# HIRING RISKY WORKERS: SOME EVIDENCE

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*Lazear recently suggested that firms that do not expect to live for a long time will hire only safe workers. Hence their worker turnover will be lower. In this paper we test this hypothesis using both the industry growth rate and industry-average age of establishments as measures of the horizon for a particular firm. We find mixed results, both at the industry level and at the establishment level. Establishments in growing industries do indeed exhibit higher churning flows, but a high average age of establishments reduces rather than increases churning.*

## 1. INTRODUCTION

In a recent paper, Lazear (1995) provides an interesting new perspective on the wages of different groups of workers using an option-pricing model of wage determination. His analysis makes specific predictions about the turnover and wage-setting practices of firms. These predictions can be tested using firm- or establishment-level data, and in this note we use administrative data at the individual-


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employer level to test one of the turnover hypotheses. Our findings are mixed: we find some support for his model, but also some contradictions.

## 2. LAZEAR'S MODEL

Lazear assumes two types of workers. Safe workers have a known and certain output, whereas risky workers produce an uncertain output. Uncertainty arises from the worker's unknown true ability and a firm-specific component of output. The worker's true ability is revealed to the employer after a period of employment. The equilibrium wage level is determined by labor-market clearing. Lazear shows that in this context, risky workers command a wage premium. This is interpreted an option value: workers who turn out to be of low value can be fired; workers who turn out to be of high value are retained. The down-side risk is truncated by the ability to fire (even with firing costs), so hiring risky workers at the safe-worker starting wage would have positive net expected value. Risky workers' starting wages therefore rise to eliminate this. Firms pay risky workers a common starting wage during probation; thereafter they pay a wage below output to risky workers revealed to be good, and fire those revealed to be bad. The key assumptions necessary to generate this result are the existence of some firm-specific component to the risk, and either private knowledge of the workers' ability, or worker mobility costs. Neither of these appears to be particularly unlikely.

However, Lazear makes a further claim for his model. He argues that

> New firms in growing industries prefer younger, riskier workers. Firms in declining industries prefer older, safer workers. As a result, Silicon Valley should have younger workers and higher turnover rates than the Rust Belt. (p. 2)

and

> Growing industries will be characterised by high turnover rates. (Abstract).

The basic result is that firms that place a low probability on survival beyond the worker's probation period will prefer safe workers, since risky workers have no option value for them (p. 3). Firms with long horizons should-prefer riskier workers and hence expect higher worker turnover. However, to get from this result to the statements quoted above requires the (implicit) assumption that the industry growth rate is a good correlate of a firm's expected horizon. This

seems possible, but not necessarily true: high-growth industries can have high firm birth and death rates. The testable hypothesis we examine here is whether high worker turnover is related to Lazear's measure of a firm's expected horizon, and to another measure available in our data (the average age of currently alive firms in the industry).

## 3. Data and Methodology

We use an establishment-level dataset that we have analyzed extensively in a series of papers (Burgess et al., 1995, 1996; Lane et al., 1996).[1] The database is drawn from the universe of Maryland quarterly wage reports. Maryland collects quarterly information about employee earnings from employers who report in compliance with its unemployment compensation law. This includes everyone employed in Maryland except for those who are self-employed or who work for certain nonprofit organizations, on family farms, or as seasonal or migrant farm workers. Employers who are required to comply with the state's unemployment compensation law include virtually all employers of one or more paid employees. The only major excluded employers are the Federal government, self-employed individuals, some small agricultural enterprises, and philanthropic and religious organizations. Employment of individuals who receive no salary at all, who are totally dependent upon commissions, and who work on an itinerant basis is not reported by covered employers. State and local government employment is reported.There are roughly 1.5 million employees every quarter, and over 100,000 reporting units. Our database consists of these records from 1985:3 to 1994:3 and complementary four-digit Standard Industrial Classification codes. A vintage data element identifies the year and month when each business enterprise first acquired an unemployment compensation account number in the state, dating back to 1938.

Lazear's model describes firms that are in steady state, and hence all worker turnover is simply due to the firing of risky workers who turned out to be disappointing. In an empirical context, however, firms expand and contract, and hence the measure of worker turnover should be purged of that component of hiring or firing of workers necessary to achieve (positive or negative) net growth. In our earlier work, we refer to worker flows over and above those ac-

1. There is not a one-to-one correspondence between reporting units and firms, but over 90% of reporting units are single-establishment firms. This issue is dealt with in detail in Burges et al. (1995, 1996).

counted for by absolute employment growth as *churning* flows. These flows arise from the reevaluation of the match by worker or firm (Jovanovic, 1979), and clearly Lazeat's turnover falls in this second category of flows. Thus we use the establishment level data to define churning flows as the difference between worker flows (hires and separations in a given quarter) and job reallocation (the absolute value of employment change). The *churning flow rate* is total churning divided by total employment. The *industry growth rate* is employment change divided by average employment. Our measure of mean age is the mean current elapsed life span of establishments; only in a steady-state context will this provide a reasonable measure of completed life spans (Lancaster, 1990), but it is the only measure available to us.

## 4. RESULTS

In our previous work, we have found churning flows to be very high, to dominate job flows as a source of worker flows, to be very persistent over time establishment by establishment, and to be pervasive across industries (Burgess et al., 1996). Here we simply test the hypothesis that across industries high churning flows are associated with long expected horizons of establishments as proxied by the industry growth rate and the mean age of current establishments.

Figure 1 suggests a positive industry level relationship between employment growth and churning. The link is much less clear when we plot industry-average establishment age against industry churning rates in Figure 2; if anything, the relationship is negative. We present a regression that describes the link between churning, job growth, and average establishment age at the industry level in Table I, which supports Lazear's suggestion that firms in a growing industry are more likely to churn workers. It does not support his hypothesis that establishments that expect to live longer will churn more.

However, Lazear's analysis focuses on firm behavior. In order to investigate this further, we looked at the churning behavior of all employers with more than 20 employees and that live at least 10 quarters from 1985:3 to 1994:3. We correlate employer churning rates with industry growth rates[2] and industry age (calculated at the three-digit SIC level) and a dummy variable for whether aggregate (Maryland) employment was expanding in the period. Since our earlier work has documented that churning can be quite idiosyn-

2. Since there are possible simultaneity problems, we experimented with lagged industry growth rates, with no change in the basic results.

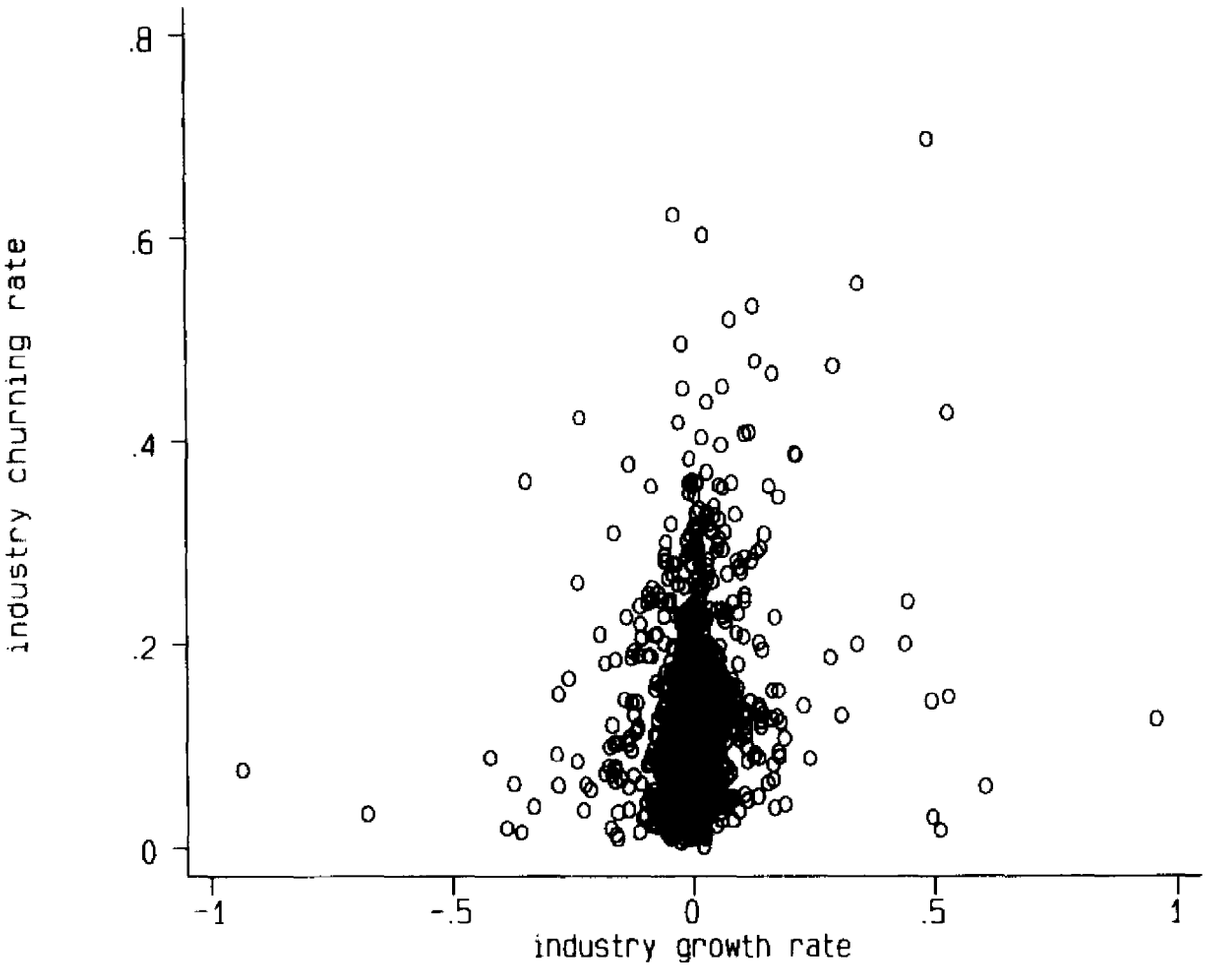


*FIGURE 1*

cratic, we control for employer fixed effects. The results are reported in Table II.

We find strong evidence linking industry growth rates and employer churning rates. High growth rates unambiguously increase churning, both in the aggregate and for five of the eight individual industry groups. The order of magnitude of this effect is quite different, ranging from lows of no effect in manufacturing and other services to highs of 0.16 in transportation, communication, and public utilities and 0.11 in wholesale trade. This confirms Lazear's hypothesis that churning will be higher in firms in growing industries, although the strength of the link is industry-specific. The empirical evidence also suggests that firms churn more when the economy is growing.

The evidence on age runs counter to Lazear's supposition. Firms in industries with older firms have lower rather than higher churning. This holds both in aggregate and for the industry subgroups. This suggests either that firms do not use the age of current firms as a proxy for their expected life span in their decision making, or that

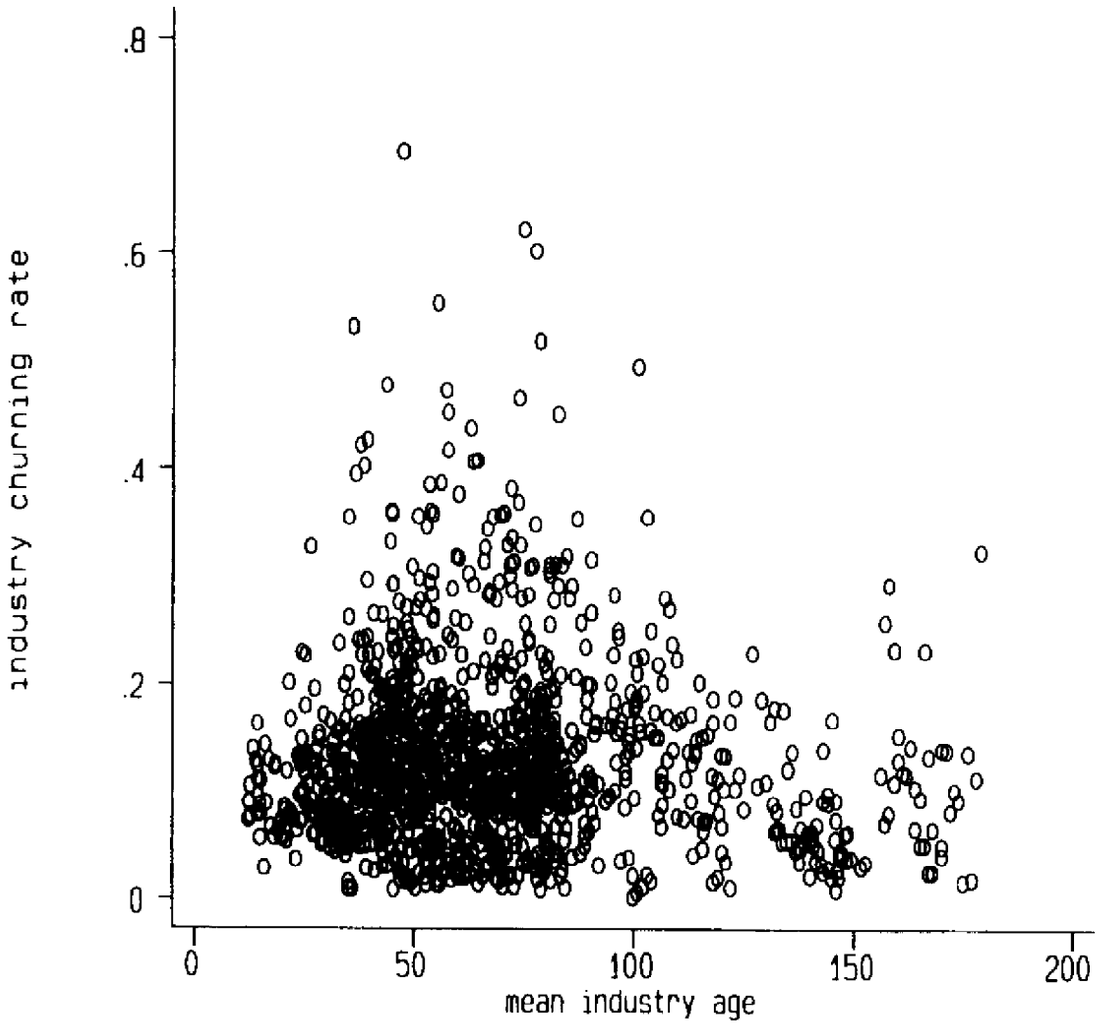


*FIGURE 2*

**TABLE I.**

**THE LINK BETWEEN CHURNING AND EXPECTED LIFE AT THE INDUSTRY LEVEL[a]**

| Industry Growth Rate[b] | Average Age[b] | Industry Fixed Effects[c] | $R^2$ |
|---|---|---|---|
| 0.051 | −0.002 | No | 0.12 |
| (3.70) | (41.67) | | |
| 0.042 | −0.0014 | Yes | 0.72 |
| (3.32) | (19.56) | | |

[a] Dependent variable: industry churning rate. 11,052 observations, 307 industries.
[b] *t*-statistics in parentheses.
Three-digit SIC.

TABLE II.

## THE LINK BETWEEN CHURNING AND EXPECTED LIFE AT THE EMPLOYER LEVEL[a]

| Sample | Ind. Growth Rate | Av. Age | Aggr. Employ. Expans. | $R^2$ | No. of Firms | No. of Obs. |
|---|---|---|---|---|---|---|
| Full | 0.001 | −0.0003 | 0.01 | 0.54 | 11,869 | 351,676 |
| | (2.33) | (5.39) | (20.24) | | | |
| AMCC[b] | 0.0002 | −0.0002 | 0.02 | 0.36 | 1,401 | 34,609 |
| | (0.46) | (2.73) | (10.44) | | | |
| Mfg. | 0.01 | −0.0008 | 0.006 | 0.44 | 596 | 15,119 |
| | (1.12) | (2.52) | (1.98) | | | |
| TCU[c] | 0.166 | −0.004 | 0.005 | 0.39 | 1,470 | 36,527 |
| | (10.70) | (27.15) | (2.59) | | | |
| Whlsl. trade | 0.11 | −0.003 | 0.012 | 0.52 | 2,686 | 70,505 |
| | (8.21) | (11.03) | (4.55) | | | |
| Retail trade | 0.02 | −0.0063 | 0.008 | 0.40 | 905 | 23,994 |
| | (2.36) | (2.04) | (3.74) | | | |
| FIRE[d] | 0.08 | −0.0009 | 0.0002 | 0.43 | 1,904 | 51,762 |
| | (5.55) | (5.43) | (0.10) | | | |
| Prof. serv. | 0.04 | −0.003 | 0.007 | 0.60 | 2,455 | 57,328 |
| | (4.15) | (9.03) | (2.69) | | | |
| Other serv. | 0.003 | −0.001 | 0.007 | 0.52 | 388 | 9,922 |
| | (0.18) | (6.16) | (2.43) | | | |

[a] Dependent variable: establishment churning rate. Firm and time fixed effects; *t*-statistics in parentheses.
[b] Agriculture, mining, and contract construction.
[c] Transportation, communication, and public utilities.
[d] Finance, insurance, and real estate.

some other forces are at work. One plausible alterative explanation for the results is that long-lived firms have good screening mechanisms for applicants, and hence reduce churning. That may well be a contributing factor to their long life.

## 5. CONCLUSIONS

Lazear's option-pricing model of wage determination implies that firms that do not expect to live for a long time (specifically, beyond

the point at which the worker's true ability is revealed) will hire only safe workers. Hence their worker turnover will be lower. Lazear suggests the industry growth rate as a proxy for a firm's expected horizon. In this paper we test this hypothesis using both the industry growth rate and industry-average age of employers as measures of the horizon for a particular firm. We find mixed results, both at the industry level and at the employer level. Employers in growing industries do indeed exhibit higher churning flows, but a high average age of employers reduces rather than increases churning.

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