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INSURING CONSUMPTION AND HAPPINESS THROUGH RELIGIOUS ORGANIZATIONS

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ABSTRACT

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1. Introduction

This paper examines whether involvement with religious organizations insures an individual's stream of consumption and of happiness. Using data from the Consumer Expenditure Survey (CEX), we examine whether households who contribute to a religious organization are able to insure their consumption stream against income shocks and find strong insurance effects for whites. Using the National Survey of Families and Households (NSFH), we examine whether individuals who attend religious services are able to insure their stream of happiness against income shocks and find strong happiness insurance effects for blacks but smaller effects for whites. Overall, our results are consistent with the view that religion provides an alternative form of insurance for both whites and blacks though the mechanism by which religious organizations provide insurance to each of these groups appears to be different.

The role of religious organizations in insuring their members' consumption and happiness is an important question for several reasons. First, it sheds light on participation in religion and the benefits individuals derive from it. The existing literature has posited a range of answers, including higher levels of utility in the afterlife and the present consumption of religious goods (e.g., Azzi and Ehrenberg 1975, Iannaccone 1990 and Biddle 1992).[1] At the same time, sociologists such as Robert Putnam argue that churches, along with other organizations, provide social capital. Social capital can be thought of as the set of valuable social networks and the "inclinations that arise from these networks to do things for each other ('norms of

[1] These religious commodities could include the direct consumption of religious meetings (like going to a concert or to a movie), social membership (like other social societies and clubs), moral and ethical teaching and understanding (like self-help books), enforcing a "healthy" lifestyle (like going to Weight Watchers or to a personal trainer), and, perhaps, a sense of meaning in a confusing world.

reciprocity')" (Putnam 2000). The benefits of social capital are thought to be increased trust, reciprocity, information, and cooperation among individuals. In this paper, we look for direct evidence that religious participation provides a particular good: implicit insurance of consumption (through mutual aid from other members) or of happiness (as a result of the consumption insurance or directly through doctrinal solace). To our knowledge, only one other working paper examines the latter question (Clark and Lelkes 2005), and the former question is new.

Second, our paper contributes to an extensive literature that has examined households' ability to insure their stream of consumption from income fluctuations; this includes studies for the U.S. (Mace 1991; Cochrane 1991, Nelson 1994, and Attanasio and Davis 1996) and developing countries (Deaton 1992 and Townsend 1994). Iannaccone (1992) and Berman (2000) show that many of the costs of religious participation, such as adherence to religious strictures, can be rationalized as mechanisms to protect the religious group against outsiders free-riding on benefits provided by the religious group. One might therefore expect religious groups to be well positioned to provide insurance because of their ability to limit adverse selection.

Overall, our results support the notion that religion serves an insurance function for its participants, insuring both consumption and happiness. We find that religious participation (as measured by making any contribution to a religious organization) buffers consumption against roughly 35 percent of the impact of income shocks for whites and that this effect is highly statistically significant. For blacks, however, the consumption insurance effect is imprecisely estimated and not statistically significant. Though we cannot reject the hypothesis that up to 50 percent of income shocks for blacks

are buffered by religious participation, the point estimate is only about 10 percent. Blacks, experience substantial happiness insurance by regularly attending religious services; the median level of attendance offsets about three quarters of the effect of an income shock on happiness. For whites, however, we find no statistically significant happiness insurance effect of religious attendance in the overall sample, though the point estimate indicates that the median level of attendance offsets about a quarter of the effect of an income shock on happiness.

The way the results break down by race is intriguing, and it fits well with the different role of religious organizations for different racial groups. For many African Americans, the church is the community (Carson 1990). Church services tend to be community-oriented and relatively long (often over 2 hours), and there are many well-attended social and community related church events. Thus, existing sociological research suggests that blacks who do not attend religious services may have weaker ties to their community and less social capital in general. For whites, in contrast, the religious organization is often just a part of their social, network and whites that have weak religious ties are likely to have other forms of social capital.[2] Moreover, anecdotal evidence indicates that the form in which members of religious organizations help each other differs by race (Chaves and Higgins 1992). Mutual help in black churches is more likely to be in-kind (and thus less likely to be measured by the CEX) while mutual help in white religious organizations is more likely to be in cash (thus showing up in expenditures in the CEX) and more likely to be a loan and induce a feeling of guilt or

[2] Chaves (2004), for example, argues that "the vast majority of congregations engage in social services only marginally" (p. 54). Though race is not *per se* a predictor of provision of social services, Chaves finds that "congregations in poorer neighborhoods perform more social services than congregations in non-poor neighborhoods" (p. 52).

stigma (thus mitigating the happiness effect). Finally, black religious organizations may give relatively more doctrinal solace for those experiencing negative shocks, thus contributing to a stronger happiness insurance effect for blacks.

The finding that religion serves an insurance function has two implications for government-provided social insurance. First, there will be less demand for social insurance in more religious areas and by more religious individuals, which is indeed what Stasavage and Scheve (2005) find using both individual-level data on preferences for social spending and country-level social insurance expenditure. Second, it implies that social insurance may crowd out insurance provided by religious organizations. Hungerman (2005) and Gruber and Hungerman (2005) show that government social insurance spending in fact crowds out religious charitable spending.

The paper is organized as follows. Section 2 provides a literature review. Section 3 describes the data. Section 4 outlines the empirical model and discusses identification and other econometric issues. Section 5 presents our results on the insurance effect of religion on consumption and on happiness. Section 6 concludes.

2. Previous Literature

The first major study to examine the economics of religious participation is Azzi and Ehrenberg (1975). They model participation in church activities based on the idea that the stream of benefits from participation extends to the afterlife ("the salvation motive"), while they also allow that people derive enjoyment from church activities ("the consumption motive") and that religious membership can increase the probability of succeeding in business ("the social-pressure motive"). Their model implies that

participation in church activities will increase with age because individuals are investing in the afterlife.[3]

In an excellent overview of the growing literature on the economics of religion, Iannaccone (1998) discusses a range of studies of the economic consequences of religious participation, for example Freeman's (1986) finding that blacks that attend church are less likely to smoke, drink, or engage in drug use. It is noteworthy that he does not cite any papers that have examined the insurance benefits of religious membership. Iannaccone also reviews models of religious participation, including those of "religious capital", which can help to explain why religious participation increases later in life and why as wages increase religious participation will be reflected to a greater extent through contributions rather than though attendance. Using the CEX and the General Social Survey, Gruber (2004) provides evidence for this hypothesis, finding an implied elasticity of attendance with respect to religious giving of -0.9. Chen (2004) shows that individuals particularly affected by the Asian financial crisis were more likely to increase their religious participation and interprets this as religious organizations providing "ex-post" insurance for individuals hit by negative shocks.

More recent studies have focused on the consequences of religious participation, but it has been hard to determine whether the consequences were causal or driven by omitted variables. Gruber (2005) succeeds in credibly establishing causality by instrumenting an individual's own religious attendance by the religious market density of other ethnic groups sharing the same denomination. He finds that increased religious

[3] The early literature on the economics of religion, as reviewed by Iannaccone (1998), viewed churches as firms. Anderson (1998) suggests that Adam Smith's approach to religion mainly viewed participation in religion as a rational enhancement to human capital and the provision of religion as firms (with competition among churches). Adam Smith did not discuss the consequences of religious participation.

participation leads to higher educational attainment and income, less dependence on social insurance programs and higher rates of marriage. Using micro data, MacCulloch and Pezzini (2004) find that religious participation reduces the taste for revolution, while based on macro data, Barro and McCleary (2003) argue that there is a causal link between economic growth and religious attendance and belief. They use two instruments for religion (a state-sponsored religion and government regulation of the religion market), and parse out the effect of particular doctrinal beliefs on growth (belief in heaven and hell matters while attendance does not).

There is a large literature examining the effect of religion on subjective measures of well-being (and distress). Overall this literature (see inter alia Diener et al. 1999 and the meta-analyses by Parmagent 2002 and Smith et al. 2003) finds a systematically positive correlation. In the present analysis, we do not focus on the direct effect of religious involvement but focus instead on the ability of religion to buffer income shocks.[4] While we know of no other study looking at the ability of religion to buffer against income shocks, a number of studies find that religion can attenuate the effect of traumatic events on subjective well-being or depression. Using cross-sectional data from the General Social Survey, Ellison (1991) finds that people with stronger religious beliefs have higher well-being and are less affected by traumatic events. Strawbridge et al. (1998) find non-uniform buffering effects using cross-sectional data from one county in California. They find that religiosity buffers the effects of non-family stressors (e.g. unemployment) on depression but exacerbates the effects of family stressors (e.g. marital

[4] There is also a large literature on the correlation between religious belief and health outcomes. Studies show a relationship between religion (variously measured by self-reported "religious coping" or religious activity including prayer) and a range of outcomes (including depression, mortality, the immune system). These are exclusively correlation studies. See, for example, McCullough et al. (2000) or http://www.dukespiritualityandhealth.org/research.html.

problems). This dovetails with the finding of Clark and Lelkes (2005) who find that religiosity may dampen or exacerbate the happiness effect of a major life shock depending on the denomination and the type of shock.

Of course, religious organizations are not the only potential provider of informal insurance as is documented by the literature on self-enforcing risk-sharing agreements and other informal insurance schemes such as group lending or mutual credit (see inter alia Foster and Rosenzweig 2001, Gertler and Gruber 2002, and Genicot and Ray 2003). Religion is also presumably a component of social capital, which in turn has also been linked to credit and insurance (see inter alia Guiso, Sapienza, and Zingales 2004).

3. Data

The data for our empirical analysis come from two sources. First, we use the Consumer Expenditure Survey (CEX) to examine whether contributions to religious organizations provide consumption insurance. Second, we use the National Survey of Families and Households (NSFH) to examine the relationship between religious attendance and the sensitivity of changes in happiness to income shocks.

3.1 The Consumer Expenditure Survey

We use data from the 1982 through 1998 panels of the Consumer Expenditure Survey (CEX). The CEX is a nationally representative survey of roughly 5,000 households per year. The CEX is the basic source of data for the construction of the items and weights in the market basket of consumer purchases to be priced for the Consumer Price Index and is widely regarded as the best source of U.S. consumption

expenditure data. It contains information on the characteristics of each household member including their relationships, income and demographics, as well as detailed household-level information on expenditures. Each household is interviewed up to four times at three-month intervals. Three months of expenditure data are collected retrospectively at each quarterly interview. Income over the past 12 months is asked only in the first and last interviews. In the last interview, data on five types of contributions over the past year are collected. These are contributions to religious organizations, charitable organizations, political organizations, educational organizations, and miscellaneous contributions.

We consider two measures of consumption based on the expenditure data reported in the CEX, non-durable consumption and total consumption. Non-durable consumption consists of expenditure on food to be consumed in the home, food consumed outside of the home, alcohol, tobacco, clothing, personal care, education, and other expenses. Total consumption includes non-durables plus durables (furniture, appliances, and consumer goods), housing, and housing related expenses (home mortgage interest and home maintenance). Because total consumption includes expenditures on durables, rather than the consumption flow from them, it provides a rather noisy measure of true consumption. Therefore, we will use non-durable consumption expenditure in our baseline specification. Consumption of goods provided in-kind is not measured in the Consumer Expenditure Survey.

Our measure of income is log real household income (in 1998 dollars). Note that because the first and last interviews in the CEX are only nine months apart, the two measures of income overlap by three months. Our measure of the change in household

income is the difference in log income between the first and last interviews. We measure the change in consumption as the difference in log quarterly expenditure between the first and last interviews.

We use contributions to religious organizations as our measure of religious participation. About 40 percent of households make a contribution to a religious organization and these contributions represent about 1.2 percent of household income in the CEX. These findings are consistent with other sources (according to Iannaccone 1998, total religious contributions represent roughly 1 percent of GNP).

3.2 National Survey of Families and Households

The National Survey of Families and Households (NSFH) is our source of data on subjective wellbeing (Sweet, Bumpass, and Call 1988 and Sweet and Bumpass 1996). The NSFH consists of a nationally representative sample of individuals, age 19 or older, living in households, and able to speak English or Spanish. The first wave of interviews took place in 1987-88, and a second wave of interviews took place in 1992-94. Though the questionnaires are not identical in both waves, many questions were asked twice making it possible to treat the data as a panel of about 10,000 individuals.

The main outcome variable is self-reported happiness, which is the answer to the question: "*Next are some questions about how you see yourself and your life. First taking things all together, how would you say things are these days?*" Respondents answered on a seven-point scale where 1 is defined as "very unhappy" and 7 is defined as "very happy" but intermediate values are not explicitly defined. Because this question is asked in both surveys, we are able to measure the change in individual-level happiness between

1987/88 and 1992/94. The use of self-reported happiness measures has become increasingly popular in economics; see inter alia Frey and Stutzer 2002, Blanchflower and Oswald 2004, and Gruber and Mullainathan 2005. One of the conclusions of this literature is that self-reported happiness is a useful proxy for well-being, and responds to economic variables as expected. Table 1 reports the distribution of the change in happiness in our sample. About one third of the respondents report no change in happiness between the two surveys, and the balance is equally divided between increases and decreases in happiness.

We use attendance of religious services as a measure of religious participation in the NSFH. In our baseline specification we use the percentile location of an individual in the distribution of attendance, but we also examine the frequency of attendance as a robustness check. The distribution of religious service attendance and the percentiles of attendance are reported in Table 2. The NSFH also has information on religious affiliation and on whether respondents take the Bible literally, both of which we will use to split our main results.

3.3 Baseline Sample

Of the 120,416 households interviewed in the 1982 through 1998 panels of the CEX, 53,210 households have non-missing consumption measures in first and last interview whereas in the NSFH 7,486 main respondents have non-missing happiness measures in both waves, out of a total of 10,005 observations in the NSFH panel. In both the CEX and the NSFH, we restrict the baseline sample to those where the head and spouse are under the age of 60 at the last interview in order to minimize the relatively

predictable income shocks following from retirement. This yields a final CEX sample of 32,794 households of which 27,219 are white, 3,939 are black households, and 1,636 are of other races, while the final NSFH sample consists of 5,716 respondents of which 4,697 are white or Hispanic, 924 are black, and 95 are from other race/ethnic groups. Descriptive statistics from the CEX are reported in Appendix Table 1 while those of the NSFH are in Appendix Table 2. The first set of columns reports the statistics from our full samples, the second from the white samples, and the third from the black samples.

4. Empirical Strategy

4.1 Specifications

Our empirical test of whether religious organizations insure their members against income shocks consists of two parts. First, using the CEX, we examine whether religious contributions insure a household's consumption stream against changes in income, and then, using the NSFH, we examine whether religious attendance buffers an individual's happiness against income shocks.

To examine whether religious affiliation insures a household's consumption stream or an individual's happiness stream, we run regressions of the form:

$$(1) \qquad \Delta Outcome_i = \Delta Income_i\,\beta_1 + Relig_i\,\beta_2 + \Delta Income_i \times Relig_i\,\beta_3 + \boldsymbol{X}_i\,\boldsymbol{\beta}_4 + \delta_t + \varepsilon_i,$$

where $\Delta Outcome_{it}$, is either the change in log consumption or the change in happiness, $\Delta Income_i$ is the change in log income, $Relig_i$ the measure of religiosity (contributions in the CEX, attendance in the NSFH) and $\boldsymbol{X}_i$ a set of extensive demographic controls in

levels and first differences. Finally, δ_t is a set of month×year of interview dummies and ε_i are error terms.[5]

Unless indicated otherwise, all variables in levels are the average of the responses in both interviews and all variables in first difference are the response in the last interview minus the response in the first interview.[6] In our baseline specification, we use log household income rather than log per capita household income as our measure of income. While changes in per capita income may be a more accurate measure of the severity of an income shock, per capita income can also change because of other life events such as marriage, childbirth or death. The direct impact of these life events on happiness may depend on religious attendance, thus possibly contaminating our estimates of insurance. We also top and bottom code the change in log income at +/– 100 log points around the mean income change in order to rule out that a few observations with exceptional income shocks drive our estimates.

Under complete consumption insurance, changes in own income should not affect changes in own consumption or own happiness once changes in economy-wide consumption (in this case, captured by δ_t) have been controlled for. That is, a finding that β_1 is zero can be interpreted as evidence in favor of complete insurance. Generally, most studies in the consumption literature are able to reject complete consumption insurance (see, e.g., Cochrane 1991, Nelson 1994, and Attanasio and Davis 1996), though some cannot (see, e.g., Mace 1991). In the happiness literature, most studies with large enough

[5] Because in the NSFH the time period between the first and second interview is not always the same, we include both a full set of month×year dummies for the first interview and a full set of month×year dummies for the second interview. In the CEX, the time period between interviews is constant, so a single set of month×year dummies suffices.

[6] This specification ensures that the variables in levels and first differences are orthogonal by construction. We therefore do not have to worry that the estimate on the level variable is affected by noise in the first difference variable.

sample sizes find a significant positive effect of changes in own income on changes in happiness though substantial part of this effect appears to be only temporary (Diener and Biswas-Diener 2002 and Di Tella et al. 2005).

If religious organizations provide insurance for their members, changes in income should have a smaller effect on the outcome variable for their members, yielding a negative coefficient on the interaction term. Thus, an estimate of $\beta_3 < 0$ is consistent with religious organizations providing insurance.

4.2 Econometric Issues

A. Measurement error in income

A major concern is that income is measured with error. Thus, changes in income will be noisy and will lead to potentially severe downward bias in β_1, the effect of income on consumption or happiness. Fortunately for our objective, to assess whether religious membership provides insurance, we do not need to assess the effect of income on expenditure. Rather, we need to compare the effect of income on consumption or happiness for participants compared to non-participants. Unless measurement error in income varies with religious participation, the measurement error should lead to the same bias in β_1 and β_3, and the ratio of β_1 to β_3 should be unaffected by measurement error. In Section 5.2, we examine whether income shocks vary by religious participation as a rough indicator of differential measurement error by religious participation.

B. Measurement error in religious participation

The CEX does not measure religious participation by attendance but rather by contributions to religious organizations. By contrast, the NSFH measures attendance. An important issue is whether contributions effectively measure participation. Unfortunately, we are unable to assess this directly because the CEX has contributions but not attendance while the NSFH has attendance but not contributions. Iannaconne (1998; Table 2), however, reports that the determinants of religious participation are similar regardless of whether one measures participation by attendance or by contributions, and we show evidence by and large confirming this in Section 5.1 below. The contribution to religious organizations is only measured in the last interview. We investigate whether the timing of the measurement of religious contributions could mechanically explain our findings in Section 5.5, but we conclude that this is unlikely.

C. Endogeneity of religious participation with respect to income shocks

A possible concern is that a negative income shock could lead an individual to join a religious organization. This has been suggested by the recent work of Chen (2004) in Indonesia. In the NSFH data, attendance is measured in both periods, so we use average attendance in both periods.[7] Furthermore, we can directly measure the extent to which shocks induce greater participation in religion; these results are presented in Section 5.1.

In the CEX, contributions are measured in the final period, and thus it is a concern if changes in income affect religious participation. It is unclear in which direction the bias will go. On the one hand, if positive income shocks are more likely to be permanent

[7] We find similar results if we use first period attendance.

income shocks than negative ones and if people are more likely to contribute after a positive shock, then those who contribute disproportionally experienced permanent income shocks and therefore have a greater consumption response to the income shock. This would bias us away from finding consumption insurance effects. On the other hand, if negative shocks were disproportionally permanent shocks or if those experiencing a loss or more likely to contribute, then the bias would go the other way.

D. Does religious involvement proxy for other characteristics that provide insurance?

While all our regressions include an extensive list of household/individual control variables, one may be concerned that religious participants have different observable characteristics and that these characteristics explain their lower sensitivity to income shocks. We deal with this concern in two ways. First, we create a matched sample in which each religious participant is matched using the nearest-neighbor method to a non-participant with observable characteristics such that the predicted probability of being a participant is roughly equal for the participant and non-participant.[8] Thus, the matching procedure creates a sample in which the distribution of observable characteristics, to the extent they correlate with religious participation, is similar for participants and non-participants. When we run our regression on this matched sample, we are less concerned about the insurance effect of religious participation being driven by differences in observable characteristics.

[8] For purposes of the matching routine a religious participant is defined as a religious contributor in the CEX and as someone with religious attendance above the own-race median in the NSFH. A non-participant matched to multiple participants is only entered once in the regression but with a weight that is equal to the number of participants to which it was matched. While the matched sample contains all participants, some non-participants may not be matched. Thus, the matched sample contains fewer observations that the original sample.

Second, we not only interact the income shock with actual religious participation, but we also include an interaction with predicted religious participation, where the predicted value is based on the observable characteristics included as controls in our regression. A finding that the insurance effect is driven by actual religious participation rather than predicted religious participation is suggestive evidence that the insurance effect comes from religious participation, not from observable characteristics correlated with religious participation.

While we cannot rule out the possibility that religious participants have unobservable characteristics that make their consumption or happiness less sensitive to income shocks, we can offer some suggestive evidence against this explanation. In order for selection to explain our findings, those who are less affected by income shocks would need to select into religious organizations. In an unreported regression with the same control variables as our baseline regression, however, we find those with the median level of religious attendance are about 5 percentage points more likely to carry private health insurance than those who do not attend religious services. This indicates that, if anything, religious participants seem to be more concerned about income shocks thus producing a bias that goes in the opposite direction of our findings.[9]

5. Results

5.1 Correlates of Religious Participation and the Effect of Shocks on Participation

As a first step in using religious participation as a key right-hand side variable, we examine correlates of religious participation and the effect of shocks on changes in

[9] This probit regression has the same control variables as column 3 in Table 4,and the effect is statistically significant (t-statistic of 5.0).

participation. Column (1) of Table 3 shows the correlates of making a religious contribution, which is the measure of religious participation in the CEX, while column (2) shows the correlates of the percentile of religious attendance or the measure of religious participation in the NSFH. Generally, the partial correlations of individual characteristics and religious participation are similar for the two measures of religious participation and there is no individual characteristic for which the partial correlations have opposite signs but are statistically significant in both datasets. Married or widowed individuals, blacks and those with more education tend to have higher levels of religious participation, both in terms of contributions and attendance. It is noteworthy, however, that household income and age are both strongly positively correlated with making a religious contribution but are negatively (though insignificantly) related with religious attendance.

One of the concerns in using religious participation as an exogenous variable in our specifications is that it could be endogenous with respect to income shocks that have a smaller impact on consumption or happiness (e.g., if those with temporary negative shocks would be more likely to increase attendance than those with permanent negative shocks). While we cannot test for such a differential effect directly (because we cannot distinguish permanent from temporary shocks), we can test whether income shocks in general affect attendance. If we do not find a general effect of income shocks on attendance, we would be less likely to expect there to be a differential effect. In column (3), we find only a very small and statistically insignificant effect of income shocks on attendance — a negative income shock of 100 log points would increase attendance by 0.6 percentiles. Thus, the direction of our effect goes in the same direction as Chen's

(2004) finding for Indonesia, but the magnitude of the effect is not economically meaningful in the U.S. Given the small magnitude of this effect, we will use average attendance over the two waves in our subsequent specifications, because this reduces measurement error in the attendance variable.

5.2 Correlates of Income Shocks

Columns (1) and (2) of Table 4 show the correlates of signed income shocks in the CEX and the NSFH. Because shocks are measured over a 9-month period in the CEX and over a 5 to 6-year period in the NSFH, we would not expect the coefficients to be of the same magnitude in both data sets, though it would be surprising if they were of opposite sign. We find that making a religious contribution is positively and significantly correlated with a positive income shock in the CEX, but this may reflect the fact that contributions are measured in the second period. Religious attendance, in contrast, is not significantly correlated with income shocks.

Columns (3) and (4) show the correlates of the absolute value of shocks – in other words which types of individuals have the most volatile incomes. If the income volatility of religious participants were very different, we might be concerned that our estimated insurance effects were driven by differential measurement error in income by religiosity. However, we find no large differences in income volatility by religious participation when other demographic characteristics are controlled for. If anything, religious participants have a slightly less volatile income stream.

5.3 Correlates of Consumption and Self-Reported Happiness

In this section we explore some of the basic relationships that determine the level of, and changes in, our two main outcome variables of interest, consumption and self-reported happiness. Columns (1) and (2) of Table 5 show that making contributions to religious organizations is both correlated with the level and change in consumption after income and other demographics are controlled for. Being a religious contributor is associated with consuming 8 percent more non-durables. Perhaps religious contributions are a sign that the household is financially relatively well off compared to other households with similar observables and therefore able to consume relatively more. It is also possible that households become members of a religious organization at particular points in their lifecycle, points at which they also experience growth in the consumption of nondurables. Alternatively, the positive association between religious contribution and consumption may also be explained by religious contributions being a proxy for a higher level of permanent income, which is consistent with the finding in Table 3 that religious contributors tend to have higher incomes. With current income being only a poor measure of permanent income, the associations between the other explanatory variables in Table 5 and the level of consumption probably largely reflect the degree to which each variable proxies for permanent income. This is most evident in the large positive association between educational achievement and consumption. This argument suggests that because contributors are relatively financially secure they do not need to change their consumption as much in response to an income shocks and any finding of an insurance effect is merely spurious. Of course, this argument would also imply that charitable

contributions are a sign of financial security and that they therefore should also provide insurance, which is not the case as we will demonstrate in Section 5.4 below.

Columns (3) and (4) show that happiness is positively correlated with income, both in levels and in first differences, with a 10 percent increase in income roughly corresponding to a 1.5 percent of a standard deviation increase in self-reported happiness. Though this effect may seem small, it is in line with previous estimates and there being substantial idiosyncratic variation in self-reported happiness (witness the low R^2). A higher average level of income is negatively, though insignificantly, correlated with the change in happiness, which is what one would expect if there is some habit formation. Religious attendance is strongly positively correlated with self-reported happiness, both in levels and first differences. Compared to those not attending any religious services, those attending at the median frequency report a level of happiness that is roughly a quarter of a standard deviation higher. The other correlates of self-reported happiness are in line with the literature – happiness is positively correlated with being married, is U-shaped in age and does not correlate much with educational attainment (Argyle 1999).

5.4 Does Religious Participation Provide Consumption Insurance?

In this section, we use data from the CEX to examine whether religious participation, as measured by making a contribution to a religious organization, insures consumption against changes in income. Table 6, panel A, reports our baseline specification. In the first column, we see that changes in log household income are positively associated with changes in log non-durable consumption: for a non-contributor, a one-percent increase in income leads to a 0.10 percent increase in

consumption, which implies incomplete consumption insurance. Households who are religious contributors have consumption growth that is 3.3 percent higher than that for non-contributors. This is probably not a causal effect but rather reflects that religious contributions are measured in the second period and are likely correlated with other forms of second period consumption (and therefore with consumption growth). Does religious membership offset the association between changes in income and changes in non-durable consumption? The coefficient on the interaction term between changes in log per-capita income and changes in log per-capita consumption is -0.031 and is significant at the five percent level. This implies that religious membership reduces the impact of income changes on consumption by about 30 percent. The regression includes the same demographic and other controls as column 2 of Table 5 and their coefficients remain very close to those reported in Table 5.

In the second column, for white households, we find a similar insurance effect of roughly 35 percent. For black households, reported in the third column, we see no statistically significant insurance effect and the point estimate is small with an implied insurance effect of 7 percent. However, given the relatively large standard error, we cannot reject a hypothesis of an insurance effect of one half.

In panel B of Table 6, we report results using the matched sample. The advantage of the matched sample relative to the full sample is, first, that we should be less concerned about the functional form specification of the control variables and, second, that the sample will not include non-contributors that differ substantially from religious contributors in observable characteristics. The estimated insurance effect of religious participation in the matched sample is very similar to our estimate using the original

sample. This reduces our concern that the estimates in the original sample might somehow be driven by observable differences in demographics between contributors and non-contributors.

In panel C of Table 6, we present results in which we also add predicted religious participation (from a probit of religious participation on log household income, the full set of demographic controls described above, and a full set of year by month dummy variables) and the interaction of predicted religious participation with the change in log household income. The results show that the insurance effect is driven entirely by the orthogonal components of predicted religious membership, i.e., it confirms the conclusion from panel B that the results are not driven by any observable characteristics that are correlated with religious participation.

In Table 7, we report the results of a variety of robustness checks on our white and black samples (we do not report results using the full sample because those results are almost identical to the results of the white sample). First, in panel A, we re-estimate our baseline specification measuring income and consumption in per capita terms. For white households, we see an insurance effect of about 40 percent though this is only significant at the 10 percent level, while for black households the insurance effect remains insignificant though the point estimate is now similar to that for whites. Thus, the results are not very sensitive to whether income changes are measured in per capita terms or not.

In panel B, we no longer top and bottom code income changes at +/– 100 log points around the mean income change. When we relax this restriction, the estimated relationship between changes in income and changes in consumption drops substantially,

as would be expected if income changes exceeding +/– 100 log points largely reflect measurement error or if income is virtually zero in one of the two years. The estimated insurance effect for whites, however, rises to about 75 percent and remains statistically significant while the effect for blacks remains insignificant.

In panel C, we define religious membership as equal to 1 if a household contributes more than $400 (the median contribution, conditional on the contribution being positive) to religious organizations in a year. For white households, the insurance effect rises to about 50 percent but is no longer statistically different from zero. Therefore, our baseline results are driven to a large extent by households that contribute less than $400 annually to religious organizations – in other words, one does not need to contribute large sums to religious organizations in order to derive insurance benefits from them.

In panel D, we use the change in log total consumption expenditure as our dependent variable instead of using just the non-durable component. Since expenditure on durable goods results in a consumption flow of durable goods that extends beyond the quarter in which the expenditure was made, expenditure on durables is a relatively noisy measure of durable consumption. Thus, someone who ceases to buy durable goods in a quarter, for example due an income shock, will still generally have the consumption flow of durables bought in the past. Thus, changes in expenditure on durables can dramatically overstate changes in the consumption flow from durables. For this reason, we excluded expenditure on durables in our baseline specification, but the results in panel D show that we continue to find substantial insurance effects for whites when using total consumption, though the result is now only significant at the 10 percent level.

In panel E, we drop the age restriction that we imposed on our sample in order to avoid retirement related income shocks. The estimated insurance effects without the age restriction are similar to our baseline results. In panel F, we add additional controls for financial wealth in the last interview, for the change in financial wealth between the first and last interviews, and for homeownership in the first and last interviews in order to rule out that religious participation is simply a proxy for having more assets and thus being able to self-insure. In fact, with the these additional controls, the insurance effect for white households increases to about 55 percent and is statistically significant at the one percent level.

In panel G, we examine whether charitable contributions also have an insurance effect on households. While it is conceivable that some types of charitable contributions could also provide households with the kind of social capital that could provide insurance in times of need, this does not seem plausible for most charitable contributions. Thus, if we were to observe charitable contributions also yielding an insurance effect, we would be concerned that the estimated insurance effect is an artifact of contributions (religious or charitable) being measured only in the last interview or that making contributions is a proxy for an omitted variable that provides the insurance effect. In panel G, however, we see that other charitable contributions do not have a significant insurance effect on consumption, reducing concerns about the causal interpretation of the insurance effect of religious contributions.

5.5 Consumption Insurance Effects in Subsamples

In Table 8, we further split the results by the education level of the household head (high school or less versus more than high school), by household wealth, and by income. There are two motivations for this. First, religious organizations' willingness to insure their members may vary by education, wealth, or income (with organizations plausibly being more willing to insure low-skill, low-wealth, or low-income members). Second, access to alternative, formal sources of insurance could also vary by education, wealth, and income. We find a significant insurance effect for the low-education, low-wealth, and low-income white samples, generally somewhat larger in magnitude than the results for whites in our baseline specification. For the high-education, high-income, or high-wealth white subsamples, we find no significant insurance effect of religious participation. Thus, consistent with our priors, religious organizations mostly provide consumption insurance to more needy households. For blacks, we do not find any significant insurance effects in any of the subsamples.

5.6 Does Religious Attendance Provide Happiness Insurance?

In Table 9, we turn to the question of whether religious participation can buffer the happiness consequences of income shocks. The first column of panel A presents our baseline specification for the full sample. As before, a negative coefficient on the interaction term can be interpreted as religious participation providing an insurance effect. For the full sample, the interaction term is negative but only has a p-value of 15 percent. The effect, however, is economically meaningful. According to the point

estimate, the median level of religious participation would buffer about half of the reduction in happiness from a negative income shock.

In columns (2) and (3), we restrict the samples to whites and to blacks and find that our results are driven primarily by blacks. For whites, though the results go in the direction of insurance, the interaction term is not statistically significant, and the point estimate indicates that the median level religious attendance buffers about 25 percent of the income shock. For blacks, however, the effect is significant at the five percent level and is much larger in magnitude. The median level of attendance offsets about 75 percent of the effect of an income shock on happiness. It is intriguing that our consumption insurance effects primarily show up for whites while the happiness insurance effects are strongest for blacks. We discuss and interpret this finding more extensively in Section 6.

Panels B and C of Table 9 explore whether the baseline results could be driven by differences in observable characteristics between active religious participants and less active ones. In panel B, we match each individual with above-median religious attendance to an individual with below-median attendance that has the same predicted probability of attending above the median, where the prediction is based on same set of control variables as in our baseline specification. We find that the insurance effects in our matched sample are very similar to those in our baseline sample, though the estimates are no longer statistically significant, probably because the sample size is smaller in the matched sample. In panel C, we interact income shocks both with actual and with predicted religious attendance. We find that actual rather than predicted religious attendance drives our baseline results. Thus actual religious attendance, rather than observable characteristics correlated with attendance, provides the insurance effect.

Table 10 provides a set of robustness checks for the happiness insurance results that is analogous to those provided for the consumption insurance results in Table 7. In particular, we test the sensitivity of our baseline results to: (a) measuring income in per capita terms, (b) eliminating the top and bottom coding of income shocks, (c) measuring religious attendance in times per month rather than percentiles, (d) measuring religious attendance as attending a religious service at least once a month, (e) eliminating the age restriction, (f) adding controls for levels and changes of wealth and homeownership, and (g) running the regressions as an ordered probit rather than OLS. In all cases, the insurance effect of religious participation is statistically significant for blacks. The point estimates indicate that the median level of attendance provides an insurance effect of 50 to 75 percent, though when attendance is measured in times per month it drops to about 20 percent. For whites, the insurance effect is never statistically significant, though the point estimates generally indicate an insurance effect that is economically meaningful.

5.7 Happiness Insurance Effects in Subsamples

In Table 11, we examine the insurance effect of religious attendance for subsamples of the data. We split the sample by education, financial assets, per capita income, and the intensity of religious belief. In panel A, we see that our effect is driven not only by blacks, but specifically by less educated blacks (with high school or less education). For more educated blacks, we find a negative effect, but one that is not statistically significant. Among whites, the effect for the less educated goes in the direction of insurance but is not statistically significant, whereas for the more educated there is an insignificant effect in the opposite direction. In panels B and C, when we split

the data by financial assets and by per capita income, which are presumably closely correlated with education and each other, we get very similar results. Thus, these findings echo the earlier consumption insurance results: the insurance effects are strongest for less educated, lower wealth and lower income individuals, whether it concerns consumption insurance for whites (Table 8) or happiness insurance for blacks (Table 11).

Finally, in panel D, we split our results by intensity of religious beliefs as measured by the average response to two statements about the Bible.[10] We find that those with the greatest intensity of beliefs experience the largest insurance effect; among blacks this effect is significant and large in magnitude, and among whites this effect points in the direction of insurance though is not significant. Various mechanisms could give rise to this finding. Religious organizations could treat all participants equally but those with more intense beliefs might receive more doctrinal solace from attending after experiencing a negative income shock. Alternatively, those with more intense beliefs are more attached to their religious organization (in ways not captured by our measure of frequency of attending religious service) and the religious organization channels assistance to more attached members. However, in unreported regressions, we found that the intensity of beliefs by itself does not provide happiness insurance against income shocks. Thus, just believing is not sufficient; one needs to participate in a religious organization to get happiness insurance.

[10] Because this question is only relevant for Christians, we drop those reporting a non-Christian religious affiliation from the sample in panel D. The statements are "The Bible is God's word and everything happened or will happen exactly as it says" and "The Bible is the answer to all important human problems" and the response to each statement was recorded on a 5-point scale from "strongly agree" to "strongly disagree."

5.8 Religion versus Alternative Sources of Insurance

It will not be possible for our results to distinguish between the spiritual, social and material channels though which religious participation may provide happiness insurance. However, by examining the insurance effect of other social activities, we can at least determine whether religious organizations play a special role in this regard. These results are presented in Table 12. In panel A, we interact a range of social activities with income shocks. For blacks, we find that all social activities go in the direction of providing insurance for happiness against income shocks, but that only going to social events at a church, synagogue or mosque is statistically significant. For whites, all activities go in the direction of insurance (other than going to a bar), but are not statistically significant.

In panel B, we examine the effect of participating in organizations such as political and service groups, leisure groups, work-related activities, and religious organizations. For blacks, the largest effect is from religious organizations, which have a negative (i.e., insurance) effect, but the coefficient is not statistically significant. For whites, the largest effect is service or political organizations, and this effect is statistically significant. This might be an indication that whites have more sources of social capital than blacks, who rely for a large degree on their religious organizations.

5.9 Insurance Against Other Life Shocks and Effects by Denomination

Table 13 extends our results along two dimensions: we split the results for whites by religious denomination (the sample size is insufficient to do this for blacks), and we also examine whether religious participation has an insurance effect for shocks other than

income. Using cross-sectional data from the European Social Survey, Clark and Lelkes (2005) find that the happiness impact of a shock varies crucially by denomination and type of shock: broadly speaking, church-going Catholics are protected against unemployment shocks but suffer more if their marriage breaks down, while church-going protestants are protected against marital shocks but become even more unhappy if unemployed.

In contrast, we do not find an insurance effect that is significant at the 5 percent level for any of the 12 regressions by type of shock and religious denomination. Interestingly though, we find that for Catholics the point estimate for marital shocks is large, negative and marginally significant. The point estimate for other Christians, however, is close to zero. Thus, if anything, the evidence points towards an insurance effect against marital shocks for Catholics. Our results may differ from those from Clark and Lelkes for a number of reasons such as lack of statistical power of our estimates, differences between Europe and the United States, the reliance on panel data rather than a cross-section or the fact that we measure religiosity by the frequency of participation whereas they measure it by a dummy for the type of religious affiliation.

6. Conclusion

We find that religious participation provides partial insurance against income shocks but that the mechanism behind this insurance effect appears to differ by race. Non-durable consumption expenditure of whites who contribute to a religious organization is about 35 percent less sensitive to income shocks that that of non-contributing whites. Religious participation, however, does not significantly reduce the

happiness impact of income shocks for whites, though the point estimate indicates that the median level of religious participation reduces the happiness impact of an income shock by about a quarter. For blacks, however, we do not find significant consumption insurance effects from religious contributions, though we also cannot reject the hypothesis that religious participation buffers half of the effect of an income shock on consumption expenditure. Yet religious organizations do provide significant happiness insurance for blacks: the median level of religious attendance reduces the happiness impact of income shocks for blacks by about 75 percent. Moreover, both for whites and blacks, the insurance effects are strongest for those who seem most vulnerable such as less educated, low-income, and low-wealth individuals. Our insurance estimates may be underestimates if religious organizations also provide insurance to those who do not contribute or to those who are affiliated but do not attend religious services.

The different effects by race might be explained by differences in the ways religious organizations provide insurance, and the sociological literature provides support for this explanation. Whites tend to belong to religious organizations where assistance is more likely to be given in cash[11] (and is thus reflected in consumption expenditure), but where the expectation to repay or the stigma attached to receiving the assistance leads to little happiness insurance. Assistance in black churches, in contrast, is more likely to be in the form of social support (thus not reflected in consumption expenditure). Furthermore, moral or doctrinal support for those experiencing difficulties tends to be greater in black churches than in white churches, leading to substantial happiness

[11] Cnaan (2002), for example, finds that percent white membership of a congregation is a significant and positive predictor of a congregation's financial commitment to social services, even after controlling for the income and total budget of the congregation.

insurance. While these explanations seem plausible, more detailed evidence on the exact mechanisms by which religious organizations provide insurance remains desirable.

The finding that religious organizations partly insure individuals' stream of consumption and of happiness against income shocks has important implications for the public provision of social insurance. Social insurance is less valuable for those who are already partly insured through their religious organization, implying that the optimal level of social insurance is inversely related to the religious participation of the population. Moreover, social insurance can crowd out insurance provided by religious organizations.[12] Thus, even where Church and State are officially separated, governments providing less social insurance will indirectly stimulate the demand for insurance from religious organizations and thus mostly likely strengthen the influence of religious organizations.

[12] Of course, insurance provided by religious organizations may crowd out other forms of private insurance, such as that provided by extended families.

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Table 1: Distribution of Self-Reported Happiness

Change In Happiness	Full Sample	Whites	Blacks
-6	0.3%	0.3%	0.4%
-5	0.4%	0.4%	0.7%
-4	1.4%	1.4%	1.3%
-3	3.5%	3.3%	4.2%
-2	9.5%	9.6%	9.4%
-1	21.2%	21.3%	19.2%
0	31.5%	31.6%	30.5%
1	18.2%	18.3%	17.6%
2	8.8%	8.3%	11.3%
3	3.5%	3.6%	2.9%
4	1.0%	0.9%	1.4%
5	0.6%	0.6%	0.4%
6	0.4%	0.4%	0.7%
N	5716	4697	924

Note: Self-reported happiness ranges from 1 (very unhappy) to 7 (very happy). The table shows the distribution of self-reported happiness in period 2 (1992/94) minus self-reported happiness in period 1 (1987/88).

Table 2: Distribution of Religious Attendance

Percentile in own distribution	Full Sample		White		Black	
	Times / year	Percentile in overall distribution	Times / year	Percentile in overall distribution	Times / year	Percentile in overall distribution
1%	0	0.119	0	0.119	0	0.119
5%	0	0.119	0	0.119	0	0.119
10%	0	0.119	0	0.119	1	0.227
25%	1	0.258	1	0.235	7	0.421
50%	13	0.464	12	0.446	27	0.575
75%	50	0.695	44	0.680	52	0.747
90%	78	0.794	76	0.778	104	0.860
95%	104	0.896	104	0.879	156	0.947
99%	189	0.967	182	0.967	234	0.985
Mean	29.3	0.479	27.1	0.462	40.7	0.565
Std. deviation	40.4	0.254	38.0	0.255	48.3	0.228
N	5716		4697		924	

Note: Each attendance measure is the average of the non-missing values of that variable for waves 1 and 2. The percentile of religious attendance in the overall distribution is the percentile of one's religious attendance relative to attendance in the same wave of all NSFH observations that are in the NSFH panel and that have a non-missing response to the religious attendance question in that period.

Table 3: Correlates of Religiosity

Dependent Variables: Made a Religious Contribution (column 1), Percentile of Religious Attendance (columns 2 and 3)

	Contributor		Level of Attendance		Change in Attendance	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)
Log household income	0.077	(0.005)	-0.006	(0.005)	0.002	(0.005)
Δ Log household income	0.018	(0.006)	-0.008	(0.007)	-0.006	(0.007)
Married (omitted)						
Separated	-0.091	(0.014)	-0.039	(0.020)	-0.011	(0.024)
Divorced	-0.086	(0.009)	-0.048	(0.012)	0.006	(0.013)
Widowed	-0.002	(0.017)	0.005	(0.026)	-0.027	(0.026)
Never Married	-0.083	(0.009)	-0.019	(0.013)	-0.043	(0.013)
Δ Separated	-0.047	(0.038)	0.000	(0.012)	0.016	(0.015)
Δ Divorced	-0.006	(0.031)	0.012	(0.009)	-0.009	(0.011)
Δ Widowed	0.034	(0.060)	-0.009	(0.024)	-0.009	(0.030)
Δ Never Married	-0.074	(0.032)	-0.003	(0.011)	-0.002	(0.012)
Kids under 18 present in HH	0.061	(0.009)	0.034	(0.011)	-0.014	(0.011)
Δ Kids under 18 present in HH	0.028	(0.015)	0.006	(0.007)	0.011	(0.008)
Household size	0.004	(0.003)	0.020	(0.003)	-0.001	(0.004)
Δ Household size	0.002	(0.005)	-0.003	(0.002)	0.007	(0.003)
Age	0.007	(0.002)	-0.002	(0.003)	0.003	(0.003)
$Age^2/100$	-0.001	(0.003)	0.006	(0.004)	-0.005	(0.004)
High school dropout (omitted)						
High school	0.111	(0.013)	0.052	(0.010)	-0.008	(0.011)
Some college	0.217	(0.014)	0.100	(0.011)	-0.010	(0.012)
College degree	0.310	(0.016)	0.151	(0.013)	0.004	(0.014)
Post college degree	0.260	(0.017)	0.151	(0.014)	0.000	(0.014)
White (omitted)						
Black	0.071	(0.009)	0.086	(0.009)	0.043	(0.011)
Other race-ethnic group	-0.041	(0.012)	0.002	(0.025)	0.012	(0.029)
Female			0.058	(0.006)	-0.005	(0.007)
Catholic (omitted)						
No Religion			-0.283	(0.008)	0.015	(0.011)
Jewish			-0.131	(0.018)	0.025	(0.017)
Baptist			0.049	(0.009)	-0.040	(0.010)
Episcopalian			-0.048	(0.025)	-0.015	(0.020)
Lutheran			0.040	(0.015)	0.012	(0.013)
Methodist			-0.032	(0.012)	-0.025	(0.011)
Mormon			0.114	(0.023)	-0.002	(0.019)
Presbyterian			-0.008	(0.017)	-0.047	(0.020)
Congregational			0.010	(0.034)	-0.075	(0.037)
Protestant, no denomination			-0.095	(0.034)	-0.018	(0.037)
Other Christian			0.183	(0.014)	-0.027	(0.014)
Other religions / missing			0.045	(0.041)	-0.091	(0.068)
Month & year of interview dummies	(142)		(38)		(38)	
Pseudo R^2 / Adjusted R^2	0.0866		0.2131		0.0099	
N	32794		5716		5572	

Note: Robust standard errors between parentheses. Column 1 reports marginal effects from a probit model and each variable in levels is the average of the non-missing values of that variable from the first and fourth CEX interview. In columns 2 and 3, each variable in levels is the average of the non-missing values of that variable for waves 1 and 2. The regressions also include dummy variables for independent variables with missing values.

Table 4: Correlates of Income Shocks

	Change in Log Household Income (9-month change in the CEX, 5-year change in the NSFH)				Absolute Change in Log Household Income (9-month change in the CEX, 5-year change in the NSFH)			
	CEX		NSFH		CEX		NSFH	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)
Contributor	0.015	(0.005)			-0.013	(0.003)		
Religious Attendance (percentile)			-0.030	(0.035)			-0.030	(0.022)
Δ Religious Attendance (percentile)			-0.060	(0.035)			-0.036	(0.022)
Log household income	-0.017	(0.005)	-0.045	(0.017)	-0.133	(0.003)	-0.100	(0.009)
Married (omitted)								
Separated	0.015	(0.015)	0.188	(0.065)	-0.011	(0.009)	0.178	(0.037)
Divorced	0.017	(0.008)	0.102	(0.034)	-0.020	(0.006)	0.068	(0.020)
Widowed	0.034	(0.016)	0.058	(0.084)	-0.028	(0.011)	0.127	(0.042)
Never Married	0.015	(0.009)	0.087	(0.039)	-0.024	(0.006)	-0.037	(0.023)
Δ Separated	-0.270	(0.037)	-0.507	(0.038)	0.057	(0.026)	-0.009	(0.022)
Δ Divorced	-0.179	(0.030)	-0.455	(0.027)	-0.071	(0.021)	-0.010	(0.018)
Δ Widowed	-0.143	(0.061)	-0.342	(0.079)	-0.056	(0.040)	-0.041	(0.045)
Δ Never Married	-0.139	(0.032)	-0.519	(0.034)	-0.094	(0.021)	-0.171	(0.024)
Kids under 18 present in HH	0.007	(0.008)	-0.049	(0.031)	-0.035	(0.005)	-0.056	(0.019)
Δ Kids under 18 present in HH	-0.049	(0.013)	-0.068	(0.021)	-0.004	(0.009)	-0.010	(0.013)
Household size	0.002	(0.003)	0.048	(0.011)	0.020	(0.002)	0.018	(0.006)
Δ Household size	0.063	(0.005)	0.021	(0.008)	0.006	(0.003)	-0.006	(0.005)
Age	-0.002	(0.002)	-0.059	(0.009)	-0.003	(0.001)	-0.024	(0.005)
$Age^2/100$	0.001	(0.002)	0.060	(0.011)	0.005	(0.002)	0.028	(0.007)
High school dropout (omitted)								
High school	-0.013	(0.012)	0.076	(0.031)	0.027	(0.008)	-0.012	(0.018)
Some college	-0.024	(0.012)	0.116	(0.033)	0.045	(0.008)	0.003	(0.019)
College degree	0.015	(0.014)	0.136	(0.038)	0.056	(0.009)	0.011	(0.023)
Post college degree	-0.011	(0.015)	0.215	(0.039)	0.090	(0.010)	0.029	(0.024)
White (omitted)								
Black	-0.018	(0.008)	-0.026	(0.028)	0.002	(0.005)	-0.023	(0.017)
Other race-ethnic group	0.017	(0.011)	0.108	(0.067)	0.009	(0.007)	0.040	(0.040)
Female			-0.002	(0.017)			0.026	(0.010)
Catholic (omitted)								
No Religion			0.045	(0.037)			0.023	(0.024)
Jewish			0.092	(0.065)			0.101	(0.039)
Baptist			-0.009	(0.025)			0.001	(0.015)
Episcopalian			0.093	(0.069)			0.067	(0.044)
Lutheran			0.006	(0.034)			-0.061	(0.023)
Methodist			0.029	(0.029)			-0.017	(0.019)
Mormon			-0.061	(0.053)			-0.050	(0.033)
Presbyterian			-0.050	(0.045)			0.029	(0.032)
Congregational			0.040	(0.066)			-0.128	(0.052)
Protestant, no denomination			0.037	(0.070)			-0.054	(0.056)
Other Christian			0.003	(0.034)			-0.001	(0.021)
Other religions / missing			-0.055	(0.100)			-0.009	(0.052)
Month & year of interview dummies	(142)		(38)		(142)		(38)	
Adj. R^2	0.0205		0.2133		0.2111		0.1277	
N	32794		4269		32794		4269	

Note: Robust standard errors between parentheses. Column 1 reports marginal effects from a probit model and each variable in levels is the average of the non-missing values of that variable from the first and fourth CEX interview. In columns 2 and 3, each variable in levels is the average of the non-missing values of that variable for waves 1 and 2. The regressions also include dummy variables for independent variables with missing values.

Table 5: Correlates of Consumption and Self-Reported Happiness

Dependent Variable: Log Quarterly Household Non-Durable Expenditure / Self-Reported Happiness

	Level of Consumption		Change in Consumption		Level of Happiness		Change in Happiness	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)
Contributor	0.082	(0.007)	0.032	(0.009)				
Religious Attendance (percentile)					0.526	(0.060)	-0.067	(0.095)
Δ Religious Attendance (percentile)							0.149	(0.095)
Log household income	0.366	(0.007)	-0.006	(0.006)	0.175	(0.023)	-0.054	(0.037)
Δ Log household income	0.020	(0.008)	0.084	(0.010)			0.153	(0.050)
Married (omitted)								
Separated	-0.146	(0.018)	-0.002	(0.023)	-0.677	(0.102)	0.065	(0.166)
Divorced	-0.130	(0.011)	-0.010	(0.014)	-0.393	(0.056)	0.169	(0.089)
Widowed	-0.154	(0.021)	0.021	(0.025)	-0.717	(0.126)	0.262	(0.202)
Never Married	-0.195	(0.012)	0.000	(0.015)	-0.322	(0.058)	0.085	(0.092)
Δ Separated			-0.112	(0.060)			-0.797	(0.105)
Δ Divorced			-0.145	(0.052)			-0.279	(0.079)
Δ Widowed			-0.259	(0.098)			-0.677	(0.187)
Δ Never Married			-0.200	(0.054)			-0.421	(0.084)
Kids under 18 present in HH	-0.143	(0.010)	0.043	(0.013)	-0.065	(0.050)	-0.092	(0.078)
Δ Kids under 18 present in HH			-0.028	(0.022)			-0.056	(0.053)
Household size	0.109	(0.003)	-0.006	(0.004)	-0.026	(0.015)	0.015	(0.025)
Δ Household size			0.091	(0.008)			-0.011	(0.018)
Age	0.022	(0.003)	0.003	(0.003)	-0.050	(0.014)	0.005	(0.022)
$Age^2/100$	-0.024	(0.003)	-0.003	(0.004)	0.056	(0.018)	0.002	(0.028)
High school dropout (omitted)								
High school	0.142	(0.015)	0.012	(0.019)	-0.021	(0.052)	-0.029	(0.080)
Some college	0.280	(0.016)	0.021	(0.020)	0.024	(0.055)	0.052	(0.085)
College degree	0.359	(0.019)	0.023	(0.023)	0.013	(0.063)	0.013	(0.099)
Post college degree	0.455	(0.021)	0.026	(0.025)	-0.012	(0.065)	-0.143	(0.103)
White (omitted)								
Black	-0.183	(0.010)	-0.033	(0.013)	0.049	(0.045)	-0.021	(0.070)
Other race-ethnic group	-0.105	(0.015)	-0.003	(0.019)	-0.086	(0.108)	-0.222	(0.146)
Female					0.003	(0.028)	-0.024	(0.045)
Catholic (omitted)								
No Religion					-0.056	(0.063)	0.029	(0.097)
Jewish					-0.087	(0.100)	0.024	(0.165)
Baptist					0.014	(0.041)	0.022	(0.067)
Episcopalian					0.017	(0.107)	0.067	(0.154)
Lutheran					0.008	(0.061)	0.021	(0.086)
Methodist					0.047	(0.052)	-0.026	(0.077)
Mormon					-0.113	(0.099)	-0.069	(0.150)
Presbyterian					0.020	(0.082)	-0.015	(0.127)
Congregational					-0.121	(0.140)	-0.018	(0.279)
Protestant, no denomination					0.055	(0.151)	0.231	(0.214)
Other Christian					0.001	(0.059)	-0.052	(0.088)
Other religions / missing					-0.282	(0.208)	0.416	(0.206)
Month & year of interview dummi	(142)		(142)		(38)		(38)	
Adj. R^2	0.3957		0.0311		0.0808		0.0279	
N	32794		32794		5716		5716	

Note: Robust standard errors between parentheses. Column 1 reports marginal effects from a probit model and each variable in levels is the average of the non-missing values of that variable from the first and fourth CEX interview. In columns 2 and 3, each variable in levels is the average of the non-missing values of that variable for waves 1 and 2. The regressions also include dummy variables for independent variables with missing values.

Table 6: Religious Organization Membership and the Consumption Effects of Income Shocks

Dependent Variable: Change in Log Non-Durable Consumption

	Full Sample		White		Black	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)
a. Baseline specification						
Change in ln HH income	0.102	(0.011)	0.098	(0.013)	0.085	(0.028)
Member of a religious organization	0.033	(0.009)	0.035	(0.010)	0.031	(0.025)
Interaction	-0.031	(0.010)	-0.034	(0.011)	-0.006	(0.025)
Adjusted R^2	0.0314		0.0311		0.0751	
b. Matched sample						
Change in ln HH income	0.101	(0.019)	0.105	(0.020)	0.045	(0.051)
Member of a religious organization	0.024	(0.012)	0.025	(0.013)	0.032	(0.032)
Interaction	-0.031	(0.012)	-0.038	(0.013)	0.013	(0.032)
Adjusted R^2	0.0365		0.0343		0.1200	
c. Horserace between actual and predicted membership						
Change in ln HH income	0.101	(0.025)	0.100	(0.028)	0.051	(0.049)
Member of a religious organization	0.033	(0.009)	0.035	(0.010)	0.033	(0.025)
Predicted membership	(absorbed by demographic controls)					
Interaction with actual memb.	-0.031	(0.010)	-0.033	(0.011)	-0.013	(0.026)
Interaction with predicted memb.	0.003	(0.064)	-0.006	(0.071)	0.120	(0.135)
Adjusted R^2	0.0314		0.0311		0.0755	

Note: Robust standard errors between parentheses. All regressions also include controls for log real household income, a dummy for income being zero or missing, average age of head and spouse, age squared/100, household size, the change in household size between interviews, the presence of children in the household, the change in the presence of children between interviews, education (dummy variables for high school graduate, some college, college graduate, professional degree), marital status (dummy variables for widowed, divorced, separated, and never married), change in marital status, race (black, other race), and year by month dummies. The sample sizes for the full, white and black samples are 32794, 27219 and 3939 respectively. For the matched sample, the sample sizes for the full, white and black samples are 19578, 16392 and 2251 respectively.

Table 7: Robustness Checks: Religious Organization Membership and Consumption

Variable	White Coeff.	White (S.E.)	Black Coeff.	Black (S.E.)
a. Income measured in per capita terms				
Change in ln HH income p.c.	0.095	(0.013)	0.101	(0.029)
Member of a religious organization	0.033	(0.010)	0.027	(0.025)
Interaction	-0.040	(0.022)	-0.033	(0.053)
Adjusted R^2	0.0481		0.1052	
b. Shocks not top and bottom coded at 100 log point difference from mean shock				
Change in ln HH income	0.034	(0.007)	0.038	(0.017)
Member of a religious organization	0.035	(0.010)	0.030	(0.025)
Interaction	-0.027	(0.012)	-0.007	(0.028)
Adjusted R^2	0.0297		0.0741	
c. Membership measured as above median contribution ($400)				
Change in ln HH income	0.183	(0.121)	-0.219	(0.181)
Member of a religious organization	0.001	(0.054)	0.113	(0.095)
Interaction	-0.094	(0.122)	0.317	(0.183)
Adjusted R^2	0.0326		0.0862	
d. Change in log total consumption expenditure used as dependent variable				
Change in ln HH income	0.072	(0.010)	0.064	(0.021)
Member of a religious organization	0.032	(0.007)	0.034	(0.019)
Interaction	-0.030	(0.017)	0.006	(0.040)
Adjusted R^2	0.0400		0.0854	
e. No age restriction on the sample				
Change in ln HH income	0.116	(0.011)	0.088	(0.026)
Member of a religious organization	0.035	(0.008)	0.018	(0.021)
Interaction	-0.065	(0.018)	0.017	(0.044)
Adjusted R^2	0.0304		0.0709	
f. Additional controls for wealth and homeownership				
Change in ln HH income	0.096	(0.014)	0.089	(0.029)
Member of a religious organization	0.035	(0.010)	0.032	
Interaction	-0.050	(0.023)	-0.022	(0.055)
Adjusted R^2	0.0311		0.0753	
g. Horserace between charitable contributions and church membership				
Change in ln HH income	0.121	(0.012)	0.089	(0.026)
Church membership	0.032	(0.008)	0.010	(0.022)
Made charitable contribution	0.014	(0.009)	0.041	(0.027)
Interaction with church membership	-0.058	(0.019)	0.022	(0.047)
Interaction with charitable contribution	-0.023	(0.020)	-0.026	(0.060)
Adjusted R^2	0.0305		0.0713	

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 6, panel a). The sample sizes for the white and black sample are 27219 and 3939 respectively.

Table 8: Consumption Effects by Respondent Characteristics

	Whites					Blacks				
Respondent characteristic	Δ ln HH income Coeff. (S.E.)	Membership Coeff. (S.E.)	Interaction Coeff. (S.E.)	Adj. R^2	N	Δ ln HH income Coeff. (S.E.)	Membership Coeff. (S.E.)	Interaction Coeff. (S.E.)	Adj. R^2	N
a. By educational attainment										
High school or less	0.106	0.034	-0.075	0.035	12450	0.101	0.014	-0.057	0.107	2446
	(0.019)	(0.015)	(0.034)			(0.034)	(0.033)	(0.069)		
Some college or more	0.080	0.040	-0.028	0.039	14769	0.044	0.054	0.046	0.129	1493
	(0.020)	(0.013)	(0.031)			(0.058)	(0.041)	(0.102)		
b. By liquid financial assets										
$2000 or less	0.114	0.039	-0.076	0.035	15714	0.097	0.037	-0.044	0.086	3321
	(0.017)	(0.013)	(0.030			(0.031)	(0.028)	(0.062)		
More than $2000	0.050	0.020	0.001	0.041	11505	0.024	-0.006	0.096	0.275	618
	(0.025)	(0.015)	(0.036)			(0.120)	(0.074)	(0.157)		
c. By per capita income										
$15000 or less	0.087	0.026	-0.069	0.032	15772	0.084	0.017	-0.022	0.092	3079
	(0.016)	(0.013)	(0.027)			(0.031)	(0.029)	(0.061)		
More than $15000	0.110	0.047	-0.010	0.043	11447	0.130	0.056	0.016	0.197	860
	(0.027)	(0.015)	(0.041)			(0.110)	(0.059)	(0.156)		

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 6, panel a). Financial assets and per capita income are measured in 1998 constant dollars.

Table 9: Religious Attendance and the Happiness Effects of Income Shocks

	Full Sample		White		Black	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)	Coeff.	(S.E.)
a. Baseline specification						
Change in ln HH income	0.276	(0.102)	0.191	(0.110)	0.794	(0.322)
Religious attendance (percentile)	-0.120	(0.111)	-0.062	(0.118)	-0.503	(0.375)
Interaction	-0.264	(0.183)	-0.108	(0.202)	-1.160	(0.514)
Adjusted R^2	0.0287		0.0359		0.0217	
b. Matched sample						
Change in ln HH income	0.126	(0.188)	0.393	(0.174)	0.474	(0.434)
Religious attendance (percentile)	-0.222	(0.156)	-0.011	(0.163)	-0.340	(0.393)
Interaction	-0.005	(0.291)	-0.329	(0.274)	-0.808	(0.643)
Adjusted R^2	0.0467		0.0538		0.0286	
c. Horserace between actual and predicted attendance						
Change in ln HH income	0.248	(0.196)	0.077	(0.215)	0.755	(0.596)
Actual religious attendance	-0.088	(0.115)	-0.022	(0.120)	-0.657	(0.412)
Predicted religious attendance	(absorbed by demographic controls)					
Interaction with actual att.	-0.278	(0.210)	-0.173	(0.229)	-1.151	(0.633)
Interaction with predicted att.	0.069	(0.450)	0.315	(0.505)	0.067	(1.269)
Adjusted R^2	0.0285		0.0359		0.0216	

Note: Robust standard errors between parentheses. All regressions also include controls for log real household income, employment by gender, employment change by gender, age, age squared, gender, household size, the change in household size between interviews, any children under 18 in the household, the change the presence of chidren in the household, education (dummy variables for high school graduate, some college, college graduate, professional degree), marital status (dummy variables for widowed, divorced, separated, and never married), change in marital status, race (black and other race-ethnicity), religious affiliation (12 dummies), and year by month dummies. Independent variables with missing values or logs of dollar amounts less than $100/year are dummied out. The sample sizes for the full, while and black sample are 5716, 4697 and 924 respectively. In the matched sample, the sample sizes are 4121, 3297 and 667 respectively.

Table 10: Robustness Checks: Religious Attendance and Happiness

	White		Black	
Variable	Coeff.	(S.E.)	Coeff.	(S.E.)
a. Income measured in per capita terms				
Change in ln HH income p.c.	0.153	(0.102)	1.235	(0.337)
Religious attendance (percentile)	-0.073	(0.116)	-0.366	(0.349)
Interaction	-0.092	(0.190)	-1.666	(0.535)
Adjusted R^2	0.0349		0.0321	
b. Shocks not top and bottom coded at 100 log point difference from mean shock				
Change in ln HH income	0.158	(0.075)	0.565	(0.236)
Religious attendance (percentile)	0.023	(0.107)	-0.425	(0.304)
Interaction	-0.138	(0.150)	-0.841	(0.357)
Adjusted R^2	0.0337		0.0250	
c. Religious attendance measured in times/month				
Change in ln HH income	0.175	(0.067)	0.320	(0.164)
Religious attendance (times/year)	-0.006	(0.008)	-0.002	(0.019)
Interaction	-0.016	(0.016)	-0.049	(0.025)
Adjusted R^2	0.0366		0.0147	
d. Attending at least once a month				
Change in ln HH income	0.154	(0.076)	0.591	(0.245)
Dummy for attending at least once/mon	0.085	(0.150)	-0.160	(0.323)
Interaction	-0.026	(0.100)	-0.634	(0.280)
Adjusted R^2	0.0356		0.0315	
e. No age restriction on the sample				
Change in ln HH income	0.195	(0.096)	0.706	(0.283)
Religious attendance (percentile)	0.006	(0.098)	-0.412	(0.313)
Interaction	-0.163	(0.170)	-0.918	(0.450)
Adjusted R^2	0.0345		0.0187	
f. Additional controls for wealth and homeownership				
Change in ln HH income	0.168	(0.110)	0.757	(0.328)
Religious attendance (percentile)	-0.063	(0.119)	-0.466	(0.383)
Interaction	-0.124	(0.202)	-1.147	(0.522)
Adjusted R^2	0.0386		0.0162	
g. Ordered probit				
Change in ln HH income	0.125	(0.070)	0.478	(0.192)
Religious attendance (percentile)	-0.052	(0.077)	-0.345	(0.221)
Interaction	-0.056	(0.128)	-0.714	(0.307)
Adjusted R^2	0.0145		0.0302	

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 9, panel a). The sample sizes for the white and black sample are 4697 and 924 respectively.

Table 11: Happiness Effects by Respondent Characteristics

	Whites					Blacks				
Respondent characteristi	Δ ln HH income Coeff. (S.E.)	Religious attendance Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N	Δ ln HH income Coeff. (S.E.)	Religious attendance Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N
a. By educational attainment										
High school or less	0.269	-0.161	-0.380	0.0300	2353	1.115	-0.499	-1.651	0.0207	568
	(0.154)	(0.176)	(0.296)			(0.406)	(0.482)	(0.647)		
Some college or mor	0.090	0.039	0.173	0.0406	2333	0.352	-0.218	-0.756	0.0127	355
	(0.154)	(0.163)	(0.274)			(0.550)	(0.589)	(0.889)		
b. By liquid financial assets										
$2000 or less	0.279	-0.150	-0.315	0.0404	1748	0.923	-0.343	-1.654	0.0122	609
	(0.183)	(0.227)	(0.346)			(0.421)	(0.548)	(0.678)		
More than $2000	0.118	-0.042	0.064	0.0306	2949	0.427	-0.673	0.111	0.0058	315
	(0.139)	(0.138)	(0.250)			(0.517)	(0.554)	(0.778)		
c. By per capita income										
$15000 or less	0.404	-0.151	-0.328	0.0385	1970	0.739	-1.032	-1.401	0.0393	568
	(0.173)	(0.198)	(0.318)			(0.404)	(0.493)	(0.607)		
More than $15000	0.006	-0.039	0.156	0.0368	2607	0.332	0.438	0.261	0.0225	289
	(0.140)	(0.148)	(0.259)			(0.553)	(0.594)	(1.028)		
d. By intensity of beliefs										
Below median	0.122	0.039	0.226	0.0352	2389	0.509	-0.550	-0.745	0.0247	508
	(0.143)	(0.185)	(0.331)			(0.389)	(0.497)	(0.690)		
Above median	0.301	-0.131	-0.328	0.0444	2029	1.606	0.125	-2.302	0.0039	387
	(0.205)	(0.199)	(0.320)			(0.694)	(0.713)	(0.980)		

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 9, panel a). Financial assets and per capita income are measured in 1998 constant dollars. The median of belief intensity is determined relative to the own sample.

Table 12: Other mechanisms of happiness insurance

	Whites					Blacks				
Mechanism	Δ ln HH income Coeff. (S.E.)	Activity Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N	Δ ln HH income Coeff. (S.E.)	Activity Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N
a. Social activities										
Getting together socially with friends / neighbors / relatives /	0.214 (0.166)	-0.016 (0.052)	-0.038 (0.090)	0.0359	4697	0.518 (0.288)	-0.345 (0.109)	-0.226 (0.151)	0.0264	924
Group recreational activity	0.157 (0.079)	-0.005 (0.027)	-0.014 (0.048)	0.0350	4697	0.221 (0.188)	-0.035 (0.081)	-0.070 (0.117)	0.0151	924
Going to a bar	0.097 (0.074)	0.036 (0.031)	0.046 (0.051)	0.0356	4697	0.245 (0.174)	-0.035 (0.095)	-0.127 (0.126)	0.0124	924
Going to social event at church / synagogue / mosque	0.193 (0.075)	-0.023 (0.039)	-0.054 (0.052)	0.0360	4697	0.497 (0.237)	0.136 (0.100)	-0.223 (0.118)	0.0186	924
b. Activity in organizations										
Service or political organization	0.212 (0.064)	-0.001 (0.073)	-0.279 (0.138)	0.0364	4697	0.160 (0.157)	0.172 (0.200)	-0.051 (0.331)	0.0217	924
Work-related organization	0.127 (0.068)	0.029 (0.072)	0.051 (0.125)	0.0357	4697	0.128 (0.167)	0.521 (0.201)	0.034 (0.318)	0.0286	924
Leisure groups	0.159 (0.085)	-0.133 (0.069)	-0.033 (0.120)	0.0361	4697	0.099 (0.210)	0.170 (0.200)	0.123 (0.323)	0.0153	924
Religious organizations	0.202 (0.073)	-0.115 (0.085)	-0.154 (0.120)	0.0370	4697	0.338 (0.235)	0.190 (0.204)	-0.336 (0.300)	0.0148	924

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 9, panel a). Financial assets are measured in 1998 constant dollars. All the variables on social activities are measured on a 0-4 scale with 0 corresponding to "never", 1 to "several times a year", 2 to "about once a month", 3 to "about once a week" and 4 to "several times per week." "Getting together socially with friends / neighbors / relatives / colleagues" is measured as the average of four separate questions asked about getting together socially with each of these classes of people. "Activity in organizations" equals 1 if the respondent reports to attend at least "several times per year" an event of such an organization. Service and political organizations include service, fraternal, veterans' and political groups.

Table 13: Religious affiliation and happiness effects of other life shocks

		Whites					Blacks				
Mechanism		Shock Coeff. (S.E.)	Religious attendance Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N	Shock Coeff. (S.E.)	Religious attendance Coeff. (S.E.)	Inter-action Coeff. (S.E.)	Adj. R^2	N
a.	*Income shocks*										
	All	0.191	-0.062	-0.108	0.0359	4697	0.794	-0.503	-1.160	0.0217	924
		(0.110)	(0.118)	(0.202)			(0.322)	(0.375)	(0.514)		
	Catholics	0.503	0.668	-0.574	0.0500	1129					
		(0.306)	(0.295)	(0.520)							
	Other Christian	0.081	-0.219	0.049	0.0443	2437					
		(0.154)	(0.153)	(0.267)							
	Not Christian	0.294	-0.063	-0.352	0.0301	1131					
		(0.202)	(0.300)	(0.546)							
b.	*Marital shocks*										
	All	0.581	0.019	-0.150	0.0297	4697	-0.090	-0.467	0.344	0.0153	924
		(0.120)	(0.106)	(0.237)			(0.337)	(0.288)	(0.490)		
	Catholics	1.027	0.705	-1.059	0.0394	1129					
		(0.311)	(0.251)	(0.560)							
	Other Christian	0.642	-0.165	-0.173	0.0359	2437					
		(0.185)	(0.137)	(0.324)							
	Not Christian	0.476	0.076	-0.182	0.0279	1131					
		(0.200)	(0.278)	(0.609)							
c.	*Job shocks*										
	All	0.219	-0.023	-0.057	0.0345	4697	0.518	-0.496	-0.264	0.0302	924
		(0.113)	(0.104)	(0.206)			(0.386)	(0.285)	(0.596)		
	Catholics	0.243	0.525	-0.100	0.0419	1129					
		(0.316)	(0.248)	(0.541)							
	Other Christian	0.192	-0.199	0.072	0.0495	2437					
		(0.159)	(0.134)	(0.263)							
	Not Christian	0.359	0.011	-0.530	0.0246						
		(0.210)	(0.283)	(0.597)							
d.	*Health shocks*										
	All	0.252	-0.012	-0.047	0.0487	4697	0.131	-0.472	0.200	0.0281	924
		(0.064)	(0.106)	(0.115)			(0.183)	(0.306)	(0.300)		
	Catholics	0.051	0.606	0.283	0.0605	1129					
		(0.169)	(0.248)	(0.298)							
	Other Christian	0.242	-0.226	-0.060	0.0554	2437					
		(0.097)	(0.139)	(0.155)							
	Not Christian	0.305	0.169	-0.034	0.0475	1131					
		(0.106)	(0.282)	(0.294)							

Note: Robust standard errors between parentheses. All regressions also include the controls from the baseline regression (table 9, panel a), except the regressions for job shocks, which do not control for income shocks. Income shocks are measured as the log difference in real HH income, top and bottom coded at 100 log points from the sample-specific mean. Marital status shocks are 1 fo those getting married, -1 for those whose marriage ends (though divorce, separation or death) and 0 for those without a marital status transition. Job shocks are 1 for those become employed, -1 for those leaving employment and zero for all others. Health shocks are changes in health status, self-reported on a 1-5 scale. The results for blacks are not broken down by religion because there are insufficient black Catholics and black non-Christians in the sample. Those who change religious affiliation are included in the "Other" group.

Appendix Table 1: Summary Statistics from the Consumer Expenditure Survey: 1982-1998

	Full Sample		White		Black	
Variable	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Contributes to a religious organization	0.37	0.48	0.37	0.48	0.35	0.48
Ln HH nondurable consumption	8.11	0.74	8.17	0.73	7.71	0.74
Ln p.c. nondurable consumption	7.17	0.76	7.24	0.74	6.76	0.79
Nondurable consumption (quarterly, in thousands of $1998)	4.44	4.05	4.65	4.18	2.99	2.81
P.c. nondurable consumption (quarterly, in thousands of $1998)	1.77	1.88	1.87	1.94	1.21	1.39
Δ Ln nondurable consumption	0.00	0.74	0.01	0.75	-0.02	0.71
Δ Ln p.c. nondurable consumption	0.00	0.75	0.00	0.75	-0.03	0.72
Ln HH income	9.88	2.11	9.94	2.12	9.40	2.04
Ln p.c. income	8.97	1.98	9.04	1.98	8.48	1.93
Missing ln income	0.04	0.18	0.04	0.19	0.03	0.18
HH income (in thousands of $1998)	37.61	29.53	39.36	29.97	24.32	21.42
P.c. income (in thousands of $1998)	15.37	13.87	16.21	14.20	10.03	10.29
Δ Ln HH income	0.04	0.85	0.04	0.85	0.04	0.91
Δ Ln p.c. income	0.03	0.86	0.03	0.85	0.02	0.93
Δ Ln HH income (bottom/top coded)	0.04	0.46	0.04	0.45	0.04	0.51
Δ Ln p.c. income (bottom/top coded)	0.03	0.47	0.03	0.46	0.03	0.53
Separated	0.04	0.19	0.03	0.17	0.11	0.32
Divorced	0.14	0.35	0.14	0.34	0.18	0.38
Widowed	0.03	0.17	0.03	0.16	0.06	0.24
Never Married	0.17	0.38	0.16	0.36	0.28	0.45
Δ Separated	0.00	0.08	0.00	0.08	0.00	0.10
Δ Divorced	0.00	0.09	0.00	0.10	0.00	0.08
Δ Widowed	0.00	0.05	0.00	0.04	0.00	0.06
Δ Never Married	0.00	0.09	0.00	0.09	0.00	0.09
Kids under 18 present in HH	0.47	0.49	0.46	0.49	0.55	0.48
Δ Kids under 18 present in HH	0.00	0.21	0.00	0.20	0.00	0.23
Household size	2.99	1.56	2.95	1.51	3.10	1.75
Δ Household size	0.03	0.58	0.02	0.55	0.05	0.75
Age	39.68	10.45	39.71	10.45	39.63	10.63
$Age^2/100$	16.83	8.54	16.86	8.55	16.84	8.67
High school	0.21	0.30	0.22	0.31	0.21	0.28
Some college	0.16	0.26	0.17	0.27	0.15	0.25
College degree	0.10	0.22	0.10	0.22	0.05	0.16
Post college degree	0.08	0.20	0.08	0.20	0.03	0.12
White	0.83	0.38	1	0	0	0
Black	0.12	0.33	0	0	1	0
Other race	0.05	0.22	0	0	0	0
N	32794		27219		3939	

Appendix Table 2: Summary Statistics from the NSFH: 1987/88 and 1992/94

	Full Sample		White		Black	
Variable	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Self-reported happiness	5.31	1.05	5.33	1.03	5.22	1.03
Δ Self-reported happiness	-0.05	1.62	-0.05	1.61	-0.01	1.61
Ln HH income	10.08	0.86	10.16	0.81	9.61	0.81
Ln p.c. income	9.06	0.92	9.15	0.87	8.61	0.87
Missing ln income	0.04	0.20	0.03	0.18	0.08	0.18
HH income (in thousands of $1998)	55.21	52.69	58.68	55.27	36.59	31.97
P.c. income (in thousands of $1998)	21.30	24.22	22.51	25.27	14.80	16.86
Δ Ln HH income	0.18	0.87	0.18	0.86	0.14	0.86
Δ Ln p.c. income	0.14	0.86	0.14	0.85	0.11	0.85
Δ Ln HH income (bottom/top coded)	0.18	0.57	0.18	0.56	0.16	0.56
Δ Ln p.c. income (bottom/top coded)	0.13	0.59	0.13	0.58	0.12	0.58
Missing Δ ln income	0.25	0.43	0.23	0.42	0.35	0.42
Married in both periods	0.54	0.50	0.59	0.49	0.30	0.49
Becomes married	0.14	0.34	0.14	0.35	0.12	0.35
Marriage ends	0.08	0.27	0.08	0.27	0.09	0.27
Not married in either period	0.24	0.43	0.20	0.40	0.49	0.40
Employed in both periods	0.65	0.48	0.67	0.47	0.59	0.47
Only employed in the second period	0.09	0.29	0.09	0.28	0.11	0.28
Only employed in the first period	0.13	0.33	0.13	0.33	0.13	0.33
Employed in neither period	0.13	0.33	0.12	0.32	0.17	0.32
Change in subjective health status	-0.13	0.84	-0.13	0.82	-0.12	0.82
Missing subjective health status	0.05	0.23	0.05	0.22	0.06	0.22
Separated	0.05	0.16	0.03	0.14	0.10	0.14
Divorced	0.14	0.30	0.13	0.29	0.16	0.29
Widowed	0.02	0.14	0.02	0.12	0.05	0.12
Never Married	0.15	0.32	0.12	0.29	0.28	0.29
Δ Separated	-0.01	0.26	-0.01	0.24	-0.02	0.24
Δ Divorced	0.01	0.33	0.01	0.34	0.03	0.34
Δ Widowed	0.01	0.13	0.01	0.12	0.02	0.12
Δ Never Married	-0.07	0.29	-0.07	0.28	-0.07	0.28
Kids under 18 present in HH	0.57	0.43	0.57		0.58	0.43
Δ Kids under 18 present in HH	-0.03	0.49	-0.02	0.49	-0.07	0.49
Household size	3.23	1.36	3.19	1.31	3.39	1.31
Δ Household size	0.08	1.52	0.06	1.47	0.12	1.47
Age	37.03	9.09	36.91	9.02	37.74	9.02
$Age^2/100$	14.53	7.07	14.44	7.01	15.13	7.01
High school	0.38	0.48	0.38	0.48	0.38	0.48
Some college	0.26	0.44	0.26	0.44	0.27	0.44
College degree	0.11	0.31	0.12	0.32	0.07	0.32

Post college degree	0.11	0.31	0.12	0.33	0.04	0.33
Black	0.16	0.37	0.00	0.00	1.00	0.00
Hispanic	0.07	0.25	99.00	0.00	0.00	0.00
Asian	0.01	0.11	99.00	0.00	0.00	0.00
Other race-ethnic group	0.00	0.07	0.00	0.00	0.00	0.00
Female	0.60	0.49	0.59	0.49	0.65	0.49
No Religion	0.06	0.23	0.06	0.24	0.03	0.24
Jewish	0.02	0.13	0.02	0.14	0.00	0.14
Baptist	0.19	0.39	0.12	0.33	0.53	0.33
Episcopalian	0.01	0.12	0.02	0.13	0.00	0.13
Lutheran	0.04	0.20	0.05	0.22	0.00	0.22
Methodist	0.07	0.25	0.07	0.25	0.06	0.25
Mormon	0.02	0.14	0.02	0.15	0.00	0.15
Presbyterian	0.02	0.15	0.03	0.17	0.00	0.17
Congregational	0.01	0.08	0.01	0.08	0.00	0.08
Protestant, no denomination	0.01	0.09	0.01	0.10	0.00	0.10
Other Christian	0.07	0.25	0.07	0.25	0.08	0.25
Other religions / missing	0.01	0.08	0.00	0.06	0.01	0.06
Frequency of (0-4 scale):						
friends / neighbors / relatives / colleagues	1.27	0.66	1.27	0.64	1.25	0.64
Group recreational activity	0.89	1.00	0.81	0.96	1.33	0.96
Going to a bar	0.77	0.94	0.80	0.95	0.62	0.95
Going to social event at church	0.97	1.03	1.00	1.05	0.80	1.05
Participation in the following types of organizations:						
Service or political organization	0.14	0.35	0.14	0.35	0.13	0.35
Work-related organization	0.19	0.40	0.20	0.40	0.17	0.40
Leisure groups	0.38	0.48	0.39	0.49	0.32	0.49
Religious organizations	0.30	0.46	0.28	0.45	0.40	0.45
N	5716		4697		924	