Do Senior Citizens Prefer Dividends? Local Clienteles vs. Firm Characteristics

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ABSTRACT

We examine the payout policy of U.S. firms over the period 1980-2008. Prior research indicates that firm characteristics, managerial preferences, and investor clienteles are all important factors in setting payout policy. Counter to the oft-reported positive relation between senior citizens and the use of dividends, our results indicate that senior citizens are either indifferent between dividends and repurchases or demand dividends and have no influence over firm policy. The evolution of firm characteristics, including the average firm size, age, and volatility of earnings over time best explains payout policy. Further, manager preference for flexibility drives the payout decision.

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1. Introduction

We examine two possible drivers of firm payout policy: senior citizen clientele and firm characteristics. Managers have increasingly preferred flexibility when setting payout policy (Brav, Graham, Harvey, and Michaely, 2005). Repurchases are thought to provide more flexibility than dividends, particularly when earnings are volatile. In addition to the average firm becoming younger and smaller over time, the preference for this flexibility is attributed to the diminishing propensity to pay dividends (Fama and French, 2001; Skinner, 2008). Both age and tax-based clientele theories indicate that certain investors may demand dividends, which may conflict with management preferences. We examine these non-exhaustive and non-mutually exclusive potential drivers in order to gain a better understanding of the determinants of payout policy.

Senior investors are commonly believed to prefer dividends to repurchases or capital gains.[1] This fact, combined with the observation that individual investors prefer local stocks (Ivkovic and Weisbenner, 2005), implies that firms headquartered in counties with a high proportion of dividends may be catering to seniors. However, over the last 30 years, the proportion of seniors has increased while the relative use of dividends has declined. The *time-series* relation between seniors and payout policy is unclear a priori. We utilize the full panel of data over this period to analyze both cross-sectional and time-series implications.

There are three possible relations between seniors and payout policy. Senior proportion may be unrelated, positively related, or negatively related to the use of dividends. The first possibility would be consistent with an insignificant relation between payout and seniors and may be due to indifference by seniors. Under the indifference scenario, forces other than demographics drive payout policy, and seniors do not seek to interfere with these forces via

[1] See, for example, Thaler and Shefrin (1981), Shefrin and Statman (1984), and Scholz (1992).

payout demands. Miller and Modigliani (1961) show that payout policy is irrelevant under a range of assumptions, although dividends may appear to be related to firm value because of an information effect. DeAngelo and DeAngelo (2006) show that payout policy is not irrelevant to firm value when constraints from Miller and Modigliani (1961) are relaxed. However, since both dividends and repurchases are generally found to be positive signals, the choice *between* the two payout methods may be irrelevant.[2] We note that this explanation does not conflict with the fact that the use of dividends has decreased over time while the proportion of seniors in the U.S. has increased. It may be that forces other than demographics drive payout policy and that senior citizenship has increased and dividends have decreased over the same period merely by coincidence.

A second possibility is that seniors demand dividends. Becker et al. (2011) find empirical evidence of this in cross-sectional tests, and we confirm these cross-sectional results in our robustness section. They note several possible explanations for the observed results. The demand for dividends may be due to consumption purposes (Miller and Modigliani, 1961; Shefrin and Thaler, 1998), self-control (Thaler and Shefrin, 1981), mental accounting (Shefrin and Statman, 1981), or tax motives (Scholz, 1992). The tax argument notes that seniors may have lower dividend tax rates than younger investors. However, as we consider in detail, dividends have historically been taxed at a higher rate than capital gains. As such, the tax motives may not provide a clear prediction. Regardless of the cause, in this scenario firms respond to current shareholder demands, and when there is a large presence of seniors, firms increase dividends.

[2] See Healy and Palepu (1988) and Grullon, Michaely, and Swaminathan (2002) for market reactions to dividends. See Grullon and Michaely (2004) for market reactions to repurchases. See Ha, Hong, and Lee (2011) for the information content (i.e., signaling effect) of dividends and share repurchases. Ha et al. (2011) show that broad dividends, which include both narrow cash dividends and share repurchases, signal both current undervaluation and future cash flows, which suggests that dividends and share repurchases are complementary in their signaling role by paying out permanent and temporary earnings, respectively.

Thus, we might expect to find a positive relation between the propensity to pay dividends and the proportion of seniors.

A third possibility is that, counter to the senior clientele theory and empirical evidence from Becker et al. (2011), seniors may prefer repurchases to dividends. This may be related to the tax implications for clienteles noted by Brav, Graham, Harvey, and Michaely (2008). Specifically, the U.S. tax code has traditionally applied a higher tax rate to dividends relative to capital gains. Prior to the 2003 tax law change, the top tax rate for dividends was 38.6% compared to 20% as the top capital gains rate. Under these conditions, seniors may prefer repurchases to dividends in order to time their earnings and to pay less tax. After 2003, when the highest tax rates for both dividends and capital gains were lowered to 15%, seniors should have theoretically been indifferent between dividends and repurchases with respect to tax implications. Under this scenario, we would expect to see a negative (positive) relation between proportion of seniors and dividends (repurchases) prior to 2003 and no relation after 2003.

We find the change in senior proportion in a county is unrelated to both dividends and repurchases, regardless of how the payout variables are measured. This is true in both cross-sectional and time-series analysis. Instead of the positive relation between the level of seniors and the use of dividends found in Becker et al. (2011), we initially observe a significant and negative relation based on the change in seniors over time when we utilize the control variables of their paper. We utilize a full time series of yearly population data from 1980-2008. Our analysis indicates that the proportion of seniors is increasing over time (i.e., non-stationary); thus, we take this into account in our analysis by using the change in proportion of seniors, which is more appropriate and results in an improvement over using levels.[3] A negative relation

[3] Nonstationarity of regressors with a stationary dependent variable creates a bias against rejecting a false null hypothesis (e.g., Granger and Newbold, 1974; Baffes, 1997). In this case, Granger and Newbold (1974) and others

is consistent with the third alternative referenced above, namely, that seniors prefer repurchases. However, after making empirical adjustments, the evidence supports the first possibility. Indeed, we find that once firm age, size, and earnings volatility (earnings growth volatility) are considered, there is no longer a significant relation between the proportion of seniors and payout policy. Further, the inclusion of these variables in the cross-sectional tests of Becker et al. (2011) reduces or eliminates the significance of the senior variable. This suggests that the inclusion of dynamic factors (i.e., earnings volatility) dominates the impact of a senior clientele. It is possible that seniors do in fact demand dividends, but firms do not cater to the preferences of the senior clientele. This may be particularly true of large firms which are less likely to respond to the demands of local individual investors. The observed relation in our paper then does not necessarily rule out a senior clientele. Rather, our results suggest that managerial preferences for flexibility combined with changing firm characteristics dominate senior clientele demand.

We attempt to determine if senior investors are indifferent or if their demands are ignored. We do this by focusing on firm size. Large firms, with more dispersed ownership on average, are less likely to respond to individual investor demand. We note that seniors' holdings represent a reasonably large proportion of all investments. As such, firms that ignore their preferences may alienate senior investors and thus face negative value implications.[4] We test this possibility by examining the interaction between a dummy variable for small firms and the change in seniors in our regressions. Theoretically, smaller firms should be relatively more likely to cater to local senior dividend demand. The interaction is negatively related to whether a firm pays dividends and is unrelated to the proportion of payout in dividends in our regressions. This indicates that senior proportion increases, in areas with small firms, are particularly related to a

suggest that we should use a first-differenced variable. As an alternative way to address this issue, Granger and Newbold (1974) also suggest that models should be built with both levels and changes.

[4] Becker et al. (2011) estimate that seniors represent 5%-6% of total stock ownership.

lower propensity to pay dividends. Thus, it is less likely that firms ignore the dividend demand of seniors and more likely that seniors do not particularly demand dividends.

We test the explanation that seniors demand repurchases, due to tax incentives, by including an interaction measure between a post-2003 tax reduction dummy and the senior proportion. We find that the senior proportion is negatively (not) related to the use of dividends relative to repurchases prior to (after) 2003. Thus, consistent with a senior repurchase clientele, we find evidence that seniors demand repurchases when capital gains have a relative tax advantage over dividends and are otherwise indifferent.

Our trivariate Granger-causality approach considers the ability of lagged senior proportion and lagged firm earnings volatility to predict current payout policy while controlling for past payout policy. Our results confirm that the proportion of seniors does not Granger-cause firm payout decisions. Further, our results indicate that the use of repurchases is positively Granger-caused by volatile earnings. Thus, our dynamic analysis suggests that firm characteristics, coupled with manager preference for flexibility, are more relevant than senior demand when making payout decisions.

Becker et al. (2011) focus on census population data from the years of 1980, 1990, and 2000 and find that dividend demand by seniors is an important determinant of payout policy in the cross-section. Similarly, Graham and Kumar (2006) find trading patterns in retail investors consistent with age and tax clienteles. With respect to time-series implications of an age-based clientele, Becker et al. (2011) suggest that, "While the dividend-demand hypothesis has strong *cross-sectional* predictions (companies located in areas with a larger fraction of seniors are more likely to pay dividends), it is unlikely to have affected the aggregate *time series* of dividend payments." They believe the lack of a time-series relation is due to the stability of the proportion

of seniors over time, but do not explicitly consider a time-series analysis. They do perform an indirect analysis of the change in the proportion of seniors by examining firm headquarter changes. Although their comment suggests that an insignificant relation between seniors and dividends in the time series would not be surprising, it is nonetheless important to examine explicitly. As discussed above, the a priori time series relation is not clear. Further, as Fama and French (2001) find that dynamic firm characteristics best explain dynamic payout policy, it is useful to see if this general finding holds when considering potentially powerful shifts in investor demographics. Indeed, we find that either correcting the regression approach to account for the change in the proportion of seniors or including dynamic firm factors such as earnings volatility (while leaving the econometric approach unchanged) yields an insignificant relation between seniors and the use of dividends.

The rest of the paper is organized as follows. In Section 2 we describe the data and methodology used in this study. In section 3 we present the results of our empirical analysis. We conclude in section 4.

2. Data and Methodology

2.1 Data

We collect accounting data, including data on dividends and repurchases, from Compustat. Additionally, like Becker et al. (2011), we utilize corporate headquarter data from Compustat to denote firm location. This approach was first taken by Coval and Moskowitz (1999, 2001) and later by Ivković and Weisbenner (2005).

Returns and ex-dividend dates are taken from CRSP. We consider two definitions of dividends: ordinary quarterly dividends (distribution code 1232) as well as all ordinary

dividends, which, in addition to ordinary quarterly dividends, includes ordinary semiannual (code 1242) and ordinary annual (code 1252) issuances. While the results herein are based on ordinary quarterly dividends, the conclusions reached are identical for the wider specification of dividends. We collect price and shares outstanding data from CRSP as well in order to control for size in our regression analysis. Size for year *t* is calculated based on CRSP data in December of year *t-1*.

In order to determine the prevalence of seniors in a given county, data from the U.S. Census is gathered and matched at the county level, based on the corporate headquarters information taken from Compustat. Becker et al. (2011) utilize data on seniors at the county level from the census years of 1980, 1990, and 2000. We, however, take advantage of the full time series and utilize the full panel of population estimates for each year over the period from 1980-2008.[5] Senior citizens are those aged 65 or older. We track, over time, the proportion of citizens in a county that are senior citizens. Specifically, the variable *Seniors* is the proportion of seniors (the number of citizens over the age of 65 in a given county-year divided by the total number of citizens in the county-year).

2.2 Regression Methodology

As in Becker et al. (2011), we use payout variables as the dependent variables in our empirical model. *Payer* is a dummy variable equal to one if the firm paid a dividend in a given year and zero otherwise. *Initiate* is a dummy variable equal to one if the firm began paying dividends in a given year and zero otherwise. *Dividend Yield* is a firm's dividend yield for the year. *Repurchase Yield* is the firm's repurchase yield for the year. We consider additional payout

[5]The most recent update provided at http://www.census.gov/popest/archives/ covers the years up to 2008. Data from 1980, 1990 and 2000 are exact numbers, taken from the U.S. Census Bureau. Figures from intervening years are based on population estimates. Estimates augment census levels by the use of actual birth, death, and migration data.

variables. We follow Skinner (2008) and create, *Dividend (Repurchase) Proportion*, which is the dollar amount of dividends (repurchases) for a given firm year divided by the total firm payout for the same year. Skinner (2008) uses these variables to document the increasing prevalence of repurchases relative to dividends. *Payout Ratio* is the sum of dividends and repurchases divided by market capitalization for a given firm-year.

We utilize the same control variables as Becker et al. (2011). Specifically, we include *Net Income*, *Cash*, and *Long-Term Debt*, which are each scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Two-year Lagged Return* is the compound monthly stock return of the past two years. *Asset Growth* is the natural log of the growth rate of assets over the prior year. Additionally, we include age-group indicator variables, which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years old, as well as industry-year interaction and state-year interaction dummy variables. Robust standard errors, based on firm clustering, are used in all regressions.

In addition to the controls used in Becker et al. (2011), we include *Age* which is the number of years since the firms' IPO. *Size* is the natural log of firm market value. *Age* and *Size* are included given that Fama and French (2001) find that the decline in the propensity to pay dividends is due in part to the average firm being smaller and younger over time. We include *Earnings Volatility* which is the standard deviation of operating income over the previous five years from year -4 to 0. These variables are included as dividends are more likely to be associated with stable and permanent earnings, while repurchases are more likely to be associated with more volatile and temporary earnings as well as more volatile earnings growth.[6]

[6] See, for example, Lee (1996), Jagannathan, Stephens, and Weisbach (2000), Guay and Harford (2000), Lie (2000), Kumar and Lee (2001), Lee and Rui (2007), and Lee and Suh (2011).

We further expand the approach of Becker et al. (2011) by considering all county-years between 1980 and 2008. This allows us to account for time-series dimensions not possible with their sample which concentrates on census years only. Thus, we offer both cross-sectional and time-series evidence.

2.3 Granger-causality

As we have a full time series of senior proportion (i.e., *Seniors*) data, we are able to examine the dynamic causal relation between seniors and firm payout. A dynamic analog to our previous questions of interest is to test if senior variable Granger-causes firm payout. Additionally, we test if earnings volatility Granger-causes firm payout. We specify the following trivariate vector autoregression (TVAR) model for the full panel of our data:

$$\begin{pmatrix} Payout_t \\ Seniors_t \\ Earnings\ Vol_t \end{pmatrix} = \begin{pmatrix} A_{11}(L), & A_{12}(L), & A_{13}(L) \\ A_{21}(L), & A_{22}(L), & A_{23}(L) \\ A_{31}(L), & A_{32}(L), & A_{33}(L) \end{pmatrix} \begin{pmatrix} Payout_{t-1} \\ Seniors_{t-1} \\ Earnings\ Vol_{t-1} \end{pmatrix} + \begin{pmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \end{pmatrix}, \qquad (1)$$

where L is the lag operator (i.e., $L^n x_t = x_{t-n}$) and $A_{ij}(L)$ is a polynomial in the lag operator (i.e., $A_{ij}(L) = [\sum_{s=1}^{k} A_{ij}(s) L^{s-1}]$ for i, j = 1, 2, 3.

Payout is the firm payout considered in the analysis. We examine *Dividend Payer*, *Dividend Yield*, *Dividend Proportion,* and *Repurchase Yield* as payout variables. *Seniors* is either the level or change in seniors. *Earnings Vol* is earnings volatility. All variables are defined as above with one exception. Unlike the county level data used above, in our Granger-causality analysis we use aggregate data. In order to do this, we generate a national proportion of seniors

for each year, as well as aggregate payout and earnings volatility variables based on the average firm in a given year. We use the lag length k = 2.[7]

Seniors is said to Granger-cause *Payout* if we reject the following null hypothesis:

$$H_0: A_{12}(L) = 0 \text{ (i.e., } A_{12}(s) = 0 \text{ for all s).} \quad (2)$$

In other words, if we reject the null hypothesis in equation (2), then it indicates that lagged *Seniors* help better predict current payout after controlling for past payout and past earnings volatility. We also examine the net (cumulative) effect of lagged *Seniors* on current payout as follows:

$$H_0 : \sum_{s=1}^{k} A_{12}(s) = 0. \quad (3)$$

In testing the null hypothesis in equation (3), we are able to assign a direction to the observed causality. We are also interested in testing if *Earnings Vol* may Granger-cause *Payout*. *Earnings Vol* is said to Granger-cause *Payout* if we reject the following null hypothesis:

$$H_0: A_{13}(L) = 0 \text{ (i.e., } A_{13}(s) = 0 \text{ for all s).} \quad (4)$$

Additionally, we are interested in the net (cumulative) effect of *Earnings Vol* on *Payout*. Thus, we test:

$$H_0 : \sum_{s=1}^{k} A_{13}(s) = 0. \quad (5)$$

[7] Lag length is based on the frequently used AIC (Akaike, 1974) and Schwarz Bayesian information criterion (SBIC). Both yield the same lag in our sample.

2.4 Summary Statistics and Stationarity Tests

Summary statistics of the variables used in our regressions are presented in Panel A of Table 1. Although our sample period differs from Becker et al. (2011), our sample statistics indicate that both our payout and senior variables are similar in value. We compare the average percent of firms paying dividends of 47% in Becker et al. (2011) to our sample, for which the average is around 39.67%, and conclude the samples are similar despite different coverage with respect to the specific years included. We find that, consistent with Becker et al. (2011), the average proportion of seniors in a given county for our sample is around 12%. Our sample exhibits significant variation among counties in the proportion of seniors as the minimum proportion is 3% and the maximum is 33%. Additionally, we find that the median year-over-year change in seniors is around 0.10% with a minimum change of a nearly 14% reduction and maximum change of a nearly 22% increase. We winsorize year-over-year change in seniors at the 1st and 99th percentile in our regression analysis in order to mitigate the impact of outliers in our sample.[8]

[Insert Table 1 here]

The use of the full panel of the senior variable leads to an important difference in our approach from previous literature. It is desirable for both left- and right-hand side variables in a regression to be stationary. If a variable is found to be non-stationary through unit root tests, the change in the variable needs to be used. However, using the change in a variable that is already stationary creates its own problems (i.e., a potential over-differencing issue which could lead to less stable coefficient estimates). Thus, it is important to carefully identify the stationarity of each variable. We examine this issue using the panel stationarity tests of Hadri (2000) and Im,

[8] Our results are qualitatively identical when we do not control for outliers in our key variable and are available upon request.

Pesaran, and Shin (2003) (IPS). While the former tests a null hypothesis of all panels being stationary, the latter test assumes that all panels are non-stationary under the null. These statistics are chosen because they are designed for panels with a large number of observations but a relatively small number of periods.

The results of our panel stationarity tests are found in Panel B of Table 1. We conduct the unit root test on firms that are present for the period from 1990 to 2008 in order to ensure a large enough sample as well as a long enough time period to provide an adequate test of stationarity.[9] We find that the null of all panels being stationary is rejected for *Seniors* as well as all control variables. This indicates that all variables considered are non-stationary. However, the Hadri (2000) test uses a null that ALL panels are stationary, which makes rejection of the null very likely with a large number of panels. This motivates our additional consideration of the IPS test which uses a null of non-stationary. This test only assumes non-stationarity in a large proportion of the panels, as opposed to ALL panels as in Hadri (2000). We fail to reject the null of non-stationarity for *Seniors* and *Size* (*Log of Market Value*). For these variables, the results suggest that we are unable to assume stationarity. Thus, *Seniors* and *Size* (*Log of Market Value*) warrant the use of the change (i.e., first difference) in our regressions. We thus create *Change in Seniors* (*Change in Size*) which is the county proportion of seniors (market value) in year t, minus the county proportion of seniors (market value) in year t – 1.

3. Results

3.1 Change in Seniors Panel Regressions

[9] Results are robust to examining firms that are present for the entire period from 1980 to 2008 as well as to focusing on each respective decade (i.e., 1980 to 1989, 1990-1999, and 2000 to 2008).

Figure 1 shows the time series of the average proportion of seniors in the U.S., the average firm's propensity to pay dividends, the proportion of total payout issued in the form of repurchases, and earnings volatility. While the proportion of seniors has steadily increased over the 1980-2008 period, the propensity to pay dividends has declined and the proportion of payout in the form of repurchases has increased. At first inspection, this figure is not consistent with seniors demanding dividends. We note that the pattern observed over time for earnings volatility closely matches the pattern for the relative use of repurchases. Thus, the figure is consistent with either senior preference for repurchases, or senior indifference to payout policy combined with other non-demographic factors (i.e., increased volatility of earnings), or senior demand for dividends but a lack of influence over policy. We provide more rigorous tests of the relation below.

[Insert Figure 1 here]

In Table 2, we use county level sorts, based on the change in proportion of seniors over the time period examined. This provides a longer horizon view of the role that changing demographics plays in payout policy. In our analysis, we require counties to have at least 3 incorporated firms in order to be included in the sample. This is done in order to make county comparisons more balanced in terms of number of firms.[10] We sort our sample into quintiles such that quintile 1 (5) contains the counties with the smallest (largest) influx of seniors.[11] Within each quintile, firms are aggregated so that county affiliation is no longer relevant. *Dividend Payer%* is the percentage of firms that pay dividends. *Dividend Proportion%* is the percentage of distributions that are granted via dividends.

[10] This results in less than 8% of firms and less than 5% of total market capitalization being excluded and does not change the interpretation of our results.
[11] Note that quintile 1 includes counties with a decline in the proportion of seniors over the decade.

We implement the sort for each decade (i.e., 1980-1989, 1990-1999, and 2000-2008), separately. In Table 2, when focusing on the 1980-1989 period, quintile 5 (the quintile with the greatest influx of seniors) is the third highest quintile with respect to proportion of dividend payers, as well as payout distributed via dividends. For the (1980-1989) decade, there appears to be no discernible relation between influx in seniors and payout policy. For the 1990-1999 period, quintile 5 is associated with the third highest *Dividend Payer%* and the lowest *Dividend Proportion%*. Thus, for this period, an influx in seniors appears unrelated to the propensity to pay dividends. However, change in seniors is *negatively* related to proportion of payout via dividends. Finally, for the 2000-2008 period, quintile 5 is associated with a nearly 20% lower *Dividend Payer%* and 11% lower *Dividend Proportion%* than quintile 1. This evidence suggests that when examining longer-horizon population changes, an influx in seniors is negatively related to the use of dividends in both a relative and absolute sense.

One possible explanation for this result is that firms in counties with an influx of seniors may exhibit characteristics consistent with non-dividend paying firms. This explanation is consistent with the observation from Table 2 that counties in quintile 5 are the smallest firms in terms of market capitalization for all three decades. We further examine the role of firm characteristics in subsequent tests.

[Insert Table 2 here]

Table 3 provides a more rigorous framework to examine the relation observed in Figure 1 and Table 2. Like Becker et al. (2011), we regress dividend payout variables on our measures of seniors and controls. Consistent with Figure 1 and Table 2, we find a negative and significant (at the 5% level) coefficient for change in seniors in the dividend payer specification. Thus, an increase in seniors in a given county is associated with a reduction in the propensity of firms in

that county to pay dividends. This is directly contrary to the existence of a senior dividend clientele effect. Change in seniors is not significantly related to firms initiating dividends or to dividend yield. The insignificance in these specifications is consistent with senior indifference with respect to dividends. Change in seniors is negatively related to the proportion of payout distributed via dividends (significant at the 5% level). This is consistent with firms becoming less likely to pay dividends over time, even as the proportion of seniors has increased. Further, this suggests that the proportion of payout in the form of repurchases is *positively related* to an increase in seniors. We note that *Volatility* is negative and significantly (at the 1% level) related to all dividend variables. Thus, regardless of how we measure the use of dividends, firms with more volatile stock returns are less likely to use dividends. This suggests that firm characteristics, coupled with managerial preference for flexibility, play an important role in setting payout policy.

[Insert Table 3 here]

Seniors may demand repurchases in favor of dividends on the basis of the historical tax advantages of capital gains relative to dividends. The senior dividend clientele theory, however, suggests there should be no relation between seniors and the firm's propensity to repurchase. In Table 4 we repeat our regressions from Table 3 except we use *Repurchase Yield, Repurchase Proportion*, and *Payout Ratio* as dependent variables.

In Table 4, *Repurchase Yield* is not related to the change in senior proportion. This is consistent with Becker et al. (2011) and suggests that seniors do not demand more repurchases in an absolute sense. As *Repurchase Proportion* is just (1 – *Dividend Proportion*), defined for Table 3, it is not surprising that we find that change in seniors is positively related to *Repurchase Proportion* (significant at the 5% level). Thus, an increase in seniors is related to a greater

portion of firm payout via repurchases. This may be due to firms ignoring the wishes of the senior dividend clientele, or to the trend of U.S. firms paying a larger portion of distributions via repurchases while seniors are indifferent between dividends and repurchases, or to seniors' relative preference for repurchases based on tax considerations. *Payout Ratio* is not related to change in senior proportion. An increase in seniors then is not related to *how much* a firm pays out, but is associated with *how* the firm decides to distribute payout. This is consistent with senior indifference with respect to the level of payout and with a preference by seniors to receive repurchases given that a firm has already decided to pay distributions. We note that *Volatility* is positively and significantly related (at the 1% level) to all repurchase variables. This is consistent with managers preferring repurchases to dividends due to the desire for flexibility in relatively uncertain times.

[Insert Table 4 here]

We note that a positive relation between *Repurchase Proportion* and change in seniors does not necessarily suggest that seniors prefer repurchases. It could still be the case that seniors' demands are ignored or that the choice between dividends and repurchases is irrelevant for seniors. However, irrelevancy alone does not fully explain our results as we do not observe an insignificant relation between change in seniors and payout variables. Instead, we observe a significant and negative relation between change in seniors and the use of the dividends. One potential explanation is that firms headquartered in counties with increasing senior populations happen to exhibit characteristics of non-dividend paying firms. We found preliminary evidence of this in the Table 2 sorts in which we observed that firms in counties with the largest decade increases in seniors were smaller, on average, than other firms.

We provide a more rigorous analysis of the relation between change in seniors and firm characteristics in Table 5. We use the same control variables as in previous regressions and focus on dependent variables for *Size*, *Age*, *Earnings Volatility (Earnings Growth Volatility),* and *Profit,* which are measured by the log of market value, years since IPO, the standard deviation of earnings (growth) over the five-year period from year -4 through 0, and net income divided by equity, respectively.[12]

Consistent with our sorting results in Table 2, *Size* is negatively related to change in seniors (significant at the 1% level). Firms headquartered in counties with more rapidly aging populations tend to be smaller. As we know that smaller firms are, on average, less likely to pay dividends, this may provide an explanation for our observed results. We would also expect younger firms to be less likely to pay dividends. *Age* is negatively related to change in seniors (significant at the 1% level), which is also consistent with firms headquartered in aging counties exhibiting characteristics of non-dividend paying firms. Dividends are more likely to be associated with stable and permanent earnings, while repurchases are more likely to be associated with more volatile and temporary earnings.[13] *Earnings Volatility* and *Earnings Growth Volatility* are positively related to change in seniors (significant at the 1% level). As the average U.S. firm has become relatively smaller and younger over time, the average volatility of firm earnings has increased. *Profit* is not related to change in seniors. Based on this variable, it does not appear that firm performance is significantly different in counties with an influx of seniors.

[Insert Table 5 here]

[12] Our definition of earnings volatility is from Jagannathan, Stephens, and Weisbach (2000).
[13] See, for example, Lee (1996), Jagannathan, Stephens, and Weisbach (2000), Guay and Harford (2000), Lie (2000), Kumar and Lee (2001), Lee and Rui (2007), and Lee and Suh (2011).

Table 5 demonstrates that counties with an increase of seniors contain smaller and younger firms and firms with more volatile earnings on average. Although we already control for the assets of the firm and also include age dummies, we add *Size*, *Age*, and *Earnings Volatility* to the existing controls in Table 6 in order to explicitly account for these characteristics. After adding the new controls, the coefficient of *Change in Seniors* is insignificant for all payout dependent variables.[14] Thus, with respect to the payout decision, our results suggest seniors are not a significant factor, and the previously observed negative relation in Tables 2 and 3 is likely due to other established payout factors. This is consistent with senior indifference to dividend policy or lack of senior influence over firm policy.[15] Further, the results suggest that factors related to management preferences (i.e., the desire for flexibility) and the evolution of firm characteristics are the major drivers of payout policy.

[Insert Table 6 here]

Another possibility is that, despite the observed negative relation between seniors and dividends found in Tables 2 and 3 and the insignificant relation in Table 6, seniors do in fact demand dividends, but large firms ignore this desire. In Table 7, we interact a dummy variable for small firm status (below median market capitalization) with our *Change in Seniors* variable. We maintain the same regression framework as previously undertaken and focus on the dependent variables *Dividend Payer*, *Dividend Proportion*, and *Payout Ratio*.

We find that the interaction between small firms and the change in seniors is negative and significant at the 5% level (insignificant) when *Dividend Payer (Dividend Proportion* and *Payout Ratio)* is the dependent variable. With respect to the negative relation when *Dividend Payer* is the dependent variable, the results suggest that even for the firms most likely to respond

[14] Results are qualitatively identical when using *Earnings Growth Volatility* instead of *Earnings Volatility*.
[15] We do not include *Profit* in the reported results as it is not significantly related to change in seniors. However, in unreported results, our conclusions are qualitatively identical when controlling for this variables.

to investor demand, the relation between senior proportion and the decision to pay dividends is negative. Additionally, *Change in Seniors* is insignificant in all three regressions. Consistent with Table 6, further controlling for firm size, age and earnings volatility renders the relation between *Change in Seniors* and payout variables insignificant.

[Insert Table 7 here]

The third possible explanation for the negative relation between seniors and dividends found in Tables 2 and 3 and the insignificant relation in Table 6 is that seniors demand repurchases. Seniors may prefer repurchases to dividends when capital gains are given preferential tax treatment relative to dividends. This describes the U.S. tax code prior to the 2003 tax code revisions. Thus, in Table 8 we include controls used in previous regressions and add a dummy variable for years after 2003 and an interaction between the post-2003 period and *Change in Seniors*. In all specifications, the post 2003 interaction with *Change in Seniors* is unrelated to the payout variables.

If seniors prefer repurchases for tax reasons, we would expect to see a negative and significant relation (insignificant relation) between *Dividend Proportion* and *Change in Seniors* for the period before (after) 2003. Consistent with this explanation, we find that *Change in Seniors* is negative and significant (at the 5% level) when *Dividend Proportion* is the dependent variable for the pre-2003 period. Further, the interaction between the post-2003 period and *Change in Seniors* is unrelated to *Dividend Proportion*. Combining this result with the *Dividend Payer* results suggests that seniors do not seek out dividend paying firms, a result that holds even after revisions to the U.S. tax code treat capital gains and dividends identically. Given that a firm is paying out earnings, seniors are associated with firms that issue a relatively larger proportion of repurchases relative to dividends before the tax cuts of 2003 and are not associated with this

proportion after the tax cuts of 2003. Consistent with the overall decline in the use of dividends, the *Post 2003* dummy variable is negative and significant in all specifications.

[Insert Table 8 here]

3.2 Granger-causality

It is possible that demographic changes have a dynamic relation to current payout policy. It is also possible that earnings volatility causes payout policy. In Table 9 we perform Granger-causality tests which allow us to address these issues. Unlike previous regressions, the Granger-causality tests in Table 9 focus on aggregate data. Specifically, we generate a national proportion of seniors for a given year and combine this data with average firm information for a given year. Thus, Table 9 provides a unique way to examine the relation between seniors and payout variables. We use a trivariate model that simultaneously considers the ability of lagged payout variables, lagged seniors and lagged earnings volatility to predict current payout policy.

At the top of Table 9, we present results which consider whether seniors and earnings volatility Granger-cause *Dividend Payer*. We examine both the non-stationary *Level of Seniors* variable from Becker et al. (2011) and the stationary *Change in Seniors* variable discussed earlier in this paper as proxies for seniors. We find that *Change in Seniors* (*Level of Seniors*) Granger-causes (does not Granger-cause) *Dividend Payer.* In other words, after controlling for past payout policy and earnings volatility, lagged changes in senior proportion help us better predict whether a firm pays dividends. However, the net (cumulative) effect of the relation is insignificant. Therefore, there is no evidence in the net (cumulative) effect test that seniors have a preference for dividends. In both tests, *Earnings Volatility* is unrelated to *Dividend Payer.*[16]

[16] We have conducted this analysis using *Earnings Growth Volatility* and the results, although omitted for brevity, are qualitatively identical to those reported.

In the second panel of Table 9, we consider whether seniors and earnings volatility Granger-cause *Dividend Yield.* For both the seniors and earnings volatility variables, there is not a significant relation with respect to *Dividend Yield*.

In the third panel of Table 9, we examine whether seniors and earnings volatility Granger-cause *Dividend Proportion*. We find that *Level of Seniors* Granger-causes *Dividend Proportion* and that the net (cumulative) effect of the relation is negative (both tests significant at the 1% level). We find that *Change in Seniors* is unrelated to *Dividend Proportion*. The results are further evidence of the importance of correctly specifying the senior variable. Using lagged *Level of Seniors* addresses the dynamic causal impact of the variable. Doing so leads to the opposite conclusions of Becker et al. (2011), who examine *Level of Seniors* only in the cross-section. Further, when we use *Change in Seniors* there is no longer a causal relation between senior proportion and *Dividend Proportion*. For this and other dividend variables, *Earnings Volatility* does not generally Granger-cause dividends (with the exception of *Dividend Proportion* when we use *Change in Seniors*).

In the fourth panel of Table 9, we present results which consider whether seniors and earnings volatility Granger-cause *Repurchase Yield*. Neither *Level of Seniors* nor *Change in Seniors* Granger-causes *Repurchase Yield*. However, *Earnings Volatility* does Granger-cause *Repurchase Yield* (significant at the 1% level) regardless of the senior variable used. Further, the net (cumulative) effect of *Earnings Volatility* is positive for *Repurchase Yield* (significant at the 5% level). This is consistent with management preferring flexibility in payout policy decisions, especially given certain firm characteristics. Specifically, when earnings are more volatile and less permanent, managers prefer to use repurchases for payout in order to avoid future dividend cuts. Collectively, the results of Table 9 suggest that the proportion of seniors is not dynamically

related to payout decisions and that earnings volatility is unrelated to the use of dividends but positively related to the use of repurchases. Consistent with our panel regressions, the results suggest that firm payout policy is driven by factors other than senior demand. This is consistent with either indifference on the part of seniors with respect to the decision between dividends and repurchases or lack of influence by senior investors over firm decisions.

[Insert Table 9 here]

3.3 Cross-sectional Regressions

In Table 10 we replicate the cross-sectional regressions of Becker et al. (2011) except that we consider age, earnings volatility and earnings growth volatility controls in various specifications. The inclusion of these controls eliminates (reduces) the significant relation between *Seniors* and *Dividend Payer* and *Dividend Initiate* (*Dividend Yield*). This highlights the importance of considering other factors related to firm payout decisions when examining the role of clienteles. For each dependent variable, we run one specification with the new controls and one without. In the specification without the new control variables, we restrict the sample to only those observations for which the new controls are available in order to rule out a changing sample as an explanation for the observed results. The results do not suggest that the sample is responsible for the reduction in significance of seniors.

[Insert Table 10 here]

Table 11 follows the same approach as Table 10 with one important change. We focus on the change in seniors in Table 11 instead of the level of seniors from Table 10. Further, while our previous change in seniors analysis focuses on year-over-year changes, Table 11 uses decade-over-decade changes for census years only (i.e., 1990 over 1980 and 2000 over 1990, respectively).

This approach has two notable benefits. First, while our previous year-over-year analysis is econometrically justifiable given the non-stationarity of seniors, the economic implications of single year changes in demographics on following year firm decisions can be potentially problematic. Specifically, our finding that change in seniors is unrelated to payout may be driven by the fact that firms do not respond as quickly to demographic changes as our earlier models would suggest. The model used in Table 11 uses the previous ten year change in seniors, which should allow for firms to adequately adjust for demographic changes if they so choose. Second, it may be argued that our reliance on census estimates based on census year only data yields results that are not directly comparable to Becker et al. (2011). The analysis in Table 11 uses census year data only, which should alleviate concerns related to the use of estimates.

The results in Table 11 are consistent with our previous results. Specifically, we find that in all but one specification change in seniors is unrelated to payout. The one exception reveals a negative relation between change in seniors and dividend yield. Both the insignificant results and the negative relation are inconsistent with firms responding to seniors demanding dividends even over longer periods.

[Insert Table 11 here]

3.4 Robustness

In order to ensure our results are not due to the choice of methodology, we consider an alternative approach utilized by Fama and French (2001). They employ Fama and MacBeth (1973) regressions with payout variables as the dependent variables and firm profitability, asset growth, market-to-book, and the NYSE size percentile for a firm in a given year as control variables. We use this approach for the dependent variables *Dividend Payer*, *Dividend Proportion*, and *Payout Ratio* in Table 12.

Our results are consistent with the earlier analysis. Specifically, change in seniors is negatively related to *Dividend Payer* (significant at the 5% level) and not related to either *Payout Ratio* or *Dividend Proportion* when our specifications do not control for firm age and earnings volatility.

[Insert Table 12 here]

We also confirm that our sample is consistent with census data used in Becker et al. (2011). We replicate their cross-sectional regressions focusing on the census years of 1980, 1990, and 2000 in Table 13. In order to be consistent with Becker et al.'s (2011) analysis, we do not use the change in seniors in a county and instead include the level. Once we eliminate the time-series nature of our analysis, our results are consistent with Becker et al. (2011). Specifically, in Table 13, we find that *Seniors* is positively related to the propensity to pay dividends, the propensity to initiate dividends, and dividend yields (all significant at the 1% level). Thus, it does not appear that our results are driven by the use of a different measure of seniors than Becker et al. (2011) or other data concerns.

[Insert Table 13 here]

4. Conclusion

The use of dividends has declined over time while the relative importance of repurchases has increased (e.g., Fama and French, 2001; Skinner, 2008). Previous work documents the importance of firm characteristics and senior clienteles in shaping payout policy. We consider both factors and seek to determine which best explains firm payout decisions.

Previous literature (Becker et al., 2011) documents the existence of a cross-sectional senior dividend clientele effect in which individuals over the age of 65 prefer dividends to

repurchases or capital gains. In this paper, for the first time, we examine the relation using a full panel data set that exploits time-series patterns between seniors and payout policy. Instead of a positive relation between seniors and dividends, as found by other authors in the cross section (which we confirm), we find a negative relation between the change in seniors and the propensity to pay dividends. Further, once we control for firm characteristics including age, size and earnings volatility, the relation between senior proportion and payout variables is no longer significant.

These results are consistent with senior indifference to firm payout or with firms ignoring the demands of seniors. Instead of senior clientele demand determining payout policy, we find that firm characteristics, coupled with managerial preference for flexibility, drive payout policy. Granger-causality tests confirm that senior clientele is not related to use of dividends while earnings volatility is positively related to the use of repurchases. This suggests that management's desire for flexibility, particularly when earnings are volatile and less permanent, causes them to utilize repurchases.

Our results are not sensitive to methodology and are not the result of a non-standard sample. We provide a comprehensive picture of the impact of seniors and changing firm dynamics on U.S. payout policy over the period of 1980-2008. The results may be of particular interest as firms decide how to address their payout policies to fit an aging population.

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Table 1
Summary Statistics and Stationarity Tests

Dividend Payer is an indicator variable equal to one if the firm pays dividends and zero otherwise. *Dividend Initiate* is an indicator variable equal to one if the firm initiated dividends in a given year and is zero otherwise. *Dividend Yield* is a firm's dividend yield for the year. *Dividend (Repurchase) Proportion* is the dollar amount of dividends (repurchases) for a given firm year divided by the total firm payout for the same year. *Repurchase Yield* is the firm's repurchase yield for the year. *Repurchase (Dividends)* is the dollar amount of firm repurchases (dividends) in a given year. *Payout Ratio* is dividends plus repurchases divided by firm market value. *Seniors* is the proportion of individuals over the age of 65 in a given county. *Change in Seniors* is the year-over-year change in the proportion of seniors in a given county. *Hadri (IPS)* is the panel stationarity test of Hadri (2000), which has a null hypothesis of all panels are stationary (Im, Pesaran, and Shin (2003) which assumes that all panels are non-stationary under the null).

Panel A: Summary Statistics

	Mean	Median	Min	Max	SD	N
Dividend Payer (%)	39.67	0.00	0	100.00	48.92	53,568
Dividend Initiate (%)	1.38	0.00	0	100.00	11.67	53,568
Dividend Yield (%)	1.79	0.77	0	10.74	2.44	53,396
Dividend Proportion	0.43	0.32	0	1.00	0.43	59,842
Repurchase Yield (%)	0.78	0.13	0	11.43	1.84	59,842
Repurchase ($1000s)	59,268	1,516	0	921,000	167,666	59,842
Dividends ($1000s)	33,104	1,385	0	502,245	91,352	59,842
Payout Ratio	0.16	0.04	0	170.14	1.16	59,842
Repurchase Proportion	0.57	0.68	0	1.00	0.43	59,842
Seniors	0.12	0.12	0.03	0.33	0.03	59,842
Change in Seniors	0.000	0.001	-0.139	0.218	0.002	59,842

Panel B: Stationarity Tests

	Hadri - Reject Stationarity	IPS - Reject Non-stationarity
Dividend Payer (%)	yes	yes
Dividend Initiate (%)	yes	yes
Dividend Yield (%)	yes	yes
Dividend Proportion	yes	yes
Repurchase Yield (%)	yes	yes
Repurchase ($1000s)	yes	yes
Dividends ($1000s)	yes	yes
Total Payout ($1000s)	yes	yes
Repurchase Proportion	yes	yes
Seniors	yes	no
Change in Seniors	yes	yes
Log of Market Value	yes	no

Table 2
County Sorts by Change in Seniors Over Each Decade

We sort our sample so that counties with the smallest influx of seniors (or a decline in seniors) over the decade examined are found in quintile 1 and counties with the largest increase in seniors are found in quintile 5. Within each quintile firms are aggregated so that county affiliation is no longer relevant. Within each quintile, *Firms* is the number of firms in the quintile, *Mean Size* is the average market value for a firm in the quintile (in millions), *Dividend Payer%* is the percentage of firms that pay dividends, *Dividend Proportion%* is the percentage of distributions that are granted via dividends.

1980-1989				
Δ Senior %	Firms	Mean Size	Dividend Payer%	Dividend Proportion %
1	1274	678	42.75%	40.16
2	1212	550	37.38%	46.11
3	650	736	48.77%	47.98
4	493	709	49.70%	43.41
5	524	465	46.20%	45.28

1990-1999				
Δ Senior %	Firms	Mean Size	Dividend Payer%	Dividend Proportion %
1	1366	3721	35.45%	35.47
2	1101	2027	38.43%	43.16
3	1098	2291	31.73%	42.08
4	1118	3192	30.75%	34.65
5	524	1595	34.73%	27.55

2000-2008				
Δ Senior %	Firms	Mean Size	Dividend Payer%	Dividend Proportion %
1	569	2866	54.64%	29.69
2	851	2852	48.94%	33.68
3	736	4070	49.66%	18.19
4	490	2904	47.35%	21.78
5	514	2747	35.01%	18.91

Table 3
Dividend Payout and Change in Seniors

Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Two-year Lagged Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Initiate	Dividend Yield	Dividend Proportion
Change in Seniors	-533.582*	7.151	0.803	-5.360*
	(218.638)	(26.770)	(10.373)	(2.303)
Net Income	1.445	0.399**	0.107	0.023
	(1.146)	(0.109)	(0.092)	(0.013)
Cash	-40.892**	0.392	-1.018**	-0.381**
	(2.639)	(0.280)	(0.126)	(0.035)
Q	-0.510*	-0.079**	-0.003	0.004
	(0.211)	(0.015)	(0.018)	(0.002)
Debt	-11.584**	0.181	0.573**	-0.061**
	(1.607)	(0.180)	(0.102)	(0.023)
Volatility	-184.005**	-3.599**	-7.337**	-1.300**
	(11.765)	(0.363)	(0.499)	(0.147)
Two-Year Lagged Return	1.518**	0.150**	0.026**	0.021**
	(0.175)	(0.034)	(0.008)	(0.003)
Change in Size	4.611**	0.555**	0.075**	0.009*
	(0.300)	(0.068)	(0.020)	(0.004)
Log of Assets	0.111**	-0.003**	0.004**	-0.000**
	(0.025)	(0.001)	(0.001)	(0.000)
Asset Growth	-0.178	-0.048*	-0.003	-0.001
	(0.096)	(0.024)	(0.003)	(0.001)
Constant	75.152**	2.869**	2.247**	0.693**
	(1.673)	(0.354)	(0.077)	(0.020)
Observations	95,054	95,054	94,682	59,842
R-squared	0.30	0.01	0.19	0.18

Table 4
Change in Seniors, Repurchases, and Payout Ratio

Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Two-year Lagged Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Repurchase Yield	Repurchase Proportion	Payout Ratio
Change in Seniors	1.927	5.360*	0.396
	(18.259)	(2.303)	(2.657)
Net Income	-0.052	-0.023	-0.015
	(0.037)	(0.013)	(0.014)
Cash	-0.232	0.381**	-0.004
	(0.234)	(0.035)	(0.034)
Q	-0.085**	-0.004	-0.006**
	(0.016)	(0.002)	(0.001)
Debt	0.780**	0.061**	0.155**
	(0.237)	(0.023)	(0.056)
Volatility	5.075**	1.300**	0.431**
	(0.703)	(0.147)	(0.074)
Two-Year Lagged Return	-0.182**	-0.021**	0.009**
	(0.036)	(0.003)	(0.003)
Change in Size	0.439**	-0.009*	-0.168**
	(0.071)	(0.004)	(0.019)
Log of Assets	0.000	0.000**	0.000
	(0.000)	(0.000)	(0.000)
Asset Growth	0.193	0.001	0.008
	(0.140)	(0.001)	(0.006)
Constant	0.033	0.307**	0.017
	(0.138)	(0.020)	(0.020)
Observations	92,621	59,871	92,452
R-squared	0.02	0.18	0.02

Table 5
Change in Seniors and Firm Characteristics

Size is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* (*Earn. Growth Vol.)* is the standard deviation of operating income (growth) over the previous five years from year -4 to 0. *Profit* is net income divided by equity. *Change in Seniors* is the year-over-year change in the proportion of seniors in a given county. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Two-year Lagged Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm, are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Size	Age	Earnings Volatility	Earn. Growth Vol.	Profit
Change in Seniors	-28.128**	-48.747**	12.847**	21.629**	0.040
	(9.853)	(13.001)	(4.942)	(6.497)	(0.220)
Net Income	0.113*	0.037	-0.089*	-0.074	0.025*
	(0.052)	(0.024)	(0.037)	(0.041)	(0.012)
Cash	-0.526**	-0.813**	2.050**	1.258**	0.012
	(0.114)	(0.114)	(0.084)	(0.095)	(0.008)
Q	0.089**	0.008	0.105**	-0.012	-0.008**
	(0.015)	(0.007)	(0.012)	(0.008)	(0.001)
Debt	0.455**	0.172**	0.293**	-0.220**	0.007
	(0.116)	(0.066)	(0.036)	(0.047)	(0.006)
Volatility	-6.407**	-1.470**	5.071**	5.763**	-0.083**
	(0.337)	(0.136)	(0.307)	(0.415)	(0.013)
Two-Year Lagged Return	0.163**	-0.008	-0.057**	-0.033**	0.005**
	(0.013)	(0.006)	(0.006)	(0.006)	(0.001)
Change in Size	0.576**	0.048**	-0.237**	-0.109**	0.005*
	(0.018)	(0.014)	(0.011)	(0.011)	(0.002)
Log of Assets	0.014**	0.006*	-0.003**	-0.001**	-0.000**
	(0.003)	(0.003)	(0.001)	(0.000)	(0.000)
Asset Growth	0.040*	-0.012	0.035**	0.009*	-0.005*
	(0.019)	(0.008)	(0.007)	(0.004)	(0.003)
Constant	11.631**	17.373**	-4.210**	-1.329**	0.005
	(0.065)	(0.061)	(0.043)	(0.055)	(0.003)
Observations	107,184	107,184	95,290	87,988	107,183
R-squared	0.389	0.904	0.389	0.228	0.159

Table 6

Dividend Payout and Change in Seniors

Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Size* is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* is the standard deviation of operating income over the previous five years from year -4 to 0. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Initiate	Dividend Yield	Dividend Proportion
Change in Seniors	-201.012	5.655	16.428	-3.922
	(208.315)	(27.789)	(9.401)	(2.383)
Size	5.989**	-0.004	0.127**	0.005
	(0.229)	(0.022)	(0.011)	(0.003)
Age	0.711**	-0.035**	0.014**	0.006**
	(0.087)	(0.013)	(0.004)	(0.001)
Earnings Volatility	-11.435**	-0.012	-0.467**	-0.063**
	(0.321)	(0.040)	(0.017)	(0.005)
Net Income	-1.698	0.436**	-0.005	0.019
	(1.063)	(0.128)	(0.088)	(0.010)
Cash	-13.363**	0.623*	0.101	-0.255**
	(2.186)	(0.303)	(0.116)	(0.031)
Q	0.261	-0.065**	0.040*	0.010**
	(0.240)	(0.017)	(0.020)	(0.002)
Debt	-16.051**	0.499**	0.029	-0.141**
	(1.615)	(0.191)	(0.085)	(0.019)
Volatility	-74.515**	-3.585**	-2.976**	-0.899**
	(7.349)	(0.451)	(0.319)	(0.135)
Return	-0.070	0.143**	-0.023**	0.015**
	(0.126)	(0.036)	(0.007)	(0.003)
Change in Size	-1.596**	0.522**	-0.149**	-0.007
	(0.276)	(0.070)	(0.018)	(0.004)
Log of Assets	-0.021*	-0.002**	0.000	-0.000**
	(0.009)	(0.001)	(0.000)	(0.000)
Asset Growth	0.097	-0.036	0.011**	0.001*
	(0.089)	(0.022)	(0.002)	(0.001)
Constant	-57.346**	2.596**	-1.276**	0.245**
	(3.269)	(0.425)	(0.147)	(0.053)
Observations	84,621	84,621	84,301	55,116
R-squared	0.421	0.006	0.286	0.205

Table 7
Change in Seniors and Small Firm Interaction

Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Small* is a dummy variable equal to one if the firm is below median market value and is zero otherwise. Controls include the following. *Size* is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* is the standard deviation of operating income over the previous five years from year -4 to 0. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Proportion	Payout Ratio
Change in Seniors	-81.589	-4.281	1.005
	(211.576)	(2.559)	(3.275)
Small	-22.264**	-0.138**	-0.003
	(1.178)	(0.017)	(0.013)
Change in Seniors x Small	-973.065*	2.143	-4.631
	(465.512)	(4.912)	(4.006)
Constant	-57.497**	0.245**	0.157**
	(3.269)	(0.053)	(0.037)
Controls	Yes	Yes	Yes
Observations	84,621	55,116	83,615
R-squared	0.421	0.205	0.016

Table 8
Change in Seniors and the 2003 Tax Change

Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Post 2003* is a dummy variable equal to one if the year is after 2003 and is zero otherwise. Controls include the following. *Size* is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* is the standard deviation of operating income over the previous five years from year -4 to 0. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Change in Size* is the year over year change in the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Proportion	Payout Ratio
Change in Seniors	-137.834	-4.978*	1.726
	(219.892)	(2.581)	(3.461)
Post 2003	-19.787***	-0.052***	-0.053**
	(1.363)	(0.014)	(0.022)
Change in Seniors x Post 2003	-689.282	4.517	-5.694
	(488.206)	(5.000)	(4.183)
Constant	-12.828***	0.541***	0.198***
	(3.393)	(0.042)	(0.037)
Controls	Yes	Yes	Yes
Observations	95069	59858	92433
R-squared	0.36	0.19	0.02

Table 9
Granger-causality

We specify the following model:

$$\begin{pmatrix} Payout_t \\ Seniors_t \\ Earnings\ Vol_t \end{pmatrix} = \begin{pmatrix} A_{11}(L), & A_{12}(L), & A_{13}(L) \\ A_{21}(L), & A_{22}(L), & A_{23}(L) \\ A_{31}(L), & A_{32}(L), & A_{33}(L) \end{pmatrix} \begin{pmatrix} Payout_{t-1} \\ Seniors_{t-1} \\ Earnings\ Vol_{t-1} \end{pmatrix} + \begin{pmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \end{pmatrix}, \qquad (1)$$

Where *Payout* is either *Dividend Payer, Dividend Yield*, *Dividend Proportion* or *Repurchase Yield* depending on the specification and each is defined as in previous tables. *Seniors* is either *Level of Seniors* or *Change in Seniors* depending on the specification. *Level of Seniors* is the proportion of seniors in a given county and *Change in Seniors* is the year over year change in the proportion of seniors in a given county. *Earnings Vol* is the standard deviation of operating income over the previous five years from year -4 to 0.Joint Test refers to the F test statistic from a test of the causal relation. Net (cumulative) Direction is the sum of the coefficients from the lags of the variable examined, reported as either positive (+) or negative (-). Net (cumulative) Significance refers to the Chi-Square statistic of the sum of the coefficients from the lags of the variable of interest, and the significance of the test is based on a Chi-Square test. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Granger-cause Dividend Payer		
Dividend Payer	Joint Test	Net (cumulative) Direction	Net (cumulative) Significance
Level of Seniors	4.71	-	4.71*
Earnings Volatility	3.45	-	0.73
Change in Seniors	6.08*	-	1.39
Earnings Volatility	0.48	-	0.07

	Granger-cause Dividend Yield		
Dividend Yield	Joint Test	Net (cumulative) Direction	Net (cumulative) Significance
Level of Seniors	3.88	-	0.99
Earnings Volatility	0.01	+	0.01
Change in Seniors	4.16	+	3.14
Earnings Volatility	0.3	+	0.01

	Granger-cause Dividend Proportion		
Dividend Proportion	Joint Test	Net (cumulative) Direction	Net (cumulative) Significance
Level of Seniors	10.67**	-	9.86**
Earnings Volatility	4.97*	+	4.56*
Change in Seniors	1.19	+	1.18
Earnings Volatility	0.57	+	0.46

	Granger-cause Repurchase Yield		
Repurchase Yield	Joint Test	Net (cumulative) Direction	Net (cumulative) Significance
Level of Seniors	0.45	-	0.45
Earnings Volatility	13.55**	+	5.95*
Change in Seniors	0.27	+	0.04
Earnings Volatility	13.15**	+	5.29*

Table 10
Cross-Sectional Regressions

Seniors is the proportion of seniors in a given county. *Size* is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* is the standard deviation of operating income over the previous five years from year -4 to 0. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Size* is the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Payer	Dividend Initiate	Dividend Initiate	Dividend Yield	Dividend Yield
Seniors	42.164	51.821*	13.827	13.966	2.075*	2.401*
	(22.308)	(22.996)	(7.503)	(7.474)	(1.055)	(1.068)
Size	5.140**	6.944**	0.249**	0.251**	0.062**	0.120**
	(0.283)	(0.276)	(0.085)	(0.088)	(0.014)	(0.014)
Age	0.577**		-0.094		0.013	
	(0.188)		(0.072)		(0.010)	
Earnings Volatility	-2.293**		0.009		0.003	
	(0.621)		(0.248)		(0.049)	
Earn. Growth Vol.	-5.464**		-0.021		-0.214**	
	(0.403)		(0.130)		(0.025)	
Net Income	1.132	2.175*	0.142	0.163	0.263	0.288
	(1.420)	(1.020)	(0.168)	(0.129)	(0.144)	(0.154)
Cash	-10.798**	-16.770**	0.825	0.860	-0.234	-0.350
	(3.382)	(3.406)	(0.912)	(0.918)	(0.218)	(0.214)
Q	-0.160	-0.362	-0.024	-0.022	0.018	0.017
	(0.176)	(0.209)	(0.036)	(0.039)	(0.014)	(0.015)
Debt	-15.584**	-15.458**	-0.441	-0.413	-0.286*	-0.278*
	(2.275)	(2.283)	(0.494)	(0.494)	(0.139)	(0.140)
Volatility	-32.443**	-49.076**	-0.053	-0.060	-1.541**	-2.017**
	(4.811)	(5.906)	(0.725)	(0.677)	(0.253)	(0.281)
Return	-0.755**	-1.038**	-0.045	-0.049	-0.029**	-0.042**
	(0.237)	(0.278)	(0.029)	(0.031)	(0.011)	(0.012)
Log of Assets	-0.014	-0.031	-0.024	-0.025	0.000	-0.001
	(0.018)	(0.020)	(0.024)	(0.024)	(0.001)	(0.001)
Asset Growth	-0.514**	-0.829**	-0.000	0.001	-0.016	-0.023
	(0.185)	(0.232)	(0.038)	(0.036)	(0.013)	(0.015)
Constant	-35.386**	-14.599**	-0.960	-3.617*	1.786**	2.048**
	(6.845)	(4.676)	(2.455)	(1.549)	(0.361)	(0.208)
Observations	6,692	6,692	3,889	3,889	6,662	6,662
R-squared	0.527	0.504	0.099	0.099	0.420	0.410

Table 11

Decade Change in Seniors

Change in Seniors is the decade-over-decade (1990 over 1980 and 2000 over 1990, respectively) change in the proportion of seniors in a given county. *Size* is the natural log of market value. *Age* is the number of years since the firm's IPO. *Earnings Volatility* is the standard deviation of operating income over the previous five years from year -4 to 0. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Size* is the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Payer	Dividend Initiate	Dividend Initiate	Dividend Yield	Dividend Yield
Change in Seniors	-26.012	-25.427	4.066	-0.337	-1.883*	-1.900
	(21.033)	(21.328)	(6.245)	(5.530)	(1.109)	(1.209)
Size	4.963***	6.894***	-0.020	-0.076*	0.082***	0.185***
	(0.282)	(0.277)	(0.048)	(0.045)	(0.015)	(0.015)
Age	0.590***		-0.031		0.016*	
	(0.175)		(0.028)		(0.009)	
Earnings Volatility	-8.170***		0.088		-0.427***	
	(0.532)		(0.147)		(0.029)	
Earn. Growth Vol.	-5.330***		-0.019		-0.180***	
	(0.414)		(0.124)		(0.021)	
Net Income	-0.010	1.316	0.385	0.510**	0.058	0.133
	(1.606)	(1.069)	(0.245)	(0.253)	(0.103)	(0.100)
Cash	-13.598***	-31.771***	0.652	0.418	-0.194	-1.044***
	(3.460)	(3.398)	(0.824)	(0.663)	(0.191)	(0.189)
Q	0.045	-0.755**	-0.013	-0.008	0.029*	-0.017
	(0.202)	(0.306)	(0.033)	(0.031)	(0.017)	(0.019)
Debt	-18.122***	-14.794***	-0.061	0.059	-0.152	0.508***
	(2.248)	(2.152)	(0.561)	(0.553)	(0.120)	(0.154)
Volatility	-46.738***	-109.169***	-2.271***	-2.380***	-1.820***	-5.460***
	(5.820)	(8.504)	(0.798)	(0.783)	(0.272)	(0.453)
Return	-0.939***	-0.996***	0.029	0.059*	-0.039***	-0.035**
	(0.261)	(0.293)	(0.032)	(0.035)	(0.012)	(0.014)
Log of Assets	-0.002	0.023	-0.002	-0.002*	0.001	0.001
	(0.014)	(0.014)	(0.002)	(0.001)	(0.001)	(0.001)
Asset Growth	-0.172	-0.910***	0.008	-0.019	0.018**	-0.021*
	(0.187)	(0.289)	(0.037)	(0.037)	(0.008)	(0.011)
Constant	-55.164***	-13.799***	1.369	2.048***	-1.561***	0.196
	(4.068)	(4.267)	(0.869)	(0.703)	(0.221)	(0.230)
Observations	6,519	7,929	6,519	7,929	6,492	7,889
R-squared	0.454	0.355	0.004	0.003	0.298	0.191

Table 12
Fama and MacBeth (1973) Regressions

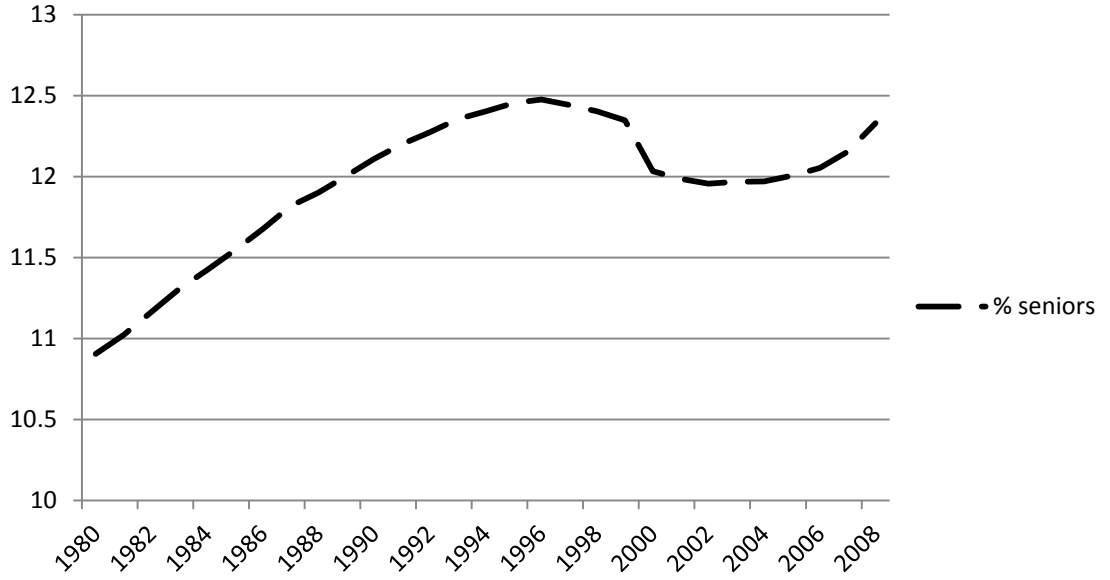
Change in Seniors is the year-over-year change in the proportion of seniors in a given county. *Profit* is net income divided by equity. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. *Market to Book* is market value divided by book value of equity. *Percentile* is the NYSE size percentile that the firm falls in for a given year. In the spirit of Fama and MacBeth (1973) and following Fama and French (2001), logit regressions are estimated each year and the standard deviation of the yearly coefficients are used for inference. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Proportion	Payout Ratio
Change in Seniors	-849.344*	-0.452	-21.191
	(331.525)	(44.258)	(13.148)
Profit	27.929*	2.794**	1.718**
	(12.312)	(0.517)	(0.606)
Asset Growth	-2.910**	0.008	-0.106**
	(0.516)	(0.047)	(0.032)
Market to Book	-2.193**	-0.049*	-0.072**
	(0.258)	(0.019)	(0.010)
Percentile	0.797**	0.004	0.024**
	(0.040)	(0.004)	(0.002)
Constant	24.917**	1.471**	0.951**
	(1.067)	(0.102)	(0.043)
Observations	115,747	115,747	115,256
R-squared	0.239	0.003	0.090

Table 13
Replication of Becker et al. (2011)

Seniors is the proportion of seniors in a given county. *Net Income*, *Cash*, and *Long-Term Debt* are scaled by total assets. *Q* is approximated using the market-to-book ratio. *Volatility* is the standard deviation of monthly stock returns over the prior two years. *Return* is the monthly stock returns over the prior two years. *Size* is the natural log of firm market value. *Log of Assets* is the natural log of total assets. *Asset Growth* is the natural log of the growth rate of total assets over the prior year. Additionally, we include age-group indicator variables which are dummies for firms between 1-5, 6-10, 11-15, and 16-20 years, as well as industry-year interaction dummy, and state-year interaction dummy variables. Robust standard errors which are clustered by firm are used in all regressions. Standard errors are reported in parentheses. **, and * indicate statistical significance at 1%, and 5% levels, respectively.

	Dividend Payer	Dividend Initiate	Dividend Yield
Seniors	64.107**	13.146*	4.073**
	(17.087)	(5.314)	(1.083)
Net Income	-0.143	0.046	0.049
	(0.496)	(0.074)	(0.053)
Cash	-18.650**	0.252	-0.568**
	(2.136)	(0.630)	(0.151)
Q	-0.937**	-0.057	-0.030**
	(0.189)	(0.031)	(0.011)
Debt	-13.943**	-0.495	0.039
	(1.848)	(0.560)	(0.183)
Volatility	-39.332**	-1.005	-2.362**
	(3.216)	(0.661)	(0.194)
Two-Year Lagged Return	-0.595**	0.056	-0.054**
	(0.208)	(0.039)	(0.012)
Size	7.624**	0.270**	0.203**
	(0.213)	(0.080)	(0.014)
Log of Assets	0.001	-0.009	0.001
	(0.009)	(0.006)	(0.001)
Asset Growth	-0.055	-0.035	-0.003
	(0.037)	(0.026)	(0.001)
Firm Age 1 -5	-28.196**	-0.826	-0.691**
	(1.468)	(0.686)	(0.091)
Firm Age 6-10	-17.835**	-0.787	-0.394**
	(1.503)	(0.680)	(0.086)
Firm Age 11-15	-14.629**	-0.848	-0.336**
	(1.632)	(0.746)	(0.096)
Firm Age 16-20	-9.608**	0.070	-0.079
	(1.411)	(0.835)	(0.082)
Constant	9.680	-2.381	1.080
	(10.349)	(2.515)	(0.847)
Observations	12,361	6,286	12,297
R-squared	0.486	0.102	0.377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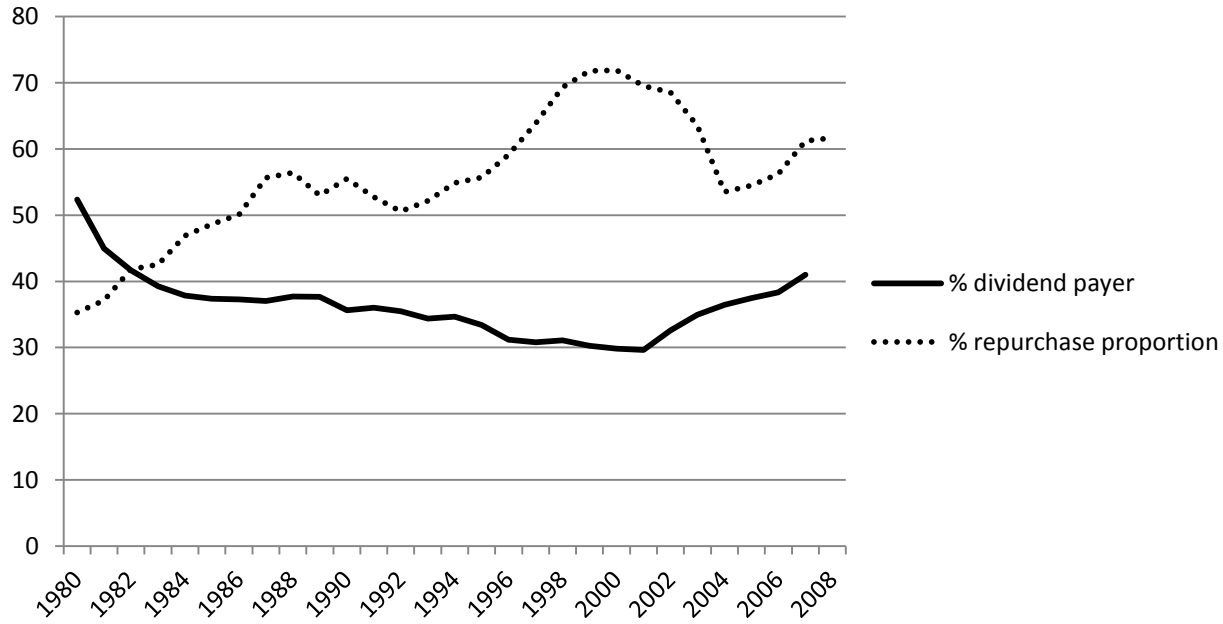
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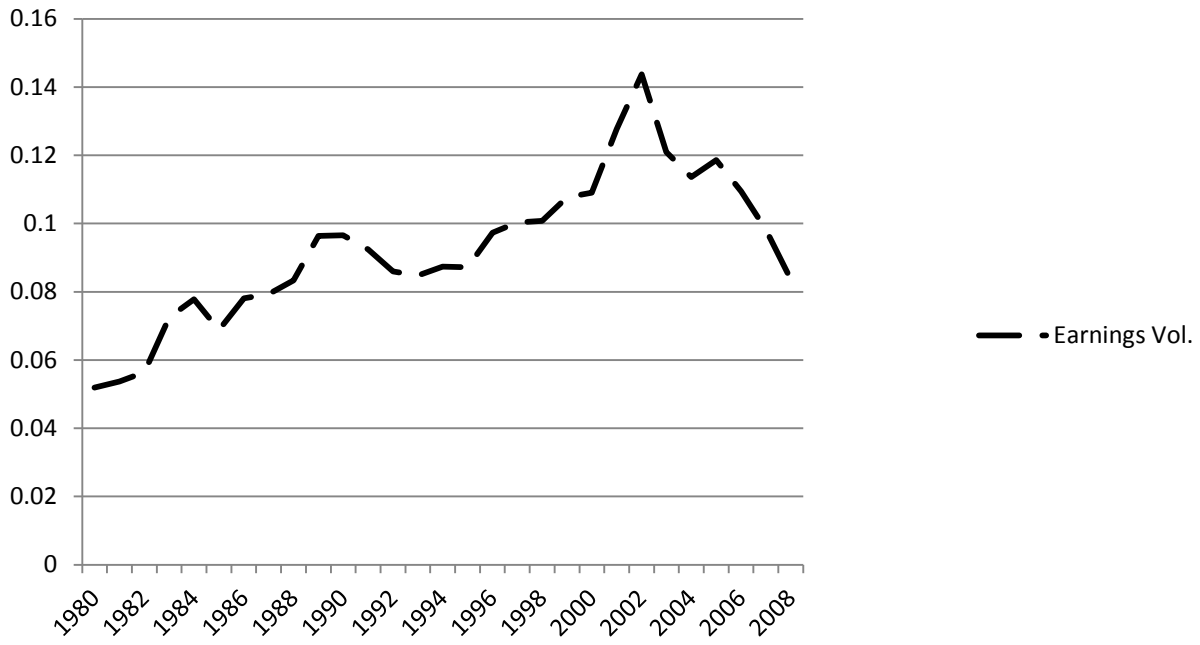

Figure 1. Time-series national (firm) averages for percent seniors (dividend payers, repurchase proportion, and earnings volatility) for Compustat firms from 1980-2008. Percent seniors is the proportion of the county's population which is age 65 or over. Dividend payer is a dummy variable equal to one if the firm pays dividends and zero otherwise. Repurchase proportion is the dollar amount of firm repurchases divided by total payout (i.e., repurchases plus dividends). Earnings Volatility is the standard deviation of operating income over the previous five years from year -4 to 0.