III. LERA Refereed Papers: Labor Markets and Economics and Work and Employment Relations

The Labor Market Risks of Individual Accounts for Retirement

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Introduction

As society is growing older, retirement income needs are also rising. To address the need for more retirement savings, public policy has mainly focused on promoting tax advantaged individual accounts, such as IRAs or 401(k)s. Typically, individual accounts involve greater risks and greater costs than pooled savings vehicles, such as defined benefit (DB) pension plans, which may be offset by other benefits. However, a cost that has not received much attention is the fact that workers are subject to varying income fluctuations during business cycles and over their careers based on demographic characteristics. These income fluctuations are not randomly distributed, however; some workers are more likely than others to see larger fluctuations.

During business cycles workers may suffer from the timing of an unemployment spell. Since labor market fluctuations lag behind financial markets, the probability of job loss increases after financial asset price peaks. Workers may be purchasing expensive equities just prior to a spell of unemployment

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and then fail to purchase equities during the remaining decline. This means that workers with greater income fluctuations are less likely to purchase financial assets when prices are low, and their lifetime accumulations may be lower than those of their counterparts. In addition, some workers face comparatively low earnings early in their careers. Thus, they are less likely than their counterparts to take advantage of interest rate compounding, relative to lifetime earnings. In this paper, we study both forms of labor market risks of individual accounts.

Background

While saving for retirement, investors typically face three risks. One is idiosyncratic financial market risk—the chance of unwise or unlucky decisions. Second is the possibility that financial market rates of return are below average during somebody's working life—so-called market risk. And lastly, there is the chance that workers will outlive their retirement savings—so-called longevity risk.

These greater risks are associated with increased costs in individual accounts. First, because of the loss of economies of scale, the management costs under individual accounts are greater than under pooled savings vehicles. Second, there are insurance costs to consider in reducing the greater risk exposure. These include the costs of annuitizing total savings upon retirement to eliminate longevity risk and rate of return guarantees to reduce market risk (Weller and Wenger 2004).

There is another potential risk, however: unanticipated shocks to labor income due to business cycles. Labor income is considered a nontradable implicit asset that is balanced with other explicit assets to achieve a household's optimal portfolio allocation (Campbell et al. 1999; Storesletten, Tolmer, and Yaron 2001; Viceira 1999). For instance, if labor income is riskless, then riskless asset holdings are expected to be strongly crowded out and a household's portfolio will contain mainly risky assets (Bodie, Merton, and Samuelson 1991). If labor income is risky but unrelated to financial market risks, the portfolio allocation in risky assets is projected to be reduced (Viceira 1999). And if risky labor income is correlated with financial market returns, households should be more likely to invest in less risky assets (Campbell et al. 1999).

The literature recognizes two obstacles to optimal diversification of workers' portfolios to account for the risk inherent in their nontradable labor income. For one, households may not be able to borrow money at the riskless interest rate to purchase the optimal mix of assets (Constantinides, Donaldson, and Mehra 1998; Bertaut and Haliassos 1997); second, there may be prohibitively high costs to holding the optimal mix of equities (Vissing-Jorgensen 2002; Yaron and Zhang 2000; Abel 1998). The latter may be especially

important for low-income households, who often do not hold any equities in their portfolios (Vissing-Jorgensen 2002; Abel 2000; Haliassos and Michaelides 2000; Campbell et al. 1999). A corollary of the transactions cost argument implies that greater volatility in nonfinancial income requires more frequent portfolio adjustments and reduces stock holdings due to prohibitively high transaction costs (Vissing-Jorgensen 2002).

If households are unable to efficiently diversify their nontradable labor income, their risk exposure is greater than it should be and their expected retirement savings accumulation is suboptimal. Specifically, short-term fluctuations in income will mean that households will be less likely to accumulate savings when it is financially most opportune, that is, when asset prices are comparatively low. Moreover, short-term labor income fluctuations in line with business cycle fluctuations appear to be heterogeneous.

The literature, though, leaves two issues unexplored. First, most empirical investigations reduce individual labor market fluctuations, and second, long-term labor market risks are generally ignored. The labor market is perennially undergoing long-term structural changes in response to technological advancements. Workers often do not adequately adapt to these changes by acquiring the skills to maintain their earnings potential. Consequently, educational achievement becomes a demographic characteristic for particular workers. But in a changing labor market, the same set of skills is likely to pay increasingly higher or lower rates of return, depending on the level of education.

The basic argument is that groups whose labor market outcomes fluctuate more with the business cycle will incur greater risks and presumably fewer assets, unless they can appropriately diversify their portfolios. Given the persistent obstacles to optimal diversification, labor income risks are likely to continue being a substantial aspect of individual accounts and will translate into fewer savings, all else equal, for workers with greater short-term labor market risks.

The labor market experience of workers differs with the business cycle by demographic characteristics (Clark and Summers 1981). For some groups unemployment levels rise faster and employment and wages fall faster or rise slower during recessions than for other groups. A common finding in the literature is that labor market outcomes, earnings, and employment tend to fluctuate more for younger workers than for older workers (Stratton 1993). Yet, the difference in outcomes by age seems to have diminished over time as older workers saw greater volatility in their labor market outcomes in the 1990s than in the 1980s (Gardner 1995).

An important distinguishing factor is gender. It appears that while women tend to experience greater volatility than men in terms of labor mar-

ket outcomes during business cycle fluctuations, these differences have shrunk over time (Hoynes 1999; Goodman, Antczak, and Freeman 1993; Abraham and Shimer 2001; Blank 1989). With respect to race, the differences appear to remain more stable over time. Stratton (1993), among others, found that there is a substantial and persistent unemployment difference between blacks and whites. Further, Hoynes (1999) suggested that nonwhites are likely to see greater variations in employment and earnings than whites in line with the business cycle. Also, education levels matter for labor market outcomes. While low-skilled workers were likely to see greater variances in labor market outcomes during business cycles than high-skill workers, these differences may have become smaller over time (Ashenfelter and Ham 1979; Murphy and Welch 1992; Hoynes 1999; Gardner 1995).

Aside from short-term business cycle fluctuations in labor market outcomes, there are also more persistent, long-term differences in labor market outcomes according to demographic characteristics. Wages and individual account accumulations are also linked in the long run since contributions to retirement accounts are primarily a function of earnings. However, for many men, especially those earning at or below the median wage, incomes have failed to increase since 1979. In particular, the lowest-earning 40 percent of male workers saw their real wages decline over the period from 1979 to 2001. Many authors have documented this decline in both wages and employment in the manufacturing sector (Murphy and Welch 1992, 1993; Bound and Johnson 1992; Katz and Murphy 1992) The wage picture for women tells a very different story: for all but the lowest 10 percent of women workers, real wages in 2001 were higher than wages in 1979 (Mishel, Bernstein, and Boushey 2003).

One common explanation for the relative decline in male wages and the increase in the education wage premium has been the increasing role of technology in the workplace. This phenomenon, referred to as skill-biased technological change, occurs when technological improvements raise the relative demand and wages for better-skilled workers. Under these conditions, income inequality increases as the demand for high-skilled workers increases and subsequently raises wages. Lower-skilled workers, in particular those with less education, will see relative demand and wage declines. There is considerable evidence that skill-biased technological change was widespread in the United States (Berman, Bound, and Machin 1998). Additionally, Bartel and Sicherman (1999) find that technology affects the allocation of labor—sorting the better skilled into more technologically advanced industries. Researchers have also found that, for men, earnings instability increased during the 1970s and earnings inequality increased during the 1980s (Haider 2001). Earnings instability is particularly important since

instability coupled with individual accounts exposes workers to potentially amplified risks. Gottschalk et al. (1994) argue that between one third and one half of the increase in earnings variance can be explained by transitory movements in earnings.

The effects of skill-biased technological change are not likely to reverse themselves. Increased use of technology in the workplace coupled with increased trade is likely to continue to put pressure on existing trends of income inequality and volatility. These long-run employment and wage risks have serious implications for personal retirement accounts. Workers who experience decline in their relative and real earnings due to skill-biased technological change are likely to have fewer resources over their life and subsequently lower retirement savings. However, workers who experience declining relative earnings may be able to take advantage of greater interest rate compounding, all else equal, relative to their career earnings than workers with rising relative earnings. The important point, though, is that workers will not know at the onset of their career whether they will experience rising or declining relative earnings over their career.

Empirical Analysis

In this section we analyze labor market risks by looking at the differences in terms of per-dollar accumulations for each demographic subgroup. Differences in this variable arise from timing of investments, not from earnings differences.

We use average wage and average unemployment rates for a number of demographic groups. We consider three demographic characteristics for the creation of our age-earnings profiles: race, gender, and education. Data are from the Current Population Survey Outgoing Rotation Groups from 1979 to 2002. Uniform data files are publicly available from the Center for Economic and Policy Research (2003).

To test for labor market risks, we create an age-earnings profile for each group of workers in our sample. This profile allows for continuous employment but adjusts wages downward based on the group's unemployment experience so the profile can be thought of as a group profile. We then allow each profile type to invest in a prototypical portfolio over these hypothetical workers' careers. The investments are in a balanced portfolio.

We calculate earnings profiles for each subgroup using age-specific unemployment rates and wages. To maintain robust unemployment rate estimates for each group, we use ten-year age ranges. The profile is aged each year by one year, so that by 2002, the age group under consideration contains people between the ages of fifty-five and sixty-five. Monthly earnings are the real wage scaled by the share of the labor force that is unemployed. This

allows us to capture the overall impact of the unemployment rate and wage changes over time.

We overlay the age earnings profiles with a hypothetical savings pattern. This assumes that individuals save 10 percent of their earnings. All savings are allocated in a balanced portfolio. Equities are assumed to increase at the rate of the S&P500 and to receive the S&P500 dividend yield. Bonds are assumed to earn interest equal to the interest paid on Moody's AAA corporate bonds. All calculations are in 2002 dollars.

Our main concern is each hypothetical worker's dollar accumulation per dollar invested, which highlights the importance of the timing of investments (see Table 1). For illustrative purposes, we also report the amount of total savings in real 2002 dollars. Most notably, and predictably, total savings vary substantially. Black women with less than a high school education could expect to have accumulated $65,546 in inflation adjusted dollars after

TABLE 1
Total Accumulations and Per–Dollar Accumulations, Based on Group Averages

		Total	Less than High School	High School	Some College	College
			Total Accumulations			
Total		152,685	97,611	126,500	155,122	219,535
Men		190,316	118,921	163,206	192,871	244,759
Women		109,506	68,274	92,525	114,203	202,944
White	Total	106,253	106,690	130,073	158,819	223,746
	Men	201,765	131,718	169,749	199,245	264,106
	Women	111,683	71,163	93,152	114,043	159,305
Black	Total	119,206	83,300	108,574	132,883	187,078
	Men	136,522	98,845	129,394	153,083	205,939
	Women	103,480	65,546	90,808	115,891	180,576
			Per–Dollar Accumulation			
Total		1.92	1.99	1.96	1.95	1.90
Men		1.93	2.01	1.97	1.96	1.92
Women		1.88	1.96	1.92	1.91	1.88
White	Total	1.92	1.98	1.95	1.95	1.90
	Men	1.93	1.99	1.97	1.96	1.90
	Women	1.87	1.95	1.92	1.90	1.85
Black	Total	1.91	1.95	1.95	1.95	1.90
	Men	1.93	1.96	1.95	1.96	1.91
	Women	1.89	1.95	1.94	1.92	1.85

Notes: Calculations are based on age–specific earnings profiles. All figures are in 2002 dollars. A balanced portfolio over the period from 1979 to 2002 is assumed. Figures in bold are maxima and minima.

twenty-four years of saving 10 percent of their earnings. In comparison, white, college-educated men could expect to accumulate more than four times as much with $264,106.

Second, the accumulation per dollar invested ranges from an additional $0.87 gained for white women to an additional $1.01 for men with less than a high school education. Men accumulated $0.05 more for each dollar they invested than women. Over a span of twenty-four years, this amounted to more than $2,900 dollars in foregone savings for women, or a 2.6 percent loss due to the timing of their unemployment spells.

Third, the differences in per-dollar accumulations vary with demographic characteristics. Women tend to have lower accumulations per dollar invested than men, while workers with more education tend to have higher per-dollar accumulations than workers with less education. Differences by race, although existent, are minimal, with blacks showing smaller per-dollar accumulations than whites.

Fourth, there is evidence of long-term labor market risks. Workers with less than a high school education benefited from the fact that their real earnings were relatively high at the start of their careers, which was also a time when stock prices were low. The opposite was true for women, whose earnings rose as stock prices rose. Men, for whom earnings were already high when stock prices were low, consequently saw per-dollar accumulations that were higher than those for women.

Our results so far show that there is a difference in per-dollar accumulation by demographic characteristics and not just differences in total accumulations. This is especially true for our results by gender and education. Using group averages, women accumulate $0.05 less per dollar invested. In dollar terms, women forewent $2,912 dollars or 2.6 percent of their total savings. These differences appear to further increase with other demographic characteristics, such as education. For instance, women with some college education accumulated $5,811, or 5.1 percent of their savings, less than they would have had with the same per-dollar accumulation as men with less than high school educations. To put this in perspective, these foregone savings approach the cost equivalent of converting total savings into lifetime annuities.

To test for the effects of short-term labor market risks without the complicating effects of long-term labor market trends, we calculate the accumulation of savings on the basis of detrended earnings. To detrend earnings, we regress real earnings on a logarithmic time trend that varies for each demographic group. Total accumulations are then based on average real earnings plus the differences between actual earnings and trend earnings in a given month. Our calculations show that each demographic group has per-dollar

TABLE 2
Per–Dollar Accumulations Based on Detrended and Trend Earnings

		Total	Less than High School	High School	Some College	College
		Per–Dollar Accumulation, Detrended Earnings				
Total		1.94	1.96	1.95	1.95	1.93
Men		1.94	1.96	1.95	1.95	1.94
Women		1.93	1.95	1.94	1.94	1.92
White	Total	1.94	1.96	1.95	1.95	1.93
	Men	1.94	1.96	1.95	1.95	1.93
	Women	1.93	1.95	1.94	1.94	1.92
Black	Total	1.94	1.94	1.95	1.95	1.94
	Men	1.94	1.95	1.95	1.94	1.93
	Women	1.94	1.95	1.95	1.95	1.92
		Per–Dollar Accumulation, Trend Earnings				
Total		1.93	1.99	1.96	1.95	1.91
Men		1.94	1.99	1.97	1.95	1.92
Women		1.90	1.97	1.93	1.91	1.90
White	Total	1.93	1.99	1.96	1.95	1.91
	Men	1.93	1.99	1.97	1.95	1.91
	Women	1.89	1.97	1.97	1.92	1.88
Black	Total	1.93	1.97	1.96	1.95	1.91
	Men	1.95	1.98	1.96	1.96	1.92
	Women	1.91	1.97	1.95	1.92	1.88

Notes: Calculations are based on age–specific earnings profiles. Results are based on group averages. Detrended earnings are based on a logarithmic time trend. All figures are in 2002 dollars. A balanced portfolio over the period from 1979 to 2002 is assumed.

accumulations of about $1.96 from 1979 to 2002 based on detrended earnings (see Table 2). Thus, there is no evidence of differences in short-term labor market risks.

Our results are more clear-cut with respect to long-term labor market risks. We recalculate our results by using each worker's trend earnings without short-term fluctuations. The figures indicate that differences in the long-term trends vary more than differences in short-term labor market risks.

So far we have focused on differences in labor market risks. To illustrate the full labor market risks, we compare the group average risks to hypothetical cases with no risks. First, we eliminate labor market risks that arise from differential unemployment rates. We compare a worker with certain demographic characteristics and the respective earnings and unemployment history to a worker who is constantly employed but who experiences the same

earnings variations. Next, we eliminate the labor market risks associated with fluctuations in earnings. We estimate the average trend earnings for all workers and use these as the earnings history for all workers. At the same time, we allow the unemployment rate to vary with demographic characteristics. Third, we create a hypothetical profile that assumes no unemployment and no earnings risks. In all cases, we compare the newly generated per-dollar accumulation to the per-dollar accumulations generated by group average earnings and unemployment rates. The differences in per-dollar accumulations give us an estimate of the labor market risks that workers with certain demographic characteristics experience.

The results are summarized in Table 3. The first panel shows the difference in per-dollar accumulations, when unemployment risks are eliminated. In each case, the per-dollar accumulations either improve or remain the same. In particular, women and blacks with less than a high school education see improvements in their per-dollar accumulations.

The second panel shows the difference in per-dollar accumulations, when earnings risks are eliminated. Many of the per-dollar accumulations are unchanged, and they actually fall when educational attainment is controlled for. Unchanged per-dollar accumulations either reflect that the trend earnings of a particular demographic group are rather similar to average earnings or that short-term and long-term risks can offset each other. The size of long-term labor market risks is especially noticeable with respect to educational attainment as the elimination of earnings risks reduces the per-dollar accumulations substantially. This reflects the loss of relative earnings, compared to average earnings, for certain workers, especially those with less than a college education. However, with respect to race or gender, we see higher or constant per-dollar accumulations when earnings are held constant at the average trend earnings.

In the third panel we compare the per-dollar accumulations based on group average risks with the per-dollar accumulations when both unemployment and earnings risks are eliminated. Again, women in particular see their per-dollar accumulations rise. For instance, the average per-dollar accumulation for women increases by $0.05, or an amount similar to the greater labor market risks that women face compared to those of men (see Tables 1 and 2). In other words, only after all labor market risks are eliminated do women fare as well as men in the performance of their individual accounts.

Our results demonstrate that there are labor market risks associated with individual accounts. We find limited evidence for differences in short-term market risks and considerable evidence of differences in long-term labor market risks across demographic groups. These risks are more pronounced by gender and education.

TABLE 3
Differences between No–Risk and Average–Risk Scenarios: Per–Dollar Accumulations

		Total	Less than High School	High School	Some College
		No Unemployment Risk			
Total		0.01	0.02	0.01	0.01
Men		0.01	0.01	0.01	0
Women		0.01	0.02	0.01	0
White	Total	0	0.02	0.01	0.01
	Men	0	0.02	0.01	0
	Women	0.01	0.03	0	0.01
Black	Total	0.02	0.03	0.02	0.01
	Men	0.02	0.03	0.02	0.02
	Women	0.02	0.03	0.02	0.01
		No Earnings Risk			
Total		0	–0.08	–0.04	–0.02
Men		0	–0.09	–0.05	–0.03
Women		0.04	–0.05	0	0.02
White	Total	0.01	–0.07	–0.03	–0.02
	Men	0	–0.08	–0.05	–0.03
	Women	0.05	–0.04	0	0.03
Black	Total	0	–0.05	–0.04	–0.03
	Men	–0.02	–0.06	–0.04	–0.04
	Women	0.02	–0.05	–0.03	0
		No Unemployment or Earnings Risk			
Total		0.01	–0.06	–0.03	–0.02
Men		0	–0.08	–0.04	–0.03
Women		0.05	–0.03	0.01	0.02
White	Total	0.01	–0.05	–0.02	–0.02
	Men	0	–0.06	–0.04	–0.03
	Women	0.06	–0.02	0.01	0.03
Black	Total	0.02	–0.02	–0.02	–0.02
	Men	0	–0.03	–0.02	–0.03
	Women	0.04	–0.02	–0.01	0.01

Notes: Calculations are based on age–specific earnings profiles. All figures are in 2002 dollars. A balanced portfolio over the period from 1979 to 2002 is assumed.

Conclusion

In this paper we examine the potential labor market risks for workers saving for retirement in individual accounts. We find limited evidence for short-term labor market risks, but we find robust evidence for persistent long-term labor market risks. This is important because workers are unlikely to know about their earnings risks, and, perhaps more importantly, they are unable to

diversify their human-capital to hedge against such risks. The size of labor market risks can add costs to individual accounts similar to those of annuitization of accumulated savings upon retirement. The costs vary especially by gender and education, and cost differences are less pronounced by race.

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