

## Preference Heterogeneity and Insurance Markets: Explaining a Puzzle of Insurance

By DAVID M. CUTLER, AMY FINKELSTEIN, AND KATHLEEN MCGARRY\*

The textbook approach to insurance markets emphasizes the role of private information about risk in determining who purchases insurance. In the classic adverse selection model of Michael Rothschild and Joseph Stiglitz (1976), individuals with higher expected claims buy more insurance than those with lower expected claims, who may be out of the market entirely. This basic prediction of asymmetric information models of a “positive correlation” between insurance coverage and accident occurrence has been shown to be robust to a variety of extensions to the standard framework (Pierre-André Chiappori and Bernard Salanie 2000; Chiappori et al. 2006).

In practice, however, insurance markets differ substantially in whether higher-risk individuals or lower-risk individuals have more coverage. In acute health insurance markets and in annuity markets, for example, the preponderance of evidence suggests that higher-risk people have more insurance, as the standard theory would predict. However, the opposite is true in life insurance, long-term care insurance, and Medigap markets, which tend to exhibit either no selection or “advantageous selection”—those who have more insurance are lower risk.<sup>1</sup> Such advantageous selection has been detected even in cases where individuals have private information about their risk type that is positively

correlated with insurance demand (Finkelstein and McGarry 2006). Indeed, the discrepancy between theory and reality is even more striking, given that moral hazard would tend to increase the risk occurrence of those with more coverage, even in the absence of adverse selection.

One explanation for this puzzle is that individuals may vary in their tolerance for risk, in addition to their exogenous risk status. When individuals are heterogeneous in their preferences as well as their risk type, the relationship between insurance coverage and risk occurrence can be of any sign (e.g., Chiappori et al. 2006). For example, individuals with lower tolerance for risk may not only demand more insurance but may also invest in activities that lower their expected claims, leading the lower risk to have more coverage. In this case, the insurance market may exhibit *over-insurance* relative to the first best, rather than the under-insurance of classic adverse selection models (David de Meza and David C. Webb 2001). In other situations, the standard adverse selection result may prevail. The theory is not definitive.

Empirical evidence suggests significant heterogeneity in preferences for insurance that is important for understanding insurance demand. Examples include automobile insurance (Alma Cohen and Liran Einav 2007), long-term care insurance (Finkelstein and McGarry 2006), Medigap (Fang, Keane, and Silverman 2006), and annuities (Einav, Finkelstein, and Paul Schrimpf 2007). These papers raise the possibility that heterogeneity in preferences may be as, or more, important than heterogeneity in risk in explaining insurance demand. They also suggest that the correlation between preferences for insurance and expected claims is not the same across markets. For example, in both annuities and auto insurance, there is evidence

\* Cutler: Department of Economics, Harvard University, 1875 Cambridge Street, Cambridge MA 02138, and NBER (e-mail: dcutler@harvard.edu); Finkelstein: Department of Economics, Massachusetts Institute of Technology, E52-243C, 50 Memorial Drive, Cambridge MA 02142, and NBER (e-mail: afink@mit.edu); McGarry: Dartmouth Department of Economics, 301 Rockefeller Hall, Hanover NH 03755, and NBER (e-mail: Kathleen.McGarry@Dartmouth.edu). We are grateful to Liran Einav, Alex Muermann, Tomas Philipson, Michael Rothschild, and participants at the NBER Insurance Meeting for helpful comments, and to the National Institutes on Aging for research support. A longer version of this paper is available (Cutler, Finkelstein, and McGarry 2008).

<sup>1</sup> See, e.g., Finkelstein and James M. Poterba (2004) on annuities, John Cawley and Tomas Philipson (1999) on life insurance, Finkelstein and McGarry (2006) on long-term care insurance, Hanming Fang, Michael Keane, and

Daniel Silverman (2006) on life insurance, and Cutler and Richard Zeckhauser (2000) for a review of the evidence in health insurance. We provide a more comprehensive literature review in Cutler, Finkelstein, and McGarry (2006).

that those with greater preferences for insurance have higher expected insurance claims, which would reinforce the standard asymmetric information effect (Einav, Finkelstein, and Schrimpf 2007; Cohen and Einav 2007). In the Medigap market and in the long-term care insurance market, however, those with higher preferences for insurance appear to have lower expected claims, creating offsetting advantageous selection (Fang, Keane, and Silverman 2006; Finkelstein and McGarry 2006). These findings suggest that differences in the relationship between preferences and expected claims may help explain differences across markets in whether they are advantageously or adversely selected.

In this paper, we examine the relation between risky behaviors, insurance purchases, and risk occurrence in five different insurance markets: life insurance, acute health insurance, annuities, long-term care insurance, and Medicare supplemental insurance (Medigap).

### I. Data and Empirical Framework

Our analysis uses individual-level data from the Health and Retirement Study (HRS). We use the original HRS cohort to examine the holding of term life insurance and private acute health insurance among people age 51 to 61 in 1992. We use a second HRS cohort, the Asset and Health Dynamics (AHEAD) sample, to examine Medigap insurance, long-term care insurance, and annuities among people age 65 to 90 in 1995. We examine contemporaneous reports of medical care use, and also use the panel nature of these data to track mortality and nursing home outcomes for individuals in both cohorts through 2002. The working paper version (Cutler, Finkelstein, and McGarry 2008) contains more detailed information on the definitions of the variables we use, as well as summary statistics.

Our basic test is to examine how measures of risk tolerance are related to the occurrence of risk, and to whether the individual has insurance. Risk tolerance is not easily measured. We proxy for risk tolerance using five measures of behaviors that likely capture individual risk aversion: smoking; drinking; job-based mortality risk; receipt of preventive health care; and use of seat belts. While each of these variables will reflect factors in addition to risk tolerance, results that are consistent across the variables suggest that risk tolerance is an important part

of their variability. We have also examined the relationship between the behavior measures and a proxy for risk aversion based on respondents' reported willingness to engage in various hypothetical income gambles. The two are moderately related (see working paper for results), which is consistent with prior analyses (Robert Barsky et al. 1997).

Our estimating equations are of the form:

(1)

$$\mathbb{I}(\text{insurance})_i = \beta_0 + \beta_1 \text{Behavior}_i + X_i \Gamma + \varepsilon_i;$$

(2)

$$\text{Riskoccurrence}_i = \alpha_0 + \alpha_1 \text{Behavior}_i + X_i \Pi + \eta_i,$$

where  $\mathbb{I}(\text{insurance})_i$  is an indicator variable for whether the individual has a particular type of insurance,  $\text{Riskoccurrence}_i$  is a measure of the occurrence of the risk the insurance in question would cover,  $\text{Behavior}_i$  is one of our measures of risk tolerance, and  $X$  represents covariates.

We use five measures of insurance holdings: whether the individual has term life insurance in 1992, whether the individual has private acute health insurance in 1992 (through either an employer or the nongroup market)<sup>2</sup>, whether the individual has an annuity in 1995, whether the individual has Medicare supplemental coverage in 1995 (termed "Medigap") to cover some of the expenses not insured by the public Medicare insurance, and whether the individual has long-term-care insurance in 1995. The corresponding risk occurrence measures for these five insurance products are: whether the individual dies by 2002 (for life insurance), whether the individual reports having entered a hospital in the previous two years (for acute health insurance), whether the individual survives to 2002 (for annuities), contemporaneous medical expenses not covered by Medicare (for Medigap), and whether the individual goes into a nursing home by 2002 (for long-term-care insurance).<sup>3</sup>

<sup>2</sup> For our analysis of the acute health insurance market, we exclude individuals who report public health insurance coverage from the analysis.

<sup>3</sup> For our risk occurrence measure for Medigap, we impute medical expenditures not covered by Medicare based on information in the HRS on hospital and doctor visits, and the deductible and coinsurance rules for

TABLE 1—RELATIONSHIP BETWEEN RISKY (OR RISK REDUCING) BEHAVIOR AND INSURANCE COVERAGE

Independent variable	Insurance product				
	Term Life (1)	Annuity (2)	Long-term care (3)	Medigap (4)	Acute health (5)
Mean dep var	0.50	0.07	0.10	0.65	0.84
Smoking	-0.034*** (0.010) [11,453]	-0.027*** (0.009) [6,420]	0.007 (0.014) [6,401]	-0.083*** (0.022) [6,383]	-0.084*** (0.009) [10,945]
Drinking	-0.017 (0.021) [11,453]	-0.013 (0.016) [6,393]	0.016 (0.023) [6,376]	-0.022 (0.035) [6,357]	-0.046*** (0.017) [10,945]
Job risk	-0.002* (0.001)	-0.003*** (0.001) [4,878]	-0.002*** (0.001) [4,845]	-0.016*** (0.002) [4,852]	-0.005*** (0.001) [10,207]
Preventive care	0.115*** (0.016) 9,773	0.053*** (0.010) [6,251]	0.082*** (0.011) [6,233]	0.187*** (0.020) [6,218]	0.220*** (0.013) [9,411]
Always wears seat belt	0.063*** (0.013) [9,805]	0.030*** (0.007) [6,408]	0.037*** (0.009) [6,390]	0.058*** (0.016) [6,373]	0.058*** (0.010) [9,488]

Note: Table reports results from OLS estimation of equation (1). Dependent variable is given in column headings. Each cell reports the results from a separate regression; it reports the coefficient on right-hand-side variable listed in the first column. Insurance is measured in the 1992 HRS in columns 1 and 5, and in the 1995 AHEAD in columns 2, 3, and 4. All right-hand-side variables are measured in the year insurance is measured (1992 or 1995 as indicated) except for preventive health activity and seat belt use for 1992 insurance coverage where they are measured in 1996. Heteroskedasticity-robust standard errors are in parentheses. Sample size is in square brackets.

\*\*\* Significant at, or below, 1 percent.

\*\* Significant at, or below, 5 percent.

\* Significant at, or below, 10 percent.

Our behavioral measures are relatively standard. Smoking behavior is defined as current smoking status. Drinking is a dummy variable for whether the individual has three or more drinks per day (a common measure of problem drinking). Job risk is defined as the mortality rates per 100,000 employees in the individual's industry-occupation cell (for the HRS) or occupation cell (for the AHEAD). We also construct two measures of active steps individuals can take to reduce mortality and healthy risk: the fraction of gender-appropriate preventive health activity undertaken,<sup>4</sup> and whether the individual

reports always wearing a seat belt. For our 1995 AHEAD sample, we observe these measures contemporaneously in 1995. Unfortunately, for the 1992 HRS sample, these measures are first available in 1996; we observe them for people who are alive at that age.

On average, in our 1992 sample of near-elderly, 27 percent of people smoke, 5 percent have a drinking problem, and the average mortality risk by industry-occupation cell is 4 fatalities per 100,000 employees. The average person undertakes 60 percent of gender-appropriate health activities, and 80 percent report always wearing a seat belt. Smoking rates are substantially lower (7.6 percent) in our 1995 sample of the elderly, reflecting the strong difference in mortality by smoking status at older ages, but the other characteristics are similar.

## II. Results

Table 1 reports the bivariate relationship between each behavior and insurance coverage. Table 2 shows the analogous relationship with risk occurrence. For completeness and comparability

Medicare. The exact imputation procedure is described in detail in the working paper version. Results using the utilization measures directly are similar (not shown). For our risk occurrence measure for acute health insurance, we use an indicator variable for whether the individual entered a hospital, but do not impute total spending, as it would require more detailed information than is available about medical care utilization.

<sup>4</sup> These activities are: whether the individual had a flu shot; had a blood test for cholesterol; checked her breasts for lumps monthly; had a mammogram or breast x-ray; had a Pap smear; had a prostate screen.

TABLE 2—RELATIONSHIP BETWEEN RISKY (OR RISK REDUCING) BEHAVIOR AND RISKY OUTCOMES

Independent variable	Risky outcome				
	Mortality (1992–2002 HRS) (1)	Mortality (1995–2002 AHEAD) (2)	Used nursing home (1995–2002 AHEAD) (3)	Medical costs that Medigap could cover (1995 AHEAD) (4)	Entered a hospital in preceding two years? (1992 HRS) (5)
Mean dep var	0.13	0.38	0.24	\$911	0.09
Smoking	0.110*** (0.008) [11,191]	0.098*** (0.022) [6,455]	−0.011 (0.019) [6,217]	−103.1*** (40.2) [6,317]	−0.006 (0.006) [11,910]
Drinking	0.083*** (0.017) [11,191]	0.021 (0.035) [6,428]	−0.030 (0.029) [6,193]	−112.3** (54.5) [6,294]	0.010 (0.013) [11,910]
Job risk	0.004*** (0.001) [10,295]	0.007*** (0.002) [5,681]	−0.001 (0.001) [4,849]	9.3*** (3.6) [4,782]	0.002*** (0.001) [10,950]
Preventive care	−0.011 (0.010) [10,085]	−0.148*** (0.020) [6,285]	−0.127*** (0.018) [6,080]	305.1*** (36.6) [6,168]	0.060*** (0.009) [10,123]
Always wears seat belt	−0.048*** (0.008) [10,123]	−0.104*** (0.016) [6,432]	−0.053*** (0.015) [6,203]	−99.4* (59.9) [6,307]	−0.021*** (0.008) [10,156]

Note: Table reports results from OLS estimation of equation (2). Dependent variables are given in column headings. Each cell reports the results from a separate regression; it reports the coefficient on right-hand-side variable listed in the first column. All right-hand-side variables are measured in 1992 in columns 1 and 5, except for preventive health activity and seat belt use, which are measured in 1996; all right-hand-side variables are measured in 1995 in columns 2, 3, and 4. Heteroskedasticity-robust standard errors are in parentheses. Sample size is in square brackets.

\*\*\* Significant at, or below, 1 percent.

\*\* Significant at, or below, 5 percent.

\* Significant at, or below, 10 percent.

with the existing literature, the working paper version also reports results in which we control for covariates ( $X$ ) designed to capture the risk classification used by insurers. Conditioning on the characteristics used in pricing insurance is crucial for papers testing the predictions of standard adverse selection models, as these predictions are about how people behave *conditional* on the menu of contracts they face (Chiappori and Salanie 2000). However, when examining the influence of preferences on insurance demand and risk type, the unconditional relationships may be of greater interest, since we are primarily interested in how preferences mediate the insurance–risk occurrence relationship. In practice, the two sets of results are very similar.

Table 1 shows that individuals who engage in more risky behavior (or less risk reducing behavior) are systematically less likely to have each type of insurance. The results are remarkably consistent across behavior measures and across insurance types. They are particularly strong

for preventive health activity, seat belt use, and the mortality rate of the individual's industry-occupation cell. Similar patterns are present—but are somewhat less robust—for smoking and drinking. To take one example, people who always wear a seat belt are 6.3 percentage points (~13 percent) more likely to have life insurance, 3.0 percentage points (~43 percent) more likely to have an annuity, 3.7 percentage points (~37 percent) more likely to have long-term-care insurance, and 5.8 percentage points (~9 percent) more likely to have Medigap coverage. Each of these is statistically significant at the 1 percent level.

Table 2 examines the relationship between risky behavior and risk occurrence. The first two columns examine the relationship between more risky (less risk reducing) behaviors and mortality in the life insurance sample (column 1) and in the annuity sample (column 2). Not surprisingly, riskier behavior is associated with higher mortality, and people who undertake more preventive activities have lower mortality.

Column 3 examines the relationship between behaviors and subsequent use of nursing homes. Although there is no systematic relationship between smoking, drinking, and job-based mortality risk and nursing home use, preventive health activity and seat belt use are negatively associated with the probability of going into a nursing home. Since people who use preventive care or wear seat belts are also more likely to have long-term-care insurance (Table 1), these patterns may help explain why the market is not, on net, adversely selected.

Finally, columns 4 and 5 look at the relationship between the various behaviors and medical costs that Medigap policies would cover (column 4) and the relationship between the behaviors and hospital use, which is an important component of the costs that acute private health insurance would cover (column 5). The results are mixed; some risky behaviors are correlated with lower medical expenditures and utilization, while others are correlated with higher spending. Some of these behaviors, therefore, act to offset the standard asymmetric information effects, while others serve to reinforce them.

### III. Interpretation and Conclusions

Our analysis yields two main findings. First, in all five markets, we find that individuals who engage in what are commonly thought of as risky behaviors (smoking, drinking, or prior employment in jobs with higher mortality rates) or who do not take measures to reduce risk (preventive health activities or wearing a seat belt) are systematically less likely to hold each of these insurance products.<sup>5</sup> Second, we find that these same individuals tend to have higher expected claims for life insurance and long-term-care insurance, but lower expected claims for annuities; for Medigap and acute health insurance, there is no systematic relationship between the behavior measures and expected claims.

<sup>5</sup> Here we use the term “risk” to denote the chance of what is generally considered to be an undesirable event for the individual (namely, worse health or death). Of course, in the context of insurance purchasing, the “risk” depends on what is being insured. For example, from the insurance company’s perspective, a high mortality individual will be “high risk” as a life insurance consumer but “low risk” as an annuity buyer.

These results can help to explain the puzzle of insurance we started with: why is adverse selection not more common? In annuity markets, there is clear evidence of adverse selection: people who live longer are more likely to buy insurance. The standard adverse selection model is one explanation for this, but so is variation in risk tolerance; people who have less risky behaviors live longer and are more likely to buy annuities. In life insurance, our results suggest that differential risk tolerance can help explain why people with lower mortality rates have more insurance. Similarly, in the case of long-term-care insurance, people who use more preventive care or are more likely to wear seat belts buy insurance more readily, but also stay out of nursing homes. For acute health insurance, the lack of any systematic offsetting effect of risk tolerance may explain why the preponderance of studies have found that this market is, on net, adversely selected. In the case of Medigap, other sources of advantageous selection than risk tolerance appear to be necessary to understand why this market is, on net, advantageously selected; indeed, Fang, Keane, and Silverman (2006) have documented that those with higher cognitive ability are more likely both to purchase Medigap and to have lower expected claims.

Overall, our findings suggest that preferences for insurance—and their impact on risk occurrence and insurance purchase—may help explain the different patterns of selection observed in different insurance markets. These preference effects thus provide a potential unifying explanation for the differential patterns in insurance coverage across different markets.

Our results have a number of implications. Most importantly, they suggest that in considering the nature of market inefficiencies created by private information in insurance markets, the possibility of over-insurance from advantageous selection should be considered in addition to the under-insurance concern of classic, unidimensional adverse selection models. The implications of this for welfare have received some attention (de Meza and Webb 2001) and are a fruitful subject for future research.

### REFERENCES

- Barsky, Robert, Thomas Juster, Miles Kimball, and Matthew Shapiro.** 1997. “Preference parameters and behavioral heterogeneity: An

- experimental approach in the health and retirement study." *Quarterly Journal of Economics*, 112(2): 537–79.
- Cawley, John, and Tomas Philipson.** 1999. "An Empirical Examination of Information Barriers to Trade in Insurance." *American Economic Review*, 89(4): 827–46.
- Chiappori, Pierre-Andre, and Bernard Salanie.** 2000. "Testing for Asymmetric Information in Insurance Markets." *Journal of Political Economy*, 108(1): 56–78.
- Chiappori, Pierre-Andre, Bruno Jullien, Bernard Salanie, and Francois Salanie.** 2006. "Asymmetric Information in Insurance: General Testable Implications." *Rand Journal of Economics*, 37(4): 783–98.
- Cohen Alma, and Liran Einav.** 2007. "Estimating Risk Preferences from Deductible Choice." *American Economic Review*, 97(3): 745–88.
- Cutler, David M., Amy Finkelstein, and Kathleen McGarry.** 2008. "Preference Heterogeneity and Insurance Markets: Explaining a Puzzle of Insurance." National Bureau of Economic Research Working Paper 13746.
- Cutler, David M., and Richard Zeckhauser.** 2000. "The Anatomy of Health Insurance." In *Handbook of Health Economics, Volume 1A*, ed. A. Culyer and J. Newhouse, 563–643. Amsterdam: Elsevier.
- de Meza, David, and David C. Webb.** 2001. "Advantageous Selection in Insurance Markets." *Rand Journal of Economics*, 32(2): 249–62.
- Einav, Liran, Amy Finkelstein and Paul Schrimpf.** 2007. "The Welfare Cost of Asymmetric Information: Evidence from the U.K. Annuity Market." National Bureau of Economic Research Working Paper 13228.
- Fang, Hamming, Michael Keane, and Daniel Silverman,** 2006. "Sources of Advantageous Selection: Evidence from the Meidgap Insurance Market." National Bureau of Economic Research Working Paper 12289.
- Finkelstein, Amy, and Kathleen McGarry.** 2006. "Private Information and its Effect on Market Equilibrium: New Evidence from Long-Term Care Insurance." *American Economic Review* 96(4): 938–58.
- Finkelstein, Amy, and James Poterba.** 2004. "Adverse Selection in Insurance Markets: Policyholder Evidence from the U.K. Annuity Market." *Journal of Political Economy*, 112(1): 183–208.
- Rothschild, Michael, and Joseph E. Stiglitz.** 1976. "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information." *Quarterly Journal of Economics*, 90(4): 630–49.

# COPYRIGHT TRANSFER AGREEMENT

**From:** The American Economic Association  
The American Economic Review  
2403 Sidney Street, Suite 260  
Pittsburgh, PA 15203

**Fax:** +1 412-431-3014

**To:** Author (please print name here) \_\_\_\_\_

The American Economic Association (hereinafter Association) is pleased to have the opportunity to publish your manuscript in the *American Economic Review*. In order that the Association, as Publisher, may obtain copyright protection for the contents of the Journal, it is necessary for you to execute this formal transfer of your copyrights in this manuscript to the Association.

The Association acknowledges the receipt of your manuscript titled \_\_\_\_\_

\_\_\_\_\_ ,  
to appear in the May 2008 issue of AER.

## Consent to Publish

In consideration of the publication by the Association of the above-named manuscript, the undersigned as Author(s) transfer(s) exclusively to the Association all rights, title and interest defined by the Copyright Law of the United States in and to the above-named manuscript in its entirety, including all subsidiary rights. The rights transferred herein shall remain the property of the Association for the full duration of these rights under the Copyright Law of the United States. If it should become necessary, the Author(s) agree(s) to assist the Association in registering and enforcing the Copyright in the name of the Association. The Association shall have the right to publish the above-named manuscript in print, sound or video recordings, magnetic media (i.e., computer disk, CD-ROM, etc. . . .) electronic media (including transmission via the Internet, or any other computerized communication network), or any other technology for publication of this work which may hereinafter be developed.

The Association, in turn, grants to the Author(s) the right to republication in any work in which he or she is the author or editor in any form, including digital repositories in universities and other institutions subject only to giving proper credit of copyright. The Association further grants to the Author(s) the right to distribute the above-noted work in any classroom in which he or she is a teacher, subject only to the Author(s) giving proper credit in any such derivative work and on any copies distributed for classroom use. Proper notice may be given as follows: [Copyright \_\_\_\_\_, American Economic Association; reproduced with permission of the *American Economic Review*].

## Permission to Reprint Policy

The Author(s) may specify the degree of access to which the Association grants others the right to reproduce the Author(s)' material. Check one:

- \_\_\_\_\_ Implicit consent: Grants anyone permission to reprint in all places in all forms provided that the appropriate copyright information is included and the Association is notified that the work is being reprinted.
- \_\_\_\_\_ Explicit consent: Requires direct consent of the Author(s) and the Association before any republication is allowed. The republisher must obtain from the Author(s) permission to reprint all or any major portion of the Author(s)' manuscript. Author(s) may charge a fee for reprint or translation rights.

Rights to translate are retained by the Author(s) and dealt with on a case by case basis.

## Warranty of Authorship

The Author(s) warrant(s) that the above-named manuscript is his or her own original work of authorship and has not been published previously. If any material included by the Author(s) in the above-noted manuscript (including tables, charts, or figures) is the work of another author or is otherwise under prior copyright protection by another proprietor, the Author(s) undertake(s) to obtain permission from that copyright proprietor for the inclusion of such material in this manuscript to be published by the Association. The Author(s) further agree(s) to save and hold the Association harmless in any suit for infringement arising from the Author(s)' unauthorized use of copyrighted material. The Author(s) agree(s) to submit to the Editor of the Journal of the Association to whom the manuscript has been submitted, copies of all letters of permission to include copyrighted material of another author included in the subject manuscript by this Author or material written by Author(s) that is under prior copyright protection by another proprietor.

The Author(s) further warrant(s) that this manuscript was not written as part of his or her official duties as an employee(s) of the United States government. Since copyright protection is not available for a work of the United States government, the Author(s) agree(s) to disclose fully to the Association the circumstances of federal employment which might invoke this bar to copyright protection of the manuscript by signing below to confirm the author warranties.

The Author(s) further warrant(s) that this manuscript was not written as an employee so as to constitute a work-for-hire in which the ownership of the copyright is in that employer.

Please sign and date this agreement. *Return one copy to the Editor of the American Economic Review promptly and retain one copy.* A manuscript for which there is no valid Copyright Transfer Agreement cannot be published.

Accepted and approved: \_\_\_\_\_  
Author(s)

Government Employees please sign here: \_\_\_\_\_ Date: \_\_\_\_\_

For the American Economic Association and the *American Economic Review*:

\_\_\_\_\_

**AMERICAN ECONOMIC REVIEW**

**2403 Sidney Street, Suite 260  
Pittsburgh, PA 15203-2167**

**Telephone: 412-432-2300  
Fax: 412-431-3014**

If you would like to order reprints of your article, fill in the order form below, taking care to describe any special details requiring attention. If covers are desired, add the charges shown in the last column.

The reprint order form must be returned with your page proofs. Reprints cannot be ordered at a later date.

You will receive a bill when the reprints are delivered (approximately four weeks after you receive your issue of the *Papers and Proceedings*). Please do not send checks with your order.

**REPRINT PRICE SCALE**

<b>PAGES:</b>	<b>1-4</b>	<b>5-8</b>	<b>9-12</b>	<b>13-16</b>	<b>17-20</b>	<b>21-24</b>	<b>25-28</b>	<b>29-32</b>	<b>Cover</b>
Minimum copies									
100 (in even hundreds)	\$55.00	\$72.00	\$87.00	\$96.00	\$120.00	\$144.00	\$168.00	\$192.00	\$100.00
Additional hundreds in multiples of 100 up to 500 copies:									
	\$21.00	\$30.00	\$36.00	\$48.00	\$60.00	\$72.00	\$84.00	\$96.00	\$42.00

(Shipping charges will be in addition to above prices and quotations.)

**REPRINT ORDER FORM**

**Detach this part and send to:**

**American Economic Review**  
AEA Publications  
2403 Sidney Street, Suite 260  
Pittsburgh, PA 15203-2167

Author & Title of Article \_\_\_\_\_

\_\_\_\_\_

Total Number of reprints wanted: WITHOUT COVERS \_\_\_\_\_ WITH COVERS \_\_\_\_\_ (At extra charge)

Ship \_\_\_\_\_ reprints to \_\_\_\_\_

\_\_\_\_\_

Ship \_\_\_\_\_ reprints to \_\_\_\_\_

\_\_\_\_\_

Send Invoice to \_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_ Signed \_\_\_\_\_

Purchase order number, if any \_\_\_\_\_



# PROOFREADERS' MARKS

SYMBOL	MEANING	EXAMPLE
	delete	take <del>it</del> out
	close up	per cent
	delete and close up	rem <del>ove</del>
	insert something here	something <sup>is</sup> missing
	space	too <sup>*</sup> close
	space evenly	space these consistently
	let stand	ignore marks and leave as was
	transpose	this [backwards] is
	used to separate 2 or more marks in margin	<sup>^</sup> / <sup>^</sup>
	center	]this should center[
	set farther to the left	[move left
	set farther to the right	move right]
	align horizontally	align with surrounding text
	align vertically	align with surrounding text
	move to next line	
	begin new paragraph	
	spell out	set PA as Pennsylvania
	set in capitals	ALL CAPS
	set in small capitals	SMALL CAPITALS
	set in lowercase	lower case
	set in italic (underline the text)	<i>italic</i>
	set in roman	roman or regular
	set in bold (squiggly underline of text)	<b>BOLD</b>
	hyphen-used to join words and to separate syllables	
	en dash—a connection between two things	2006–2007
	em (long) dash—indicates a sudden break in thought	
	superscript or superior	E=MC <sup>2</sup>
	subscript or inferior	H <sub>2</sub> O
	centered	for a centered dot in p <sup>^</sup> q
	comma	red, white, and blue
	apostrophe	my sister's friend's investments
	period	the end.
	semicolon	he said; she said
	colon	what follows proves: clarifies
	quotations marks	"the economist"
	parentheses	(like this)
	brackets	[like this]
	wrong font	wrong siZe or style