hypothesis regarding "job searching behavior while employed," he examined the relationship between cohort and separation rates using the time-series data from the Employment Trends Survey (1965–94) and the prefectural Panel Survey (1981–94). The results showed that regardless of past conditions of supply and demand in the labor market, the conditions existing at the time of graduation had an effect on the worker's labor turnover rate and that the best job-matching opportunities tended to be concentrated around the period immediately after graduation.

While these studies were based on published data, Otake and

Table 1

Major Papers on the Cohort Effect in the Labor Market

Paper	Data	Sample and period	Major analysis	Major results
Genda (1997)	Wage Census (public)	Regular male workers 1980–95	Analyzed the rate of change in average wages by age and educational background using the price effect and composition effect. Focused on the length of service and the rate of employment in large companies.	While the cohort that graduated from high school and went job hunting during the high-growth period has seen their wages improve, the cohort that went job hunting during the low-growth period have tended to change jobs frequently and been unable to find long-term employment opportunities. Since the 1990s, university graduates have experienced wage limitations and difficulties getting promoted due to increased cohort size.
Otake and Inoki (1997)	Wage Census (10% random sampling, individual data)	Regular male workers under the age of sixty-five 1980–93	Broke down the average and distribution of wages, length of service, and company size using the cohort effect, age effect, and year effect. Performed a regression analysis by educational background on the cohort effect using the number of new graduate job seekers in the same period and the level of tightness in the labor market in the year before their job search started.	Longer lengths of service were reported by both university and high school graduates who were part of cohorts that were job hunting during good economic times. However, there was no evidence that the ratio of employment at a large firm was significantly higher for university graduates during tough labor market conditions. Rather the rate of employment at large firms for university graduates is stable. Wages are limited for university graduates who are part of a cohort with large numbers of graduates. For high school graduates, labor conditions at graduation have a greater effect than cohort on wages, length of service, and employment ratios at large firms.

Ohta (1999)	Employment Trends Survey (public)	Regular workers under the age of twenty-five 1965–94	Independently defined the job separation rate from the survey, and conducted a time-series analysis and a panel analysis by prefecture on its relationship with determinants including the ratio of jobs to applicants. Based on the search model.	Labor market conditions at graduation have a large impact on future job separation rates. Conclusions are consistent with search theory, indicating that job matching efficiency is particularly high at the time of graduation.
Okamura (2000)	Wage Census (public)	Standard workers 1988–95	Applied the career phase model used by Welch (1979) to analyze the baby boom generation in the United States. Robustly estimated the effects of cohort size on real official salaries by gender and educational background.	Among male university graduates, larger cohort sizes tend to pull down real wages, and that effect did not vanish even as length of experience increased. The size effect was also evident among female university graduates, but the effect vanished as the length of service increased.
Kurosawa and Genda (2001)	Survey of Employment Conditions Among Young People (individual)	Workers age fifteen to twenty-nine as of 1997	Using background information on school graduation or drop-out status, this study conducted a proportional hazards analysis by gender on the effects of the unemployment rate in the year before graduation and the content of occupational counseling provided by the school, on the individual's ability to find regular, full-time employment and job separation.	The higher the unemployment rate in the year before graduation, the lower is the probability that high school graduates will find regular, full-time employment and the higher the job separation probability after finding regular, full-time employment. This trend was evident among both men and women, but was stronger among women than men.
Kondo (2007a)	JGSS (individual)	Of the survey respondents between 1999 and 2002, men and women who graduated from school between 1985 and 1997	Probit estimate of the correlation between current employment patterns and employment patterns at the time of first job, using the instrumental variable method, with consideration given to the effects of worker quality that cannot be statistically measured.	Considering the effects of worker quality, there was a statistically significant correlation found between current and initial employment patterns.

(*continues*)

Table 1 (*continued*)

Paper	Data	Sample and period	Major analysis	Major results
Ohta and Genda (2007)	Labor Force Survey Special Survey (1986–Feb. 2001), Labor Force Survey (Feb. 2002–Feb. 2005) (individual)	Men within twelve years of having graduated high school	Regression analysis by educational background on the effects of the unemployment rate in the year of graduation on real income, employment patterns, and unemployment probability at present while controlling for region and year effects.	As the unemployment rate in the year before graduation rises, the wages of high school graduates continuously decline. Cohorts that graduate during a recession are affected by an increase in the probability of finding provisional employment or being unemployed. Among university graduates, the effects of the year before graduation gradually disappear. Generations that experienced higher unemployment rates while attending school tended to have higher rates of advancement to higher education.
Genda, Kondo, and Ohta (2007)	Labor Force Survey (individual) CPS (individual)	Men within twelve years of having graduated high school	Compared the cohort effect (effect of supply and demand) in Japan and the United States by applying the same analytical structure used by Ohta and Genda (2007) to the Current Population Survey.	Wages among the less educated are pulled down in both countries among cohorts that graduate during a recession. While the effect is temporary in the United States, it is continuous in Japan. The wage-constricting effects of recession on high school graduates are eliminated over the long term in both countries.

Sources: Yuji Genda, "Chansu ha ichido—sedai to chingin kakusa" [Once Chance: Generation and Wage Disparities], *Nihon roudou kenkyū zasshi* 449 (1997): 2–12; Fumio Otake and Inoki Takenori, "Roudou shijou ni okeru gendai kouka" [The Cohort Effect in the Labor Market], in *Gendai makuro keizai bunseki—tenkanki no nihon keizai* [Contemporary Macroeconomic Analysis: The Japanese Economy in Transition], ed. Kazumi Asako, Naoyuki Yoshino, and Shinichi Fukuda (Tokyo: University of Tokyo Press, 1997), 56–68; Souichi Ohta, "Keiki junkan to tenshoku koudou" [Economic Cycles and Job Changing Behavior], in *Nihon keizai no kouzou chousei to roudou shijou* [Structural Adjustments in the Japanese Economy and the Labor Market], ed. Jiro Nakamura and Megumi Nakamura (Nihon Hyouronsha, 1999), 13–42; Kazuaki Okamura, "Nihon ni okeru ko-ho-to/saizu kouka" [Cohort Size Effect in Japan], *Nihon roudou kenkyū zasshi* 481 (2000): 36–50; Finis Welch, "Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust," *Journal of Political Economy* 87 (1979): 65–98; Masako Kurosawa and Yuji Genda, "Gakkou kara shokuba he: '7 / 5 / 3' tenshoku no keihai" [From School to the Workplace: Explaining the 70–50–30 Turnover Phenomenon], *Nihon roudou kenkyū zasshi* 490 (2001): 4–18; Ayako Kondo, "Does the First Job Really Matter? State Dependency in Employment Status in Japan," *Journal of the Japanese and International Economies* 21 (2007): 379–402; Souichi Ohta and Yuji Genda, "Shitsugyouritsu joushou ga motarasu jakyunen shuugyou he no jizokuteki eikyou ni tsuite—roudou shijou no seday kouka ni kansuru saikenshou" [Continued Effects of Rising Unemployment on Youth Employment: A Reexamination of the Cohort Effect in the Labor Market], Ministry of Internal Affairs and Communications, Statistics Bureau, Statistical Research and Training Institute Research Paper no. 8 (2007); Yuji Genda, Ayako Kondo, and Souichi Ohta, "Long-Term Effects of a Recession at Labor Market Entry in Japan and the United States," ISERP Working paper 07–09 (2007), Institute for Social and Economics Research and Policy, Columbia University.

Inoki (1997) conducted a study on the cohort effect using 10 percent random sampling data from the Basic Survey on Wage Structure from 1980 to 1993. They analyzed the wages of regular male employees of companies with ten or more employees, length of service, and large company employment rates by the cohort effect (effect of the year of graduation), age effect, and year effect. By performing a regression analysis by educational background on the cohort effect thus derived, using the number of same-period new-graduate job seekers and labor market tightness in the year of job seeking, they learned a great deal about the cohort effect.[2]

First, the cohort effect on wages followed a consistently rising trend in the postwar period, and hiring trends at the time of job seeking had an enduring effect on wages. Real wages by cohort were negatively correlated with unemployment rates in the year of graduation among high school graduates, and were positively correlated with the major company employee excess/shortage determination index among university graduates. With regard to the relationship between company size and length of service, they found that employees who were hired during better economic times tended to have longer periods of service, and that those who faced better economic conditions at the time of high school graduation were more likely to be working for large companies.

Otake and Inoki (1997) showed that generally, the lasting effects of supply and demand conditions in the labor market at graduation were more remarkable among high school graduates than among university graduates. They suggested that those workers who were job hunting during the recession tended to have lower wages and a shorter length of service, and that labor supply and demand conditions at graduation had an effect on later employment-matching quality and the worker retention rate. On the other hand, the results related to the cohort effect showed that the number of job seekers in a given cohort had a negative effect on that cohort's wages. These findings, combined with Genda's results, show that cohort size has a significant effect among university graduates.

Okamura (2000) conducted an in-depth analysis of the cohort size effect using published data. He focused on standard workers using the Wage Census figures reported from 1988 to 1995, and

theoretically examined the size effect by applying Welch's (1979) career phase model to Japan. This model showed that the increased rate of university enrollment among the first baby boomers in the United States in the 1970s resulted in increased wages for university graduates and constrained the wage gap between people with different educational backgrounds.

Okamura's results were consistent with the model. That is, even among university graduates in Japan, the larger the cohort size, the lower the level of real wages. On the other hand, if we look only at male university graduates, we find that the negative effect of cohort size on wages is not eliminated even as the length of service increases, a result that is inconsistent with the model's predictions.

Underlying the wage-constraining effect of cohort size among university graduates is the fact that the increase in university graduates not only causes an oversupply in the employment market for new graduates but also increases the level of competition within companies, ultimately placing some constraints on internal advancement. If those who are primarily subject to competition for internal advancement are highly educated males, then the lasting effect of cohort size is going to be particularly remarkable for male university graduates, more so than for women or high school graduates.[3]

Kurosawa and Genda (2001) studied the cohort effect on separation rates using individual data. Since the mid-1990s, the high ratio of those who quit their jobs within three years after being hired immediately after graduation has come to be known as "70–50–30" turnover. Based on individual data from the Survey of Youth Employment conducted by the Ministry of Labor in October 1997, Kurosawa and Genda analyzed the separation probability and full-time employment probability of young workers under the age of thirty using a proportional hazards model.

They found that an increase in the unemployment rate immediately prior to graduation not only pulled down full-time employment probability after graduation but also increased workers' future separation probability even once they were hired as full-time employees. Thus, the high turnover rates among new graduates can

be attributed to the reduced probability that young workers during economic downturns will be able to find a job that they will want to keep for the long term.[4]

New research tracks for verifying the cohort effect have opened up in the 2000s. While some workers face unstable employment conditions upon graduation and continue to work in uncertain situations, others become full-time employees and remain in stable employment situations. This distinction may be less a result of generational or labor market problems, than of differences in worker quality, which are not addressed in the statistics. If it is simply that people who are not well suited to employment as full-time employees, either because of their skills or preferences, are continuing in provisional jobs, it is difficult to argue, from an economic perspective, that apparently polarized employment conditions present any particular problem.

Kondo (2007a) used the Japan General Social Surveys to analyze the relationship between current employment conditions and employment conditions at the time of workforce entry by looking at the influence of worker quality, which defies direct observation. Estimates addressing the problem of the endogeneity of employment patterns at the time of workforce entry, in which a variable related to labor supply and demand at graduation was used as the operating variable, showed a positive relationship with hiring patterns at both points in time. These results mean that labor market conditions at graduation influence the employment of young people independent of their skills, and solidly confirm the effect of labor supply and demand on cohort.

Cohort Effect During the "Lost Decade"

Multiple analyses of the cohort effect in the labor market have confirmed that the size of the cohort tends to pull down the wages of male university graduates, and that the supply and demand trends in the labor market at graduation have a fairly significant effect on generational wages and turnover trends.

However, the studies we are about to examine largely analyze the cohort that graduated from high school in the early part of the

1990s. The market for new graduates first came to be referred to as the "employment ice age" in the mid- to late 1990s.[5] If there is any reason to reexamine the cohort effect, it is the need to confirm (from the data) the kinds of employment conditions that are being faced by the ice-age generation in later life, and to recognize that measures need to be taken to address those challenges.

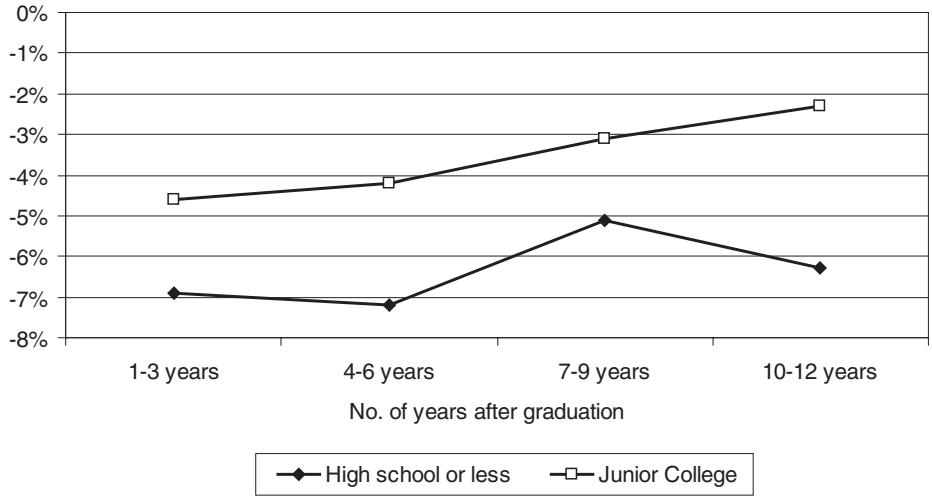
Ohta and Genda (2007) and Genda, Kondo, and Ohta (2007) combined the Special Survey of the Labor Force Survey (1986 to February 2001) and the Labor Force Survey (Detailed Tabulation, 2002 to February 2005) to perform a new analysis on the cohort effect.

They measured the effect of the overall unemployment rate in the year of high school graduation on real wages, employment conditions, and employment probability (one minus unemployment probability) of young male workers, by educational background, while taking into consideration the effects of the overall unemployment rate by regional block and year, as well as the impact of individual attributes.[6] Specifically, by considering the fixed effect of the survey year, region, and year of graduation, as well as the linear trend by region, they created a model in which changes in the unemployment rate reflect as closely as possible genuine fluctuations in the labor market. As shown in Table 1, this was the first attempt to verify the cohort effect over a long-term period that includes the year 2000, using individual data from the Labor Force Survey and Special Survey of the Labor Force Survey.

Here we use the results of these studies to show that the unemployment rate in the year immediately prior to graduation had an effect on later real income changes beyond graduation.

Figure 1 plots the change in annual income by educational background when there is a 1 percent fluctuation in the unemployment rate at the time of graduation (vertical axis), over the course of time after graduation (horizontal axis). It shows that the unemployment rate at graduation has a lasting impact on later income, and that the impact is stronger for high school and junior high school graduates (or less, i.e., "the less educated"). Among the less educated, cohorts with higher rates of unemployment in the year of graduation tend to have lower levels of income at least in the twelve years following

Figure 1. **Effect of a 1 Percent Rise in the Unemployment Rate at Graduation on Real Annual Income**



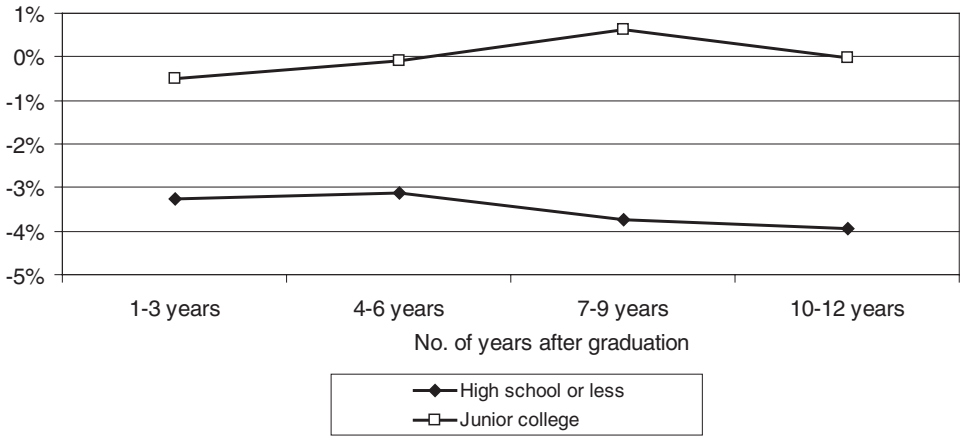
Source: Yuji Genda, Ayako Kondo, and Souichi Ohta, "Long-term Effects of a Recession at Labor Market Entry in Japan and the United States," ISERP Working paper 07–09, Institute for Social and Economics Research and Policy, Columbia University (2007), table 5.

Note: Coefficient from least-squares regression using real annual income for the year as the explained variable.

graduation, and the income gap between these cohorts and those that were job hunting during periods of low unemployment has not narrowed over the years. Specifically, among cohorts for whom the unemployment rate in the year of graduation was 1 percent higher than in other cohorts, real wages fell continuously lower from 5 percent to 7 percent over the next twelve years.

Figure 2 plots employment probability when there is a 1 percent fluctuation in the unemployment rate at the time of graduation (vertical axis), over the course of time after graduation (horizontal axis). Among the less educated, the probability of not finding employment continuously rises among cohorts with higher unemployment rates in the year of graduation. Likewise, Figure 3 plots changes in the full-time employment probability among those who are employed. This also shows that the less educated who faced high unemployment rates at graduation tend to continue to have difficulty finding full-time employment later. Among the cohort that was job hunting

Figure 2. **Effect of 1 Percent Rise in the Unemployment Rate at Graduation on Employment Rates**



Source: Yuji Genda, Ayako Kondo, and Souichi Ohta, "Long-term Effects of a Recession at Labor Market Entry in Japan and the United States," ISERP Working paper 07–09, Institute for Social and Economics Research and Policy, Columbia University (2007), table 5.

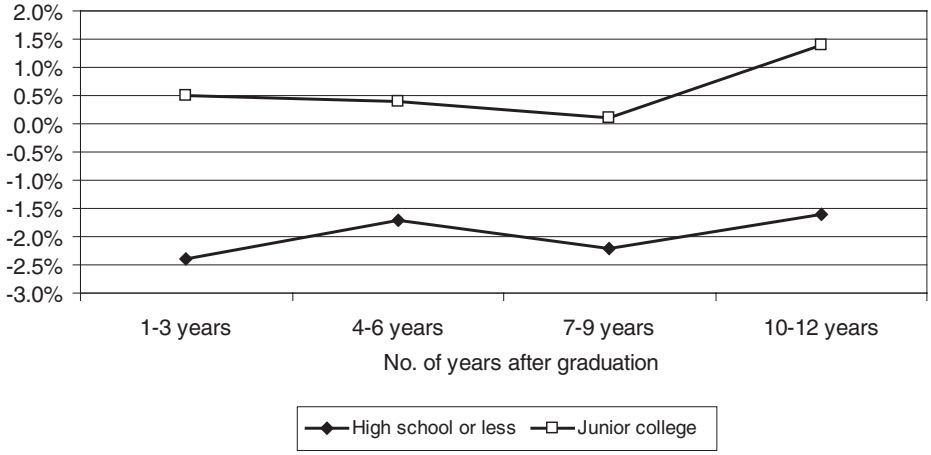
Note: Estimated marginal effect produced by the probit model using a dummy variable of 1 if the individual is employed as the explained variable.

during the recession, those with less education tend to have greater problems finding full-time or permanent employment. Since they have a greater tendency to find provisional employment or to remain unemployed, their opportunities to earn higher incomes in the future continue to be limited.

On the other hand, among those who have graduated from a university, vocational school, or junior college (hereafter, "the more educated"), the drag effect on annual incomes among cohorts that experienced higher rates of unemployment after graduation is relatively weak, from 2 percent to 5 percent, and that effect is generally eliminated within about ten years. There was virtually no effect on employment probability in this group.

We also analyzed the size of companies at which people were employed, and found a remarkable tendency for employment at a large company to be persistently limited among cohorts that graduated during the recession. Otake and Inoki (1997) examined

Figure 3. **Effect of a 1 Percent Rise in the Unemployment Rate at Graduation on Changes in Full-Time Employment Probability** (among the employed only)



Source: Yuji Genda, Ayako Kondo, and Souichi Ohta, "Long-term Effects of a Recession at Labor Market Entry in Japan and the United States," ISERP Working paper 07–09, Institute for Social and Economics Research and Policy, Columbia University (2007), table 7.

Note: Estimated marginal effect produced by the probit model using a dummy variable of one if the individual is a full-time employee as the explained variable, if the sample is limited only to employed people.

university graduates prior to the collapse of the bubble, and did not find any significant relationship between labor demand and supply at graduation and employment rates with large companies. This discrepancy is likely because of the emergence of the tendency, after the collapse of the bubble, for college graduates to expand their job hunts to include small and medium-size companies, in order to secure full-time employment opportunities. Among the less educated, however, in spite of the trends in labor supply and demand, job opportunities at large companies were limited.

If this continuous effect on wages was particularly remarkable among the less educated, one might expect rates of advancement to higher levels of education to be higher among those who faced high unemployment rates at high school graduation. However, Ohta and Genda (2007) did not find higher rates of educational advancement among cohorts that graduated from high school during a recession.

This was explained by Aruga (2007), who noted that because the actual number of individuals who advance to higher education is limited by the capacity for such students (the supply side), an increase in those desiring to pursue higher levels of education may not necessarily lead to an increase in the actual rate of advancement. Furthermore, tough economic conditions reduce household incomes and make it difficult for individuals to afford higher levels of education, thereby constraining the desire to pursue advancement. These conclusions are all merely speculative, however, and much is still unclear about the relationship between the trends in the labor market around the time of graduation and educational advancement. This is an important area that requires further research.[7]

Research on the cohort effect in the labor market is not limited to Japan. The empirical research conducted by Beaudry and DiNardo (1991) using U.S. data showed that the tightest labor market conditions observed since a worker was hired have a stronger effect than the labor market tightness at the time of graduation.[8] Using panel data on male university graduates in Canada, Oreopoulos, von Wachter, and Heisz (2006) showed that unemployment rates at graduation put downward pressure on annual income, but that the impact on annual income gradually weakened over time, such that it essentially vanished within about ten years. Annual incomes declined by about 2 percent for every 1 percentage point increase in the unemployment rate, and there was no effect found on the rate of employment.

Differences between Japan and North America were also found in the results for those of different educational backgrounds. Genda, Kondo, and Ohta (2007) compared Japan and the United States by applying the analytical framework developed by Ohta and Genda (2007) to the U.S. Current Population Survey. The results showed that in the United States, the impact of labor supply and demand at graduation on annual incomes vanishes within about three years for high school graduates, but continues for about six or seven years among university graduates, a trend that is just the opposite of that seen in Japan.[9]

Again, the unique characteristics of the cohort effect in Japan are the continuous effects of labor supply and demand fluctuations

at the time of graduation and the fact that this trend is particularly pronounced for those with less education.

Ohta and Genda (2007) limited their study to males, but Kondo (2008) also studied the cohort effect on women who graduated between 1981 and 1997. Kondo used the Japanese Panel Survey of Consumers conducted by the Institute for Research on Household Economics to confirm the long-term impacts of labor supply and demand at graduation on women. Significant declines in female employment rates were caused by the recession, and for every 1 percent increase in the unemployment rate in the year of graduation, women saw their rates of employment decline by as much as 6.8 percent, even as long as seven years after graduation. This suggests that because labor market retention rates are lower for women than men, the loss of desire to seek employment due to a recession may lead to earlier decisions not to participate in the labor force. Kondo (2008) compared the United States and Japan and found that the cohort effect was more sustained in Japan, among both men and women.

Reasons for the Lasting Effects of Conditions at Time of Graduation

Institutional Background

A well-known characteristic of the Japanese labor market is the bias toward greater numbers of employment opportunities immediately after graduation (Ariga, Brunello, and Ohkusa, 2000). As a result, studies (e.g., Kondo 2007a; Sakai and Higuchi 2005) have shown that it is difficult for young people who are unable to find full-time employment upon graduation to later escape their "freeter" status (people who lack full time employment or are unemployed, who may also be described as underemployed or freelancers). Since the 1990s, an increasing number of young people, particularly high school graduates, have become so-called NEETs (young people not in education, employment, or training), and it is not uncommon for these individuals to lack any kind of postgraduation employment experience whatsoever (Genda 2005: 188).

Why is it so difficult for young people who graduate during a recession to shrug off their postgraduation freeter or NEET status?

For those who want to look for work after graduating high school rather than continuing on to a university, a bridge to employment has been created through a partnership between schools and the government (specifically, through Hello Work). Based on the "one person, one company system," careful guidance is provided by high school career counselors well acquainted with the job seekers' potential skills, and a smooth transition from school to employment is promoted by long-term relationships of trust developed between schools and companies as a result of annual hiring performance (Mitani 1999; Ryan 2001). When there is a lack of job offers for high school graduates, the schools actively try to find opportunities for employment at small and medium-size companies, and there is a growing trend toward emphasizing the maintenance or expansion of hiring activities (Ishida 2007).

After an individual has been hired as a full-time employee, a great deal of energy is invested in ensuring that worker's rotation through various positions within the company, in forming intellectual proficiency through long-term competition and reviews, and in conducting performance evaluations to measure their progress. The merit-based ranking system that has formed the core of the "Japanese-style" employment system characterized by seniority-based wages and long-term employment, was originally formed for the purpose of achieving the principle of merit-based promotions regardless of educational background or gender (for details, see Nippon Keidanren 1969).[10] In the internal labor market, workers are expected to expand their latent potential, and companies are expected to evaluate their workers' skills as accurately as possible.

The Japanese employment system has been forced to change by the tough corporate environment that has existed since the 1990s, and a trend has emerged in personnel management that places more weight on the demonstration of short-term and overt skills than on the long-term cultivation of potential skills. On the other hand, there are still some companies that are not changing their

approach to internal skill formation, even in these tough economic times (Sato and Genda 2003).

Although the internal labor market has weakened or contracted among companies in general, there is a strong tendency among companies that focus on hiring new graduates to continue emphasizing personnel strategies based on a long-term perspective. Hara, Sano, and Sato (2006) reported that companies that tend to view new high school graduates as long-term trainees have continued to hire new high school graduates even since the 1990s.

Given this economic environment, it is the large number of high school graduates who are in the most serious predicament, whether viewed from the perspective of the ties between schools and companies at the time of graduation, or the rigorous evaluation system within companies. When university graduates face fewer job openings due to a poor economy or more intense job competition due to their larger numbers, they tend to broaden their view of potential full-time workplaces to include companies that they might never have previously considered. In this case, high school graduate job seekers suffer, as they end up being squeezed out of full-time employment opportunities. While university graduates can usually manage to find a place in the internal labor market by lowering their ambitions, high school graduates are left to the external market, that is, provisional employment, or are essentially bumped into unemployment.

Once a young person has been shut out of a school or company, there are very few opportunities for that individual's potential skills to be accurately evaluated, a reality that considerably limits future opportunities for being hired as a full-time employee. As compared with the job search counseling provided by schools or the rigorous evaluations conducted in the internal labor market, there are significant gaps in the job skill evaluative functions in the external market. While university graduates who choose to change jobs enjoy the informational value of the name of the university or faculty from which they graduated, in addition to their job history, high school graduates lack such common standards for expressing their potential skills. For this reason, the costs required for a high

school graduate to move from a provisional job or unemployment into a full-time job are particularly high, potentially eliminating their incentives to find permanent employment altogether. Relatively more importance is attributed to company-specific human capital formation for high school graduates than for university graduates, who are able to acquire certain general skills through their university education. For this reason, high school graduates who have been unable to obtain full-time employment are more limited in their ability to move into full-time employment than university graduates placed in the same environment.

While the economic strain of one's graduation level is relatively greater for high school graduates, they also find it harder to break free from disadvantageous situations because of the weak evaluative functions of the labor market and the high transition costs involved in changing jobs. These two structural weaknesses of the Japanese external labor market make it difficult to project that there will be any improvement in employment status among high school graduates of the employment ice-age generation.

Economic Theoretical Background

The cohort effect characteristics created by the institutional framework described above are consistent with the interpretations of economic theories that take into consideration incomplete information and uncertainty about the future.

In a scenario where high school graduates lack opportunities to be hired as full-time employees because of the state of the economy at the time of graduation, and then later find themselves unable to obtain full-time employment after taking provisional positions or becoming unemployed, their career history is evaluated as a negative signal of their expected productivity. The fact that an individual was not hired as a full-time employee upon graduation is viewed by the corporate world as an indicator of that individual's low productivity. In addition, individuals cannot change their employment history at the time of graduation when the mid-career employment market is not functioning for some reason. Several economic theories explain

that it takes time to eliminate the shock of a recession on wages and employment at the time of graduation: human capital theory, job search theory, and implicit-contract theory.

Explanations based on the human capital theory of Becker (1964) and Rosen (1972) suggest that among those who graduate during a recession, the dearth of opportunities for human capital accumulation through the job training programs offered to employees at their first jobs can be expected to produce a wage difference reflecting the amount of that lost human capital. Differences in job training opportunities are both qualitative and quantitative, that is, differences in quality based on the attributes of the employer (i.e., larger companies make larger investments in training) and differences in the amount of investment in training made to maintain performance during a recession, even with the same company. The effects of both of these are gradually eliminated, by later job changes in the case of the former, and by the ability to make up for lost training opportunities through economic recovery in the case of the latter. Nonetheless, given that the return on training investments is higher for younger employees, it is easy for the costs associated with the loss of training opportunities to become persistent for those who experienced deteriorating labor supply and demand conditions at the time they were hired.

Job search theory includes interpretations based on the "on-the-job search model" typified by Ohta (1999), Burdett (1978), and Mortensen (1978). These hypothesize that as long as workers are not terminated, they will change jobs when they have an opportunity to earn higher wages than they are earning in their current position. If the wages they earn in their first job increase, they will continue in that job, but if the wages they earn in their first job fall, they will quit and look for a job with higher wages. However, because this transition process takes time, the labor supply and demand conditions at the time of graduation will continue to have an effect for a certain period of time. If this model is accurate, labor supply and demand at the time of workforce entry will have a lasting effect.

The implicit-contract theory espoused by Azariadis (1975), which is based on the assumption of the uncertainty of future supply and demand, explains the lasting effects of labor supply and

demand conditions at graduation. There is an incentive for neutral companies to respond to economic volatility risk by offering a certain level of wages as insurance for workers who prefer risk avoidance. The existence of an actual "contract" based on an implicit consensus and the labor supply and demand status at the time of workforce entry produce a lasting effect. For rational companies, it is most desirable to enter into a long-term insurance contract with a worker when the worker first enters the company, that is, upon the worker's graduation. A recession at the time of graduation leads to excess supply in the market for new graduate job seekers, and this puts upward pressure on the insurance premiums that have to be paid when workers are hired. As a result, those who graduate during a recession, when companies must forfeit the payment of that higher level of insurance, will continue to lose stable employment opportunities over the long term.

The Azariadis model contends that wages grow more rigid when the transition costs of changing jobs after an implicit insurance contract has been established are large, making it more difficult to change jobs. By contrast, Harris and Holmstrom (1982) have expanded the model on the premise of low worker transition costs. They have theoretically shown that while wages will rise as a result of changing jobs in a good economy, wages will move rigidly downward in a poor economy since existing contracts will be maintained.

Figuring out which of these two models of uncertainty is more accurate can be achieved through empirical testing. Beaudry and DiNardo (1991) examined both models by looking at the labor market in the United States. The results showed that since current wages are strongly influenced more by the lowest unemployment rate experienced after entering the labor market than by the unemployment rate at the time of graduation, changing jobs can have a positive effect on wages. This is consistent with the Harris and Holmstrom model. Ohta and Genda (2007, table 13) copied the analysis conducted by Beaudry and DiNardo, and examined the cohort effect by adding the lowest unemployment rate after graduation as an explanatory variable. Their findings showed that even when controlling for the best economic conditions after graduation,

the effect of labor supply and demand at the time of graduation was persistent. More rigorous examination is required, but these results suggest that in Japan, unlike in the United States, Azariadis' implicit-contract model more accurately describes reality given the country's high job transition costs.

The Ongoing Ice Age

Supply and demand conditions in the labor market immediately before graduation have a long-term effect on wages and job separation. This fact has been reported by multiple studies as the cohort effect in the labor market. This article introduced studies of the cohort effect that analyzed individual data over a long period extending from the mid-1980s to the mid-2000s. The results reconfirmed that cohorts of workers who were hired during a recession earned lower real wages, experienced more uncertain employment conditions, and tended to have a higher unemployment probability than cohorts of workers who were hired during good economic times. This trend was even more evident among high school graduates than among university graduates.

For high school graduates whose employment opportunities were severely limited during the employment ice age, the ice age has not ended even though the economy overall is improving. For those who did not choose to continue their education beyond high school, or who abandoned their hopes for higher education, the thick ice continues to impede their employment prospects.

If we consider that it is not only immediately after graduation, but well beyond that these individuals will continue to have problems improving their wages and employment conditions, it becomes apparent that providing public support for skill development programs for those who graduated from high school during the employment ice age is of urgent concern. Companies do not have any incentive to provide training to provisional employees who are not expected to develop experience and skills. The government has created education and training financial aid systems for employment insurance subscribers and supports the skill development of individual

workers, but many provisional employees are not subscribed to employment insurance. Moreover, that financial aid system is primarily for off-the-job training, while on-the-job training is often a more effective means of skill development. Thus, the development of effective education and training programs for ice-age generation freeters and NEETs is currently one of the most important labor policy challenges we face.[11]

Although the economy has been on the mend since 2002 and labor supply and demand are improving, many high school graduates, now in their thirties, continue to live as freeters and to experience unstable employment and unemployment conditions due to the cohort effect. Some of these people surely possess a high level of skills, but have not been given opportunities to demonstrate them. For those in the ice-age generation, however, the external labor market, which has only weak evaluation functions, offers limited opportunities for individuals to express their potential capabilities, and the transition costs of moving from provisional employment or unemployment to full-time employment are extremely high.

Because of this, even now that the economy is improving, new structures are needed to bridge the gap between companies and those individuals who were not able to make a smooth transition between school and work. Since the 1990s, deregulation of the labor market has progressed, the personnel services industry has grown, and the market for changing jobs has become more developed. This has led to the efficient allocation of labor resources through the evaluative functions of the marketplace, and has also lowered the transition costs for workers and given them access to job opportunities offering higher levels of satisfaction and fulfillment.

However, these environmental developments in the labor market have primarily only been made among highly educated white-collar workers, professional skilled laborers (known as *gaten* jobs), and nontypical workers such as temporary workers and contractors. By contrast, not much progress has been made on creating a new labor market with appropriate evaluative functions for workers who graduated from an ordinary high school and would like to become generalist, full-time employees.

In Japan, where the labor markets for specific occupations are underdeveloped, it is difficult for past work experience to be viewed as an appropriate signal of the individual's skills. Rather, the mere experience of having been a freeter or NEET is perceived as an easily identifiable, negative signal.

However difficult it may be to escape the freeter or NEET stereotype, it is not impossible if one has enough ambition and talent. Nonetheless, because there is no other measure of evaluating a worker's latent potential, a previous history of unstable employment or unemployment tends to be given more weight than it should in signaling future potential. As a result, there is a tendency in the youth labor market today to believe the most extreme conclusions, for example, that "it is impossible to break out of the freeter or NEET lifestyle," or that "any young person who has been a freeter or NEET is not going to be a good employee."

What kinds of market-strengthening efforts will be needed to overcome the vulnerabilities related to the evaluative functions of the labor market and to improve the market's ability to match companies with workers?

First, we need to develop a system for evaluating the job skills of workers across companies, including young people who have not continued on to a university education. Investigations into these kinds of policies have already begun. For example, the Ministry of Health, Labor, and Welfare (MHLW) is promoting activities aimed at developing a "job passport." This is an effort to disseminate new evaluation criteria whereby workers enter information on a broad range of past job experiences and social activities, including volunteer work and internships, on a specified form that can be used as reference material for their job searches.

The MHLW is also studying a new skill development and evaluation system known as "the third way." This is a program for developing professional training systems that cultivate young people into professionals through what is called the Japanese version of the dual system, where young people can "study while working, and work while studying." It aims to create a public training system, based on an awareness of the need for market evaluative

functions, in which training, including classroom lectures, is suited to corporate needs.

While government initiative is important in the construction of a skill evaluation system, workers themselves must be primarily responsible for striving to effectively demonstrate the skills they possess. This is the case not only for highly educated full-time employees but also for those who did not pursue a college education, provisional employees, and nonskilled workers. What is important here is not only the skill development of workers who disclose their job-related experience and their hopes for the future (a professional career) but also the ability of companies to accurately evaluate their experience and skills.

This means that companies need to actively seek out solutions to problems including the cohort effect. While the information functions of the external labor market remain underdeveloped, the risks of hiring a freeter or NEET are quite high. However, it is impossible to ignore that the conventional focus by large Japanese corporations on hiring new graduates has made it difficult for an evaluation system in the external labor market to develop. In the future, if the number of new graduates is going to trend downward nationwide, it is going to become increasingly important for companies to be able to accurately evaluate mid-career workers with diverse job experience. Given that many small and medium-size companies have thus far only been able to hire limited numbers of new graduates, the construction of a cross-sectoral labor market achieved through tie-ups between small and medium-size companies is going to have to be examined in the future. Constructing an effective skill evaluation system will require the cooperation of companies and industrial associations, but the advantages this will offer all Japanese companies over the long term must be recognized.

Opportunities for these youth employment problems to be seriously addressed are becoming obsolete as economic recovery progresses. However, improving the evaluative functions of the labor market is going to remain an important social challenge in the future.[12]

Notes

1. In an economic recession, job seekers have a narrower selection of employer options, while companies have a greater selection of available workers. Thus, the relationship between the economic cycle and quality of employment matches is theoretically not so apparent. However, the empirical data reported by Bowlus (1995), which is based on the U.S. National Longitudinal Survey of Youth, shows that the quality of employment matching falls under recessionary conditions.

2. Detailed results are presented in Otake (2005).

3. When thinking about the cohort effect, considerations of the effect of cohort size present an important point for future debate. According to previous studies, the ongoing reduction in cohort sizes being brought about by the trend toward lower birthrates should be expected to result in an increase in wages, particularly among male university graduates. However, if the conventional cohort effect is closely linked to the way that internal promotions are handled, the predictions will be reversed as soon as the internal labor market changes. Considerations regarding the relationship between the size of the cohort (including the second baby boom) and wages and length of service are going to be important issues when studying the cohort effect.

4. Even outside of Japan, Oreopoulos, von Wachter, and Heisz (2006) likewise have shown that cohorts with higher unemployment rates at graduation tend to have higher rates of job separation over the long term.

5. The phrase "employment ice age" was named a buzzword of the year in 1994.

6. The overall unemployment rate at the time of graduation from the highest level of education reached was calculated using the annual average unemployment rate for the previous year at the time of graduation (March). It was assumed that the individual's place of residence at graduation was the same as at the time the survey was conducted, and found the unemployment rate by region for the year prior to the year of graduation by regional block (the area from Hokkaido to Kyushu was divided into ten blocks). To consider the young labor market, the study was limited to those with twelve or fewer mixed-experience years (survey year to year of graduation). Those who would like to read this research paper may obtain a copy by sending an e-mail to genda@iss.u-tokyo.ac.jp.

7. Actually, several studies have been conducted that suggest that labor supply and demand do, in fact, have an impact on rates of educational advancement. Ohta (2002) analyzed the determinants of the rate of educational advancement using longitudinal data from 1974 to 1998 based on the Basic Survey of Schools and the Employment Security Statistics. He tried to determine the rate of advancement of high school graduates as the percentage of those who continued on to a university (excluding correspondence courses); and by combining data related to such factors as tuition expenses and the wage disparity between those with different educational backgrounds, he examined the effects of the number of just-graduated job seekers, the ratio of job openings to just-graduated job seekers, and the number of job seekers per recent graduate. He found that the

stagnation in the number of just-graduated job seekers significantly raised the rate of educational advancement. It is difficult to draw conclusions or interpret the relationship between the rate of educational advancement and the labor supply and demand index since the trend factors that include both variables have to be controlled in some way. Analyzing the individual level of the supply and demand effects on university advancement requires data that include information regarding interregional movements for both employment and educational advancement. To examine whether the negative effects of the labor market are reduced by the educational advancement of those who face difficult job hunting conditions, it is essential to create new data, for example, prefecture-level panel data based on resources such as the Basic Survey of Schools, and to analyze these data against the Employment Security Statistics.

8. Some have pointed out that at large companies, labor supply and demand at the time of employment have a continuous effect on the worker's later wage profile (Baker, Gibbs, and Holmstrom 1994). This may be because it is difficult for a worker at a large company, where labor conditions are relatively good, to improve their situation by changing jobs. The finding reported by Oreopoulos, von Wachter, and Heisz (2006) that the unemployment rate at graduation would have a continuous effect on those whose first job was with a large company, is consistent with this interpretation.

9. As will be shown in the theoretical analysis to follow, the impact of labor supply and demand at the time of graduation in explanations based on the job search model or the implicit-contract theory is highly likely to be eliminated by job separation due to exogenous factors such as termination or childbirth. Because the postgraduation employment opportunities for less educated young people in the United States are mostly temporary jobs, wages are significantly affected by short-term labor supply and demand. This trend holds true among not only different educational backgrounds but also different ethnicities. Black people are more easily terminated than white people, but the effect of the unemployment rate at the time of graduation is also dampened more quickly among black people (Kondo 2007b).

10. Ishida (1997) explains the contemporary significance of this book.

11. Ishikawa (1999: 385) points to the adverse effects that can arise when we rely only on the self-help efforts of workers themselves and only some companies for education and training aimed at improving productivity. This invites the phenomenon of free riding by companies with regard to the costs of providing training. To avoid the adverse effect of the asymmetry of information regarding training quality and to keep companies that provide training from developing a purchasing monopoly, we must not rely on market functions alone to provide skill development opportunities. Instead we must promote the continued intentional efforts by labor organizations and entrepreneur organizations working cooperatively to create and maintain social venues for job training, which are needed for achieving equality of skill development opportunities and improving productivity throughout society.

12. In this case, some people might have to be resigned to earning a low income as a result of the way they are evaluated by the market. Bolstering social

redistribution, such as promoting intensive skill development among those people, is essential to improving the labor environment overall.

References

Ariga, Kenn; Giorgio Brunello; and Yasushi Ohkusa. 2000. *Internal Labor Markets in Japan.* Cambridge: Cambridge University Press.

Aruga, Ken. 2007. "Shinki kousotsusha no roudou shijou" [The Labor Market for New Graduates]. In *Keizai teitai no genin to seido* [The Causes and Systems of Economic Stagnation], ed. Fumio Mori. Tokyo: Keiso Shobo.

Azariadis, Costas. 1975. "Implicit Contracts and Underemployment Equilibria." *Journal of Political Economy* 83: 1183–202.

Baker, George; Michael Gibbs; and Bengt Holmstrom. 1994. "The Wage Policy of a Firm." *Quarterly Journal of Economics* 109: 921–55.

Beaudry, Paul, and John DiNardo. 1991. "The Effect of Implicit Contracts on the Movement of Wages over the Business Cycle: Evidence form Micro Data." *Journal of Political Economy* 99, no. 4: 665–88.

Becker, Gary S. 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. New York: National Bureau of Economic Research.

Bowlus, Audra J. 1995. "Matching Workers and Jobs: Cyclical Fluctuations in Match Quality." *Journal of Labor Economics* 13: 335–50.

Burdett, Kenneth. 1978. "A Theory of Employee Job Search and Quit Rates." *American Economic Review* 68: 212–20.

Genda, Yuji. 1997. "Chansu ha ichido—sedai to chingin kakusa" [Once Chance: Generation and Wage Disparities], *Nihon roudou kenkyū zasshi* 449: 2–12.

———. 2005. *Hararaku kajou* [Overwork]. Tokyo: NTT Shuppan.

Genda, Yuji; Ayako Kondo; and Souichi Ohta. 2007. "Long-term Effects of a Recession at Labor Market Entry in Japan and the United States." ISERP Working paper 07–09, Institute for Social and Economics Research and Policy, Columbia University.

Hara, Hiromi; Yoshihide Sano; and Hiroki Sato. 2006. "Shinki kousotsusha no keizoku saiyou to jinzai ikusei" [Continuous Employment of New High School Graduates and Human Resource Development]. *Nihon roudou kenkyū zasshi* 556: 63–79.

Harris, Milton, and Bengt Holmstrom. 1982. "A Theory of Wage Dynamics." *Review of Economic Studies* 49: 315–33.

Ishida, Hiroshi. 2007. "Koukou ga shūshoku assen suru koto—koukou ga haro-wa-ku" [High Schools as Job Search Mediators: Are High Schools Serving as Hello Work Offices?]. *Nihon roudou kenkyū zasshi* 561: 56–58.

Ishida, Mitsuo. 1997. "Nikkeiren 'nouryoku shugi kanri'" [Nikkeiren's "Meritocratic Management"]. *Nihon roudou kenkyū zasshi* 443: 20–21.

Ishikawa, Tsuneo. 1999. *Haibun no keizaigaku* [The Economics of Distribution]. Tokyo: Tokyo University Press.

Kondo, Ayako. 2007a. "Does the First Job Really Matter? State Dependency

in Employment Status in Japan." *Journal of the Japanese and International Economies* 21: 379–402.

———. 2007b. "Differential Effects of Graduating during a Recession across Race and Gender." ISERP Working Paper 2007–05, Institute for Social and Economic Research and Policy, Columbia University.

———. 2008. "Roudou shijou sannyuuji no fukyou no choukiteki eikyou —nichibei josei no hikaku bunseki" [Long-Term Effects of Graduating During a Recession: Comparative Analysis of Women in the U.S. and Japan]. *Kikan kakei keizai kenkyū* 76.

Kurosawa, Masako, and Yuji Genda. 2001. "Gakkou kara shokuba he: '7 / 5 / 3' tenshoku no keihai" [From School to the Workplace: Explaining the 70–50–30 Turnover Phenomenon]. *Nihon roudou kenkyū zasshi* 490: 4–18.

Mitani, Naoki. 1999. "The Japanese Employment System and Youth Labour Market." In *Preparing Youth for the 21st Century: The Transition from Education to the Labor Market*. Tokyo: Organization for Economic Cooperation and Development.

Mortensen, Dale T. 1978. "Specific Capital and Labor Turnover." *Bell Journal of Economics* 9: 572–86.

Nippon Keidanren Meritocratic Management Research Association Report. 1969. *Nouryoku shugi kanri—sono riron to jissen* [Meritocratic Management: Theory and Practice]. Tokyo: Nippon Keidanren Publishing Department.

Okamura, Kazuaki. 2000. "Nihon ni okeru ko-ho-to/saizu kouka" [Cohort Size Effect in Japan]. *Nihon roudou kenkyū zasshi* 481: 36–50.

Oreopoulos, Phillip; Till von Wachter; and Andrew Heisz. 2006. "The Permanent and Transitory Effects of Graduating in a Recession: An Analysis of Earnings and Job Mobility Using Matched Employer-Employee Data." NBER Working Paper 12159.

Ohta, Souichi. 1999. "Keiki junkan to tenshoku koudou" [Economic Cycles and Job Changing Behavior]. In *Nihon keizai no kouzou chousei to roudou shijou* [Structural Adjustments in the Japanese Economy and the Labor Market], ed. Jiro Nakamura and Megumi Nakamura, 13–42. Tokyo: Nihon Hyouronsha.

———. 2002. "Jakunen shitsugyou no saikentou" [Reexamining Youth Unemployment]. In *Risutora to tenshoku no mekanisumu* [Restructuring and Job Transfer Mechanisms], ed. Yuji Genda and Yoshifumi Nakada, 249–75. Tokyo: Toyo Keizai Shinposha.

Ohta, Souichi, and Yuji Genda. 2007. "Shitsugyouritsu joushou ga motarasu jakyunen shuugyou he no jizokuteki eikyou ni tsuite—roudou shijou no seday kouka ni kansuru saikenshou" [Continued Effects of Rising Unemployment on Youth Employment: A Reexamination of the Cohort effect in the Labor Market]. Ministry of Internal Affairs and Communications, Statistics Bureau, Statistical Research and Training Institute Research Paper no. 8.

Otake, Fumio. 2005. *Nihon no fubyoudou—kakusa shakai no gensou to mirai* [Inequality in Japan: Illusions and the Future of a Differentiated Society]. Tokyo: Nihon Keizai Shinbunsha.

Otake, Fumio, and Takenori Inoki. 1997. "Roudou shijou ni okeru gendai kouka" [The Cohort effect in the Labor Market]. In *Gendai makuro keizai bunseki—tenkanki no nihon keizai* [Contemporary Macroeconomic Analysis: The Japanese Economy in Transition], ed. Kazumi Asako, Naoyuki Yoshino, and Shinichi Fukuda, 56–68. Tokyo: University of Tokyo Press.

Rosen, Sherwin. 1972. "Learning and Experience in the Labor Market." *Journal of Human Resources* 7: 326–42.

Ryan, Paul. 2001. "The School-to-Work Transition: A Cross-National Perspective." *Journal of Economic Literature* 39, no. 1: 34–92.

Sakai, Tadashi, and Yoshio Higuchi. 2005. "Furi-ta- no sono ato" [Life After Being a Freeter]. *Nihon roudou kenkyū zasshi* 535: 29–41.

Sato, Hiroki, and Yuji Genda. 2003. *Seichou to jinzai—nobiru kigyou no jinzai senryaku* [Growth and Human Resources: Human Resource Strategies of Growing Companies]. Tokyo: Keiso Shobo.

Welch, Finis. 1979. "Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust." *Journal of Political Economy* 87: 65–98.