Dividend Preferences
- The Effect of Age and Income in a Swedish Setting

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Abstract
We examine the existence of dividend clienteles in Sweden using a unique dataset containing yearly information on age, gender, income and portfolio composition of about 200 000 Swedish stockholders. The data covers the years between 2005 and 2010. More specifically, we investigate whether investor preferences for dividends differ depending on their age or income. Furthermore, we seek to establish if there are any differences in performance, based on abnormal return, between investors with different dividend yields. We find that age clienteles exist in Sweden; older investors hold stocks with higher dividend yields and invest a larger portion of their portfolio in dividend paying stocks than younger investors. We do not find support for the existence of income clienteles; low-income investors tend to invest in stocks with a higher dividend yield than high-income investors. However, we find that different income groups hold about the same portfolio weight in dividend paying stocks. Overall, we find no significant differences in performance within or between various age or income groups. The main finding of this paper is the identification of age clienteles in Sweden.

Keywords: household finance, dividends, dividend clienteles, age clientele, income clientele, abnormal return
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1. Introduction

Whilst the field of household finance has had a sharp increase in popularity during the last decade, Guiso and Sodini (2012) stress that there are still numerous fundamental issues that remain unexplored. Among those issues are various questions regarding household portfolio allocation. One of the decisions facing households when allocating their portfolio to different securities is the question of how to view dividends. The original view on dividends, developed in the early 1960’s by Miller and Modigliani (1961) concluded that the rational viewpoint would be for investors to be indifferent in the trade-off between dividends and capital gains. However, recent studies find that investor preferences for dividends do differ, often due to aspects such as investor age and income (Graham and Kumar 2006). However, it is not known for certain how these preferences vary - especially not in a Swedish setting.

Households are important actors in the financial markets of developed countries, and they are more involved in financial decisions today than ever before. Households are highly dependent on financial instruments in numerous ways, ranging from short term deposits to retirement savings (Guiso and Sodini 2013). According to Campbell (2006) and Calvet, Campbell and Sodini (2007), household decisions are difficult to predict and the decisions they make are often not in line with what financial theory would predict. Among other reasons, these aspects have drawn researchers’ attention to household finance (Guiso and Sodini 2013). Research in household finance centers around the question of how households make financial decisions. Campbell (2006) points out that average households do not easily manage these decisions and while some perform well, others make investment mistakes. Both such well-grounded and flawed financial decisions have been connected to different demographic attributes of the investor.

Graham and Kumar (2006) find that demographic attributes affect investors’ preferences for dividends. According to Li and Lie (2005), dividend preferences are important to pay attention to, especially for corporations, as they tend to have an impact both on a company’s investor base and their stock price. However, Black (1976) points out that it is difficult for companies to consider investors’ dividend demands. Brennan and Thakor (1990) stress that dividends tend to remain stable over time and payments tend to be affected

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1 According to Campbell (2006), household finance is the study of “how households use financial instruments and markets to achieve their objectives”

2 Researched demographic factors include income, education and age (see e.g. Graham and Kumar 2006)
by firm size, age and industry – but may also be a result of the fact that investors demand them. Dividends have certain characteristics that the recipient of them needs to take into consideration. Dahlquist et al. (2014) stress the fact that dividends result in an immediate tax liability, whereas a corresponding capital appreciation only has a tax effect when such a gain is realized. According to Baker and Wurgler (2004), dividends may serve as an income stream that reoccurs every year, although they also occur at the expense of capital appreciation. This creates a foundation for differing viewpoints with regards to dividends.

While some studies find that retail investors in aggregate do not prefer dividends, others find that different groups of retail investors do (see, e.g., Shefrin and Statman 1984; Graham and Kumar, 2006). Such groups, referred to as dividend clienteles, exhibit different preferences for various reasons. According to Shefrin and Statman (1984), aspects that create dividend clienteles and affect dividend preferences include demographics such as age and income. Studies on different demographic groups in the U.S. reveal that dividend preferences may vary along the life-cycle, making older investors more likely to favor dividends than younger investors (see, e.g., Shefrin and Thaler 1988; Becker et al. 2011). Graham and Kumar (2006) refer to such groups as age clienteles. In contrast, Krieger et al. (2013) find that it is possible that no such preference among older investors exist. Graham and Kumar (2006) further find specific patterns with regards to income. They discuss that partially due to the nature of dividend payments as an income stream, lower income households tend to favor dividends whereas higher income households do not. These latter groups are in turn called income, or tax, clienteles. Despite the help of such findings, it may still be difficult for companies to make decisions based on reported preferences since, as reported by Breuer and Salzmann (2012), findings on dividend clienteles sometimes show different, or even opposing, results. In addition, Krieger et al. (2013) highlight the impact of cultural differences. Taken together, these aspects make generalizations difficult.

Age and income has also been connected to portfolio performance. Peress (2004) cites wealth as having a positive relationship with portfolio performance, since wealth enables access to valuable information that can be used in investment decisions. Provided that income can serve as a proxy for wealth, the same may be applicable to high-income individuals. Korniotis and Kumar (2011) find that older investors perform worse than younger investors, despite their good knowledge of investments. They attribute the weaker performance to cognitive limitations that come with age. With regards to dividends in particular, Black and Scholes (1973) stress that there should not be any differences in expected, or actual, performance relating to the choice of dividend levels.
1.1 Problem

Campbell (2006) suggests that many of the aforementioned theoretical gaps within household finance are due to difficulties in obtaining high quality data. Further developing this relatively unexplored topic should therefore be of interest to researchers. In addition to the difficulties regarding household finance, it has long been known that understanding the shareholders’ dividend preferences is not an easy task for companies. In fact Black (1976) claimed that investor dividend demands are difficult, perhaps even impossible, to know for certain. This limited knowledge of what investors want makes the decision of whether or not to pay dividends especially difficult for managers and necessitates that companies increase their understanding of investor dividend preferences. Shefrin and Statman (1984) stress that ultimately; the opinions of households with regards to dividends may have a direct impact on corporate dividend policies, as the dividends can impact the investor base. Taken together, these aspects highlight why understanding investor dividend preferences is both difficult and pivotal to managers - but also that many managers lack this knowledge. Dividends are also of interest to individual investors, especially because they put into light questions of taxes, transaction costs and sentiment (Baker and Wurgler 2004). Despite this, Black (1976) stresses that investors tend to be ignorant about the role of dividends, as well as their own understanding and preference for them. Overall, dividends remain a challenging topic to many investors.

With regards to dividends, studies find that the attitude towards them is often impacted by an investor’s age and income. In the U.S., income is also connected to differing tax rates between dividends and other capital income, potentially creating dividend clienteles (see, e.g., Graham and Kumar 2006). Swedish investors, on the other hand, are subject to the same tax on capital regardless of income (Dahlquist et al. 2014). The U.S. and Sweden differ in many aspects other than tax systems, and in combination with the lack of knowledge on dividend preferences in Sweden, this makes it interesting to test the results of Graham and Kumar (2006) in a Swedish setting. More specifically, apart from Dahlquist et al. (2014), few - if any - studies have considered age or income clienteles in Sweden.

Related to the question of investor attitude towards dividends is the question of how dividends relate to performance. Media often argue that investors should seek dividends, claiming that they serve as interest rate substitutions and that companies that perform well usually pay them (see e.g. Mårder 2015, Vilenius 2016). Furthermore, newspapers and magazines often publish lists of the best dividend payers (see e.g. Veckans Affärer 2016).
This may lead to a popular belief that dividend-paying stocks also perform better. This may at times have been true in recent years (Vilenius 2016). However, such a belief is contrary to the findings of researchers such as Black and Scholes (1973), who do not find any positive relationship between dividend yield and stock performance. Nonetheless, it may be that uninformed investors turn to dividend paying stocks as a means of increasing their returns. The role of dividend yield in affecting portfolio performance – as well as the connection between investor age and income as mentioned earlier – remains to be tested in a Swedish setting.

1.2 Purpose

The purpose of this study is to investigate whether previously identified dividend clienteles exist in a Swedish setting. More specifically, the aim of the study is to examine whether or not there is a relationship between (i) age and dividend preferences, and (ii) income and dividend preferences. The thesis aims to contribute to existing literature on household finance, and dividend clienteles by further exploring the household aspect of dividend preferences, thereby aiding both managers and investors in their understanding of dividend preferences. We also investigate whether or not there is a relationship between the dividend preferences of potential clienteles and the performance of their portfolios.

1.3 Disposition

The paper is organized as follows: related literature is presented in section 2. Section 3 includes a description of the data and method used, followed by a presentation of the results and analysis in section 4. Section 5 includes robustness checks of presented results, and the paper is concluded in section 6, which also includes suggestions for further research.
2. Related literature

2.1 Household finance

In his 2006 presidential address, Campbell (2006) claimed that household finance is a field lacking both status and definition. According to Guiso and Sodini (2012) however, increased attention has recently been directed towards the area. According to Campbell (2006 p. 1553), household finance “...by analogy with corporate finance, asks how households use financial instruments to attain their objectives”. The area focuses on households, or consumer, behavior and decisions in broad (Tufano 2009).

According to Campbell (2006), there are two ways to study household finance; you can either consider positive household finance (what households do) or normative household finance (what households should do). While this may not seem like a difficult task at first, Campbell (2006) stresses that one of the difficulties in measuring positive household finance is to attain high quality data, and that normative household finance necessitates that you broaden existing financial theories.

Studies on household finance generally consider the actions of individuals as members of households, often using data from brokerage houses or, when available, data on all individuals in a population (see, e.g., Grinblatt and Keloharju 2000, 2001). Campbell (2006) argues that it is important to focus on the average investor when studying investor behavior due to wealth inequalities affecting aggregate data. He stresses that if wealthy households and households of average wealth behave differently from each other, then research will be unable to understand how households in general make financial decisions. Another central theme to household finance is the study of investment mistakes, which are especially prevalent among poorer and less educated households. This is closely related to financial sophistication, which is the ability to understand and make decisions on financial matters. Also, Campbell (2006) describes the disposition effect, which is the tendency to hold onto losing stocks, and sell winning stocks. Guiso and Sodini (2012) point out that while some households have substantial financial expertise and can afford financial advisors or are educated themselves, others do not have access to advisors or lack financial knowledge.

2.2. Dividends

Several authors have considered the issue of dividends, both from an investor, and from a corporate perspective. An early paper by Black (1976) discusses corporate and
investor behavior asking why companies pay dividends and why investors pay attention to them at all. He emphasizes that when trying to understand investors’ views on dividends, transaction costs and taxes are usually considered. Dividends are of interest to investors because they serve as signals of the current state of the company. Therefore, changes in the dividend level may affect the stock price due to the signal they send. The function of dividends as a signal is however not per se a reason for companies to pay dividends. Irrational ideas about the role of dividends may pervade average investors’ perception of dividends; including the belief that non-dividend paying stocks should not be held, at least not unless they are priced lower than similar dividend paying stocks. Black (1976) concludes that as long as companies are unaware of investor rationality, they are also unaware of the appropriate dividend payout level. Many of these ideas reappear also in more recent research.

Baker and Wurgler (2004) show that today, companies do cater to investor dividend preferences and Brav et al. (2005) find that a large portion of dividend paying companies believe that attracting retail investors is an important or very important factor in the company's dividend decisions. Along the lines of this, Graham and Kumar (2006) stress that the dividend level chosen will affect both the investor base and the stock price. In general, dividends tend to be stable and paid by mature firms, tendencies identified by both Brav et al. (2005) and DeAngelo and DeAngelo (2006). Large capitalization firms are more inclined to pay dividends than small capitalization firms (Svenskt Näringsliv 2014). This is also supported by studies such as Fenn and Liang (2001), who find that there is a positive relationship between firm size and dividend payments, and a negative relationship between market-to-book value and dividend payments. DeAngelo and DeAngelo (2006) state that younger companies refrain from paying dividends as a result of having more investment opportunities.

In addition, there are several theories related to dividends that indicate possible reasons for why they exist and why investors want them. Similar to Black (1976), Shefrin and Statman (1984) stress the importance of the signaling function of dividends. The signaling theory argues that, due to the information asymmetry between stockholders and managers, dividends may serve as a way to convey information. According to the authors, signals from companies may thus become part of the reason why investors want to hold stocks that pay dividends. Pindado et al. (2012) claim that by paying dividends, the company may send a signal that more informed insiders will not act in favor of their own interests, at the expense of less informed shareholders. Denis and Osobov (2008) stress that according to the life-cycle model, firms of varying characteristics such as age, maturity and growth will
alter their payout policy with the development of the firm’s life cycle. Graham and Kumar (2006) stress that investors may also seek dividends due to them being considered substitutes for, or a form of, income.

Dong et al. (2005) find that from an investor perspective specifically, dividend preferences are affected by the age, income and educational level of the investor. In general, all investors care about dividends, in one way or another. One of the reasons dividends are sought is that they serve as a signal of the state of the company, in line with the aforementioned signaling theory. The authors also find that dividends are preferred and sought due to the wish to avoid transaction costs, a tendency that is especially high for old, low-income and uneducated investors. With dividend payments, investors avoid the transaction cost that is charged when the investor sells off stocks, rather than use the dividend payment (no transaction cost), in order to consume, save or invest in a different security. The authors argue that overall, investors do prefer dividends, especially older investors and low-income investors. While suggesting a number of drivers behind investors’ dividend preferences, the wish to avoid transaction costs, the signaling function of dividends and agency theory (i.e. dividends serving as a control for avoiding overinvestments) are the ones supported by the authors’ findings.

Baker and Wurgler (2004) find that there are different types of investors; those who have a rational understanding of dividends and their costs, and those who are more irrational and care about whether or not a company pays dividends. The authors refer to this latter type of investors as category investors (whereas the former are called arbitrageurs), and they are investors that either want dividends or they do not. It is this group of category investors that managers tend to cater to. In considering the motives behind dividend demands, Baker and Wurgler (2004) emphasize investor sentiment, yet in their paper they also consider traditionally accepted drivers behind investor dividend demand, including transaction costs, taxes as well as market imperfections.

2.3. Dividend clienteles

Already in the 1960’s, Miller and Modigliani (1961) suggested that if dividend preferences vary, investors will find the optimal company for themselves, by searching for a payout policy consistent with their own preferences. When studying dividend preferences, several researchers have identified dividend clienteles. Dividend clienteles are smaller groups of investors that, in relation to each other, often display differences in dividend preferences (see, e.g., Graham and Kumar 2006).
Graham and Kumar (2004) stress that there are a number of reasons why it is important to understand the existence of dividend clienteles. First, it is possible that there will be a positive relationship between a dividend increase and stock returns. In the long run, this enables management to adjust their dividends in order to appeal to a certain investor base. Second, the authors also stress that dividend clienteles could determine the nature of ideal corporate finance decisions. In considering senior citizens in particular, Krieger et al. (2013) however oppose this latter view, finding that other determinants (i.e. firm characteristics) of payout policy may be stronger. However, they also report that previous studies have found that investor clienteles exist, and that such clienteles - together with firm characteristics and manager preferences - do have an impact on the chosen dividend policy.

When studying how investors of different ages view dividends, Graham and Kumar (2006) find evidence for the existence of age clienteles. More specifically, they find a positive relationship between age and both the weight in dividend paying stocks, and dividend yield. Unlike for other clienteles, this relationship exists regardless of the level of risk in the portfolio. They also find that there are several possible reasons for these findings; for example, older investors may be drawn to dividend paying stocks due to life-cycle preferences or consumption preferences. Becker et al. (2011) find evidence both of seniors preferring dividends, and of corporations catering to such preferences. Their results show a positive relationship between the number of senior citizens in an area, and the propensity to pay dividends. Krieger et al. (2013) however find evidence that they suggest indicate that no such dividend preferences among older investors exist, and even if there are, companies may not cater to them.

According to Graham and Kumar (2006) and Elayan et al. (2009), dividend clienteles may be a result of tax rates i.e., they exemplify tax clienteles. Studying U.S. investors, the former authors find that, in a system where tax rates vary between investors, so do the dividend preferences. For investors with low income it will be financially more favorable to hold dividend-paying stocks. For those investors that are in the higher tax brackets, the opposite is true.

A recent study by Dahlquist et al. (2014) include all domestic stock portfolios in Sweden and investigates the existence of tax clienteles in a Swedish setting. They take as their starting point the tax clientele hypothesis, namely that low-tax investors prefer dividends, whereas the opposite is true for high-tax investors. They find that although certain groups act in accordance with the hypothesis, they are unable to find clear indications of tax clienteles among individual retail investors; in some instances they behave in accordance
with the model, while in other the results indicate that individuals either prefer or do not prefer dividends.

Graham and Kumar (2006) also refer to subsequent findings on income clienteles, which are closely connected to tax clienteles. Dividends may serve as an annual income stream, and may as such entice older investors or investors of low income, as the dividend payment could for example be used for consumption. There are several reasons why dividends may be appreciated as an income substitution, among those are psychological effects. To many people, it is easier to spend money from dividends, than to sell off stocks and realize gains from capital appreciation.

2.4 Portfolio performance

With regards to age and portfolio performance, Korniotis and Kumar (2011) study the portfolios of old investors. They find that older investors show signs of high investment knowledge; they hold portfolios with less risk, they trade less and exhibit weak behavioral biases. However, the investment skills of these older investors decrease with age (especially around the age of 70). Taken together, the high knowledge, but deteriorating skills has a negative impact on portfolio return. The authors further find that old investors earn 3-5% less on an annual basis, indicating that age has a negative effect on portfolio performance.

Peress (2004) shows that wealthy individuals have better access to costly information, which may affect their investment choices. In the end, access to such information may allow for better portfolio performance, than that attained by less wealthy investors who are unable to gain such information. Using income as a proxy for wealth (as done by Baker et al 2016), the same may be assumed for investors of different income levels.

Black and Scholes (1973) are unable to find a relation between dividend yield and stock performance and thus it does not seem as an investor can base their expected portfolio return, and subsequent actual return, on the decision of investing in a stock with a specific dividend level.

2.5 Literature summary and hypotheses formulation

The review of literature on household finance has revealed that there are still several theoretical gaps to be filled. In trying to establish what investment decisions households make, studies have often been restricted by insufficient data and many topics remain unexplored. Among the investment decisions facing households is that regarding how to view dividends. Previous research has identified that dividend preferences are connected to
the age and income of the investor. Old investors seem to favor dividends to a larger extent than young investors and low-income investors favor dividends to a larger extent than high-income investors. Preferences may stem from the fact that investors want to use dividends for consumption purposes, perceive them as signals or because of investor sentiment. This makes it reasonable to expect that differences between investors will exist with regards to dividends, and that those differences will be connected to demographics. However, we are unaware of how potential dividend clienteles vary in a Swedish setting, and even if they exist.

Academic research and media have further considered the connection between dividends and performance, where the former finds no connection, whereas the latter often implies that there is a connection. Using different methods for measuring investment performance, previous studies have examined the connection between age and income and portfolio performance, finding that older investors perform worse, and low-income investors do not perform as well as their high-income counterparts. However, according to presented theory, there should be no performance differences connected to chosen dividend level.

We thus hypothesize:

$H_1$: The higher the age of an investor, the higher the dividend preference

$H_2$: The higher the income of an investor, the lower the dividend preference

$H_3$: There will be no performance differences between investors with different dividend yields

In this paper, the term investor is used to denote an individual investor with direct stock ownership.
3. Data and Methodology

The information on all investors covered in this study, including their demographics and portfolio specifications, is obtained from a database containing information from the Swedish Central Securities Registrar (Euroclear Sweden). The data from this database was collected in collaboration with Daniel Hallgren at Campus Gotland. This database was chosen because it enables taking advantage of the uniqueness of Swedish data, where detailed information on every Swedish stockholder (roughly two million) is available. The information from Euroclear Sweden is updated semi-annually before 2006 and quarterly thereafter. Information from the Swedish tax authorities (Skatteverket) enables the inclusion of income information on the individuals in the study. Monthly returns and market values of stocks on the Stockholm Stock Exchange (SSE) are available from Datastream. Data was collected covering the years between 2005 and 2010. To identify dividend paying firms and company values on the SSE, we hand-collected from Svenska Dagbladet’s printed edition for each of the years between 2005 and 2010. The exact publication date chosen depends on the last day of trading in each year, which is always published in the paper the following day.

The study necessitates that income and age are included for all investors in the respective groups, both of which are available only on Swedish retail investors. As the study is limited to the years of 2005-2010, we are unable to draw conclusions that span over several economic cycles. However, earlier studies on dividend clienteles use a time frame of five years (see e.g., Graham and Kumar (2006) and Dahlquist et al. (2014)), which indicates that this is a sufficient amount of time. Furthermore, the study is limited to those years in particular because data on income was available only until 2010. The choice has been made to focus on Swedish investors’ direct stockholdings only. As pointed out by Dahlquist et al. (2014), considering only direct stockholdings offers a limited picture of an investor's complete wealth, which consists also of bonds, real estate etcetera. However we do not intend to draw conclusions on retail investors’ complete wealth, but rather on their stock preferences in particular.

Due to the study covering several years and the fact that the groups are reweighted as information from Euroclear Sweden is updated, an individual can appear in different age and income groups in different months and years. Also, if no income is reported on an investor, they will not show up in any group. Data was collected in two separate steps. First by choosing a sample of Swedish investors to test for dividend preferences and second by
collecting data on the portfolio returns of all Swedish individuals, divided into groups and quintiles. The two steps are described in 3.1 and 3.2 below.

3.1 Data for testing dividend clientele among investor groups

First, and for each year, the entire population was divided into four equally weighted groups based on income. This means that the groups each represent 25% of the population of Swedish stockholders. From each of these four groups a random sample of 50 000 individuals per group was chosen, resulting in a total sample of 200 000 individuals in each year. The reason for using four income groups is that income shows a great variation and takes on a wide range of values.

Second, the whole sample was divided into three age groups; (i) 18-44 years, (ii) 45-64 years and (iii) 65-100 years. The age groups that were used are the same as those used by Graham and Kumar (2006). These age groups were deemed appropriate, partially because of the fact that they have been used in previous studies, but also because 18 (age of majority) and 65 (common age for retirement) are natural cut-offs. The 200 000 individuals were split between the age groups in the following way: approximately 61 000 individuals between 18-44 years, 79 000 individuals between 45-64 years, and 60 000 individuals between 65-100 years.

Given the size of the population of Swedish stockholders, the total sample of 200 000 individuals per year represents around 10% of all Swedish stockholders during this time interval. This was also close to the largest sample possible, given that it needed to be manageable for the analysis. For each of the investor in the sample, the following information was included:

1) Age
2) Gender
3) Income: based on the individual’s total income during the previous year, as reported by Skatteverket. Income includes all income received in a year, including for example income from employment, capital gains and inheritance.
4) Average portfolio dividend yield in a year, calculated as:

\[ PDY_{it} = \frac{\sum DIV_{it}}{PV_{it}}, \]  

where

\[ PV_{it} = \sum w_{ijy} \times MktV_{jt} \]
Equation 1 shows the calculation of each individual, \( i \)'s, portfolio dividend yield, \( PDY \) in year \( t \). \( PDY \) was calculated by first adding the dividend payments, \( DIV \) received in the previous year, \( t-1 \). The past year dividend payment was then divided by the portfolio value, \( PV \), of the portfolio of investor \( i \) in year \( t \). \( PV \) was calculated as seen in equation 2; by multiplying the weights, \( w \) of all investments \( j \) in the portfolio of investor \( i \), as stated in the latest portfolio composition reported by Euroclear Sweden. To find the aggregate yearly portfolio dividend yield for each group, \( g \) in year \( t \), all the individual portfolio dividend yields in the sample, as calculated by using equation 3 were added, and divided by the number of observations, \( N \), in each group.

\[
PDY_{gt} = \frac{\sum PDY_{it}}{N}
\]

5) The share of the portfolio value that is invested in the stocks that paid dividends; weight in dividend paying stocks:
Calculated by: (i) identifying the stocks in an individual’s portfolio that paid dividends (ii) calculating the market value – in each portfolio - per December 31\(^{st}\) of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio per December 31\(^{st}\).

The average portfolio dividend yield was calculated as described in step (4) and weight in dividend paying stocks as described in step (5), in order to obtain a dataset that resembles that of Graham and Kumar (2006). Given that they had already conducted a similar test on a small subset of American investors, their method for determining dividend clienteles based on dividend yield and weight in dividend paying stocks was followed when possible.

Individuals older than 100 years old were excluded from the study in order to minimize the risk of using erroneous data. The possible erroneous data stem from individuals’ birth year either being incorrectly entered into the database (e.g., an individual born in 1990 may mistakenly be entered as born in 1890) or due to estates not being settled. The highest income group was winsorized at the 1\% level for income in order to avoid non-representative income (e.g., several hundred million SEK, likely due to inheritance) having a large impact on the results. Lastly, each of the income and age groups were trimmed at the 5\% level for dividend yield. The reason for trimming based on dividend yield was to limit the impact of extreme values on the aggregate data. Although this may have a slight impact
on the results, this was necessary in order to obtain a sample size that corresponded to our computational limitations.

3.2 Data for determining abnormal return among investor groups

In order to test for performance differences, and style preferences, the abnormal return of the investors were calculated. Data for testing this was collected accordingly: the first step was to divide the entire population in the same way as previously, into three age groups and four equally-weighted income groups. This was done for each year. For each group, average monthly returns were calculated. Here, it was not necessary to pick a sample; instead it was possible to extract average values from the entire population. Average monthly returns in this case were based on each individual’s monthly portfolio return. All individual monthly returns were then added and divided into group average monthly returns. The steps can be described in the following way:

\[ r_{pt} = \sum W_{it} R_{it} \]  \hspace{1cm} (4)
\[ r_{gt} = \frac{\sum r_{pt}}{N} \]  \hspace{1cm} (5)

Equation 4 shows the calculation for individual portfolio return, where \( r \) is the portfolio return of an individual’s portfolio \( p \) in month \( t \). The individual’s monthly portfolio return was calculated as the weight, \( W \), in investment \( i \) in month \( T \), multiplied by the return \( R \), of investment \( i \) in month \( t \). Returns were based on those reported by Datastream. In any given month, \( W \) and \( T \) denotes the weights \( W \) in the portfolio per the last time \( T \) portfolio compositions were updated by Euroclear Sweden. Average monthly portfolio return for each of the age and income groups are calculated in accordance with equation 5, where the sum of all individual monthly portfolio returns in each group are summarized, and divided by the number of observations in the specific group.

As a second step, each of the three age groups and four income groups from the first step were divided into five quintiles. This was done for every year in the sample. This gave a total of 35 subgroups (3 age groups x 5 quintiles, and 4 income groups x 5 quintiles). The groups were divided into equally weighted quintiles based on the dividend yield of the individuals within each group. The reason for dividing the groups into quintiles in this way is the aim to compare, within each age and income groups, how investors with different dividend yields perform and invest in relation to each other. For each quintile, the average monthly portfolio returns were reported in the dataset. The dividend yield was calculated as
the total value of the dividends received in the previous year, divided by the value of the portfolio at the end of last year (per the last day of trading).

3.3 Determining the existence of dividend clienteles

3.3.1 Based on the excess weights in dividends

In order to test the relative dividend preferences of different investor groups, group averages for weight in dividend paying stocks (from 3.1, step 5), is used. The remaining steps in this section resembles the method used by Graham and Kumar (2006) and aims at measuring the groups’ relative dividend preferences by calculating the excess weight in dividend paying stocks, measured as the actual weights minus the expected weights.

To calculate an expected value for weight in dividend paying stocks, the market weight was calculated. This was done in the same way as for the individuals (see section 3.1), but based instead on the entire market portfolio. First, Svenska Dagbladet was used to identify those stocks that paid dividends in a given year. Second, the market value, as reported by Svenska Dagbladet, of those firms that paid dividends in a given year was divided by the total market value of the SSE in that year. In order to test each group’s deviation from the expected value, the expected weight in dividend paying stocks of the market is subtracted from the weights in dividend paying stocks of each group portfolio. This is repeated for each of the three age and four income groups, and yields the following model for finding the excess weight in dividend paying stocks:

\[ EW_{D_{pt}} = w^{div}_{pt} - w^{div}_{mt} \]  

(6)

where the excess weight in dividend paying stocks \( EW_D \), of portfolio \( p \) in year \( t \) is equal to the weight, \( w \) in dividend paying stocks of portfolio \( p \) in year \( t \), subtracted by the weight in dividend paying stocks, \( w \) of the market \( m \) in year \( t \).

The same method was repeated for the dividend yield, as calculated using equation 6. These values were then compared to the market dividend yield, calculated as the average dividend yield between 2005 and 2010. The market dividend yield was obtained from a report produced by Svenskt Näringsliv (2014). We therefore rewrite the above equation as:

\[ EDY_{pt} = DY_{pt} - DY_{mt} \]  

(7)
3.3.2 Based on dividend yield regressions

To further control for the existence of dividend clienteles, ordinary least square (OLS) regressions were used to test the relationship the dividend yield and age or income of the investors. This was included here as an additional test of the existence of dividend clienteles, that also indicates the preference with regards to the level of dividends, as well as the amount in dividend paying stocks. Within each group, this allowed for the testing of the existence of a linear relationship between either age or income, and dividend yield.

For testing the dividend yield relationships, an adjustment to the data was necessary. All individuals with a dividend yield of zero were excluded from the regression, in order to show the relationship between age/income and dividend yield among those investors that receive dividends. The OLS regressions were examined using the following variables:

*Dependent variable* – the dividend yield in each year for each investor in a given age or income group.

*Independent variable* – the age or income of the individual for whom the dependent variable is included, in each year.

3.4 Abnormal return of the age and income groups

In order to determine abnormal returns of different groups of investors, as well as to control for style preferences, a multivariate time series regression was used. The method used thereby constitutes a calendar-time methodology. The same regression was run on all the groups mentioned in step 2, i.e. the seven groups from step 2a, and all 35 quintiles formed in step 2b. The model used in the regression was the Fama-French (1993) three-factor model, augmented by the fourth factor as added by Carhart (1997).

The Fama-French three-factor model takes firm specific factors into consideration. The model, as described by Fama and French (1993), compares portfolio return with three risk factors, namely (i) the return of the market portfolio less the risk-free rate, (ii) the average return on small-stock portfolios minus the return on large-stock portfolios, \(SMB\) (this reflects the impact of size on stock returns), and (iii) the average return on portfolios with high book-to-market value of equity minus the average returns of those with low book-value of equity, \(HML\) (this reflects the impact of BE/ME on stock returns). The model aims to explain the expected returns on equity. Carhart (1997) further develops a fourth factor, which he adds to the original Fama-French three-factor model. The fourth factor reflects the tendency for momentum in stock returns, also described as the one-year momentum.
anomaly. Stocks that have previously performed well will tend to do so also in the following year, and stocks that have underperformed tend to do so again next year. This momentum tends to emerge even if there is no reason for it in the fundamentals. All four coefficients that emerge in the model, like those in the three-factor model, offer an indication of the extent to which the four strategies reflected in the model explain portfolio returns.

Adding momentum \( (MOM) \) to the original equation, the four-factor model that emerges is:

\[
R_p - R_f = \alpha_p + b_p (R_M - R_f) + s_p SMB + h_p HML + m_p MOM + \varepsilon_p \tag{8}
\]

The slopes of the time series regression are equal to \( b, s, h \) and \( m \) in the above regression. \( R_M - R_f \) is the difference between the return on the market portfolio and the risk free rate. In this study, the specific variables used are:

- **Dependent variable** – average monthly returns for the age and income groups, as calculated in equation
- **Independent variables** – \( SMB, HML, MOM \) and \( Rm-Rf \), as explained above, here based on values for the SSE.

First, the regression is used to examine the income groups and the age groups. Second, the same is done for all the 35 quintiles. The independent variables were available from the Department of Business Studies at Uppsala, as used in previous studies. As calculations of these factors cover the entire SSE, rather than a sample of stocks, these are not necessary to recalculate. In this case, the inputs in the independent variables used were based on values calculated in the same way as done by Fama and French (1993). First, all stocks on the SSE were sorted into six portfolios based on \( BE/ME \); small, medium and high. Secondly, they were sorted based on size; small or big. This yielded the same six portfolios as those used by Fama and French (1993): \( S/L, S/M, S/H, B/L, B/M \) and \( B/H \). For all six portfolios, monthly average returns were collected. In this study, those covering 2005-2010 are used. The return of the market is the return on the SSE and the risk-free return is the monthly return on the 3 month treasury bill, both reported by Datastream.

For comparison, and OLS regression was included using the Capital Asset Pricing Model, CAPM. In this study the dependent variable was the average monthly returns for the age and income groups, and the independent variable was \( Rm-Rf \). Again, this was done for all the age and income groups, including also the 35 quintiles.
4. Results and analysis

4.1 Descriptive statistics

Panel A Table 1 presents summary statistics for the individuals in the sample. After trimming, the total sample consists of roughly 1.1 million observations between 2005 and 2010 (on average about 190 000 individual observations per year). For the entire sample, consisting of 58% males and 42% females, the average investor is 55 years old with an average (median) annual income of about SEK 337 000 (277 000) and an average portfolio value of SEK 290 000 (27 000).

Panel B Table 1 presents characteristics and portfolio details for individuals sorted by age. The average age is 33 in the youngest group. The group consists of 62% males and 38% females, with an average (median) annual income of about SEK 294 000 (259 000) and an average portfolio value of SEK 224 000 (16 000). The average age in the middle group is 55, and the group consists of 58% males and 42% females with an average annual income of SEK 405 000 (308 000) and portfolio value of SEK 292 000 (25 000). The average age of the oldest group is 74, and the group consists of 54% males and 46% females, with an average annual income of SEK 296 000 (215 000) and portfolio value of SEK 353 000 (35 000).

Panel C Table 1 presents the characteristics and portfolio details for individuals sorted by income. The average age is 54 in the lowest income group and the group consists of 43% males and 57% females with an average (median) annual income of approximately SEK 99 000 (110 000) and an average portfolio value of SEK 102 000 (15 000). The average age in the Mid/Low income group is 58, with an even distribution of males and females and an average annual income of SEK 221 000 (220 000) and an average portfolio value of 112 000 (18 000). For the Mid/High income group the average age is 53, and the group consists of 62% males and 38% females, with an average annual income of SEK 314 000 (311 000) and an average portfolio value of 153 000 (24 000). Lastly, the highest income group has an average age of 54, and consists of 75% males and 25% females, with an average annual income of SEK 712 000 (511 000) and average portfolio value of SEK 793 000 (57 000).

To ensure that the sample used is representative of Swedish stockholders we compare our data on portfolio size to that reported by Statistics Sweden, SCB, for the entire Swedish population of stockholders. According to SCB (2005; 2006; 2007; 2008; 2009; 2010), the average portfolio value of a Swedish stockholder is SEK 267 000 and the median portfolio value is SEK 19 300 between 2005 and 2010. Thus the sample appears representable of Swedish stockholders.
Table 1
Descriptive sample statistics.

<table>
<thead>
<tr>
<th>Group</th>
<th>Age</th>
<th>Income</th>
<th>Median Income</th>
<th>Portfolio Value</th>
<th>Median Portfolio Value</th>
<th>Male</th>
<th>Female</th>
<th>No. Of Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A. Averages for entire sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Investors</td>
<td>55</td>
<td>337 359</td>
<td>276 682</td>
<td>289 723</td>
<td>26 875</td>
<td>58%</td>
<td>42%</td>
<td>1139894</td>
</tr>
<tr>
<td>Panel B. Averages for age groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-44</td>
<td>33</td>
<td>293 686</td>
<td>259 253</td>
<td>224 486</td>
<td>15 833</td>
<td>62%</td>
<td>38%</td>
<td>349905</td>
</tr>
<tr>
<td>45-64</td>
<td>55</td>
<td>404 862</td>
<td>308 356</td>
<td>292 054</td>
<td>25 008</td>
<td>58%</td>
<td>42%</td>
<td>449612</td>
</tr>
<tr>
<td>65-100</td>
<td>74</td>
<td>295 546</td>
<td>214 780</td>
<td>352 898</td>
<td>35 073</td>
<td>54%</td>
<td>46%</td>
<td>340377</td>
</tr>
<tr>
<td>Panel C. Averages for income groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>54</td>
<td>99 472</td>
<td>110 241</td>
<td>101 902</td>
<td>15 350</td>
<td>43%</td>
<td>57%</td>
<td>284924</td>
</tr>
<tr>
<td>Mid/Low</td>
<td>58</td>
<td>229 654</td>
<td>219 970</td>
<td>111 777</td>
<td>17 998</td>
<td>50%</td>
<td>50%</td>
<td>284984</td>
</tr>
<tr>
<td>Mid/High</td>
<td>53</td>
<td>314 355</td>
<td>311 143</td>
<td>152 693</td>
<td>23 554</td>
<td>62%</td>
<td>38%</td>
<td>284993</td>
</tr>
<tr>
<td>High</td>
<td>54</td>
<td>711 956</td>
<td>510 696</td>
<td>793 432</td>
<td>57 304</td>
<td>75%</td>
<td>25%</td>
<td>284993</td>
</tr>
</tbody>
</table>

The table shows summary statistics for the data used in this study. The data was divided into four equally weighted income groups with 50,000 investors subsequently randomly drawn within each group every year. This resulted in a total sample of 200,000 investors each year. The number presented in the last columns represent the total number of observations in all six years. We then constructed three age groups from this sample. Individuals over 100 years old were removed, and the data was subsequently trimmed with 5% on dividend yield. Mean values for age, income, and portfolio values are available for all groups. Median values are included for income and portfolio value. All monetary values are expressed in Swedish Krona, SEK.

4.2 Dividend clienteles among age and income groups

4.2.1 Age and dividend preferences

The first step in testing how the age of an individual is related to dividend preferences was to investigate the weight in dividend paying stocks by comparing the different age groups. The results of the first step are presented in Figure 1. Panel A of Figure 1 shows the weights in dividend paying stocks of the different age groups. The youngest age group has the lowest weight in dividend paying stocks. The higher the age group, the higher the allocation is towards dividend paying stocks. The oldest group allocates the largest portion of their portfolio to stocks that pay dividends. More specifically, the youngest group has 83.6% of their portfolio value in stocks that pay dividends, the middle group has 85% and the oldest group has 86.7%. The overall high weights in dividend paying stocks are not surprising given the high frequency of companies that pay dividends on the SSE as reported by Svenskt Näringsliv (2013; 2014). Despite a high overall weight in dividend paying stocks, the results presented here indicate that there is a difference between the three age groups.
Figure 1
Portfolio weight in stocks that pay dividends, sorted by investor group.

Panel A. Weight in dividends per age group  
Panel B. Weight in dividends per income group

Panel A and B shows the average portfolio weight in dividend paying stocks for each of the three age groups and the four income groups respectively. The weight in dividend paying stocks reflects the portion of the total portfolio value that is invested in stocks that paid dividends. Calculated by: (i) identifying the stocks in an individual’s portfolio that paid dividends (ii) calculating the market value – in each portfolio - per December 31st of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio per December 31st. These are average values for the time period 2005-2010, trimmed with 5% on dividend yield.

When comparing these results to the expected (market) weight of 91.85% (see Panel A Figure 2), estimated as the portfolio weight in dividend paying stocks on the SSE, all groups have a value below the expected value. However, it is clear that the youngest group deviates the most from the expected level, while the oldest group deviates the least. The middle group sorts in between the youngest and oldest groups. Subtracting the expected weight in dividend paying stocks from the actual weights reported for each group, yields the excess weight in dividend paying stocks, EWD. Panel A Figure 2 indicates that the EWD for the youngest group is -8.25%, the EWD for the middle group is -6.85% and the oldest group has an EWD of -5.15%. Thus, as a group, we find that Swedish investors do not prefer dividends since all groups are below the expected value, similar to the findings on American investors by Graham and Kumar (2006). However, similar to them we do find differences between the different age groups. Panel A Figure 3 shows the dividend yields of the age groups, but this time by comparing them to an expected (market) dividend yield. The market
Figure 2

Actual weights in dividends, compared to expected weights (market weights).

Panel A. Actual weights, age groups and market

Panel B. Actual weights, income groups and market

Panel A (B) show the actual portfolio weights in dividend paying stocks of the different age (income) groups, compared to an expected weight in dividend paying stocks, calculated as the weight in dividend paying stocks of the market. The sample is trimmed with 5% on dividend yield. For both panels, the expected weight in dividend paying stocks – the market weight – was calculated in the following way: first, Svenska Dagbladet was used to identify those stocks that paid dividends in a given year. Second, the market value, as reported by Svenska Dagbladet, of those firms that paid dividends in a given year was divided by the total market value of the SSE in that year. All market values used were those reported per December 31st in each year. These were then aggregated into an average for the years 2005-2010. For both the age and income groups, a group level actual weight in dividend paying stocks was calculated by (i) identifying the stocks in an individual’s portfolio that paid dividends last year (ii) calculating the market value – in each portfolio - per December 31st of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio.

dividend yield in this case is the dividend yield of the SSE. The average dividend yields of the various age groups are 4.0%, 4.5% and 4.9% respectively. Expressed as a percentage difference, the dividend yield of the oldest group is 22.5% higher than that of the youngest group. The figure highlights how dividend yield increases with age. Although all groups have average dividend yields that are higher than that of the market - indicating that they
Figure 3
Dividend yield of age and income groups, compared to expected (market) dividend yields.

Panel A. Dividend yields, age groups and market

Panel B. Dividend yields, income groups and market

Panel A shows the average dividend yield of the three age groups over the period 2005-2010 (after trimming with 5% on dividend yield), as well as the expected dividend yield. The expected dividend yield is the market dividend yield, based on the average yearly dividend yields on the SSE between 2005-2010, as reported by Svenskt Näringsliv (2014). Panel B shows the average yearly dividend yield of the four income groups, using the same expected (market) dividend yield as in Panel A. Each group dividend yield is calculated by adding the dividend payments received in the previous year for each individual. The previous years dividend payments were then divided by the portfolio value per December 31st. To find the aggregate yearly portfolio dividend yield for each group, all the individual portfolio dividend yields are added together, and then divided by the number of observations in each group.
seek those stocks that pay higher dividends specifically - the difference between actual and expected dividend yield is the highest for the oldest group, and lowest for the youngest.

The second test is an OLS regression relating the dividend yield of each investor to their age. As seen in Panel A Table 2, there is a positive relationship between age and dividend yield; the older the investor, the higher the dividend yield. This is significant at the 1% level. The table indicates that the positive relationship persists also within the groups. Both the results indicating that the weight in dividend paying stocks increases with age, and the fact that the older you are the higher your dividend yield, are in line with the findings of Graham and Kumar (2006). Their study on American investors present similar findings, and use these aspects as a sign of the existence of dividend clienteles. This is also in line with Becker et al. (2011) who find that senior citizens specifically prefer dividends and Dong et al. (2005) who find that dividend preferences vary with the age of an investor. However, these findings are contrary to those of Krieger et al. (2013) who find no such tendencies.

Although there exists no defined level of dividend yield and EWD that ascertain when dividend clienteles exist, the proximity of the results in this paper to the results of prior studies, indicate that age clienteles exist also in Sweden. The same is true for the tendency of investors seeking a higher dividend yield the older they are. As discussed earlier, previous research has shown that older investors show a preference for dividend paying stocks, and Graham and Kumar (2006) suggest that with age comes the wish to use dividends for consumption purposes. Older investors also search for a way to avoid transaction costs as described by Dong et al. (2005). The results of this paper may thus be in line with such theories, as well as the idea of life-cycle preferences. The results also indicate that many investors are indeed category investors, as defined by Baker and Wurgler (2004); they do care about dividends - regardless of whether or not this is rational. Taken together, these results indicate that companies may be able to use dividends to attract certain investors.

4.2.2 Income and dividend preferences

To investigate whether income clienteles exist, the first step was to investigate the weight in dividend paying stocks that the investors hold. These results are presented in Panel B Figure 1. As seen, the portion of the portfolio value that is invested in dividend paying stocks vary little between the four income groups. For income group Low the weight in dividend paying stocks is 84.9%, Mid/Low 85.5%, Mid/high 85.0% and High 84.7%. This means that the weights differ at the most with 0.8%. Considering again that many Swedish companies
Table 2
OLS regression relating age/income and dividend yield.

Panel A. Regression relating dividend yield and age of investors

<table>
<thead>
<tr>
<th>Coefficient. LN independent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0186***</td>
</tr>
<tr>
<td></td>
<td>(36.8404)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0081***</td>
</tr>
<tr>
<td></td>
<td>(63.5357)</td>
</tr>
<tr>
<td>N</td>
<td>1 032 433</td>
</tr>
</tbody>
</table>

Panel B. Regression relating dividend yield and income of investors

<table>
<thead>
<tr>
<th>Coefficient. LN independent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0683***</td>
</tr>
<tr>
<td></td>
<td>(-127.1389)</td>
</tr>
<tr>
<td>Income</td>
<td>-0.0014***</td>
</tr>
<tr>
<td></td>
<td>(-32.6408)</td>
</tr>
<tr>
<td>N</td>
<td>1 032 433</td>
</tr>
</tbody>
</table>

This table presents the results from the OLS regressions relating the income or the age of an individual to their dividend yield between the years 2005-2010. Investors with dividend yields of zero and persons over 100 years of age are excluded. Furthermore, each group is trimmed with 5% on dividend yield. Age or income constitutes the independent variable, and the dividend yield is the dependent variable. Because of a positive skew, OLS regressions were run using natural logarithms for the independent variables. Panel A presents the results for the age groups, whereas panel B presents the results of the income groups. t-statistics are shown in parenthesis and N reports the number of observations for all six years. For the samples in both Panel A and B, average dividend yield is calculated by first adding the dividend payments received for each individual. These are then divided by the portfolio value at the end of December each year.

* Significance level of 10%
** Significance level of 5%
*** Significance level of 1%

do pay dividends, the overall high weights in dividend paying stocks are not surprising, but what is interesting here is that there seems to be almost no differences between the groups. Comparing these to the expected (market) weight in dividend paying stocks of 91.85%, all groups have a value lower than the market. This is presented in Panel B Figure 2. Calculating
the EWD for each group yields values, from income group Low to High of: -6.95%, -6.35%, -6.85% and -7.05%. These highlights further the small differences between the groups.

Panel B Figure 2 shows the average dividend yield of each group, compared to the market. The average dividend yields of the various income groups are, from low to high: 4.8%, 4.7%, 4.4% and 4.2%. Expressed as a percentage difference, the lowest income group has a dividend yield 14.3% higher than that of the highest income group. This figure indicates that all income groups seek high dividend yields relative to the market. It also highlights again the negative relationship between income and dividend yield, based on the differences between the group average and the market being the largest for income group Low, and the smallest for income group High.

Given the results on weight in dividends for income groups, it is interesting to consider Panel B Table 3, presenting the results from the OLS regression relating income to dividend yield. Using natural logarithms for the independent variable, the regression shows a statistically significant negative relationship between income and dividend yield. This table further shows that, although investors in different income groups invest in a similar manner with regards to how much of their portfolio they allocate to dividend paying stocks, they do vary with regards to the dividend yield that they seek. All results in this table are statistically significant.

Similar to Dahlquist et al. (2014), we cannot determine that income clienteles - or tax clienteles – exist in Sweden. Tax clienteles are connected to the tax level of the investor, in turn dependent on their income, so it may not be surprising that we do not find as clear results with regards to income-/tax clienteles as Graham and Kumar (2006), since unlike in the US, Swedish investors are taxed the same regardless of income. The inability to conclude that income clienteles exist lies in the fact that the dividend yield differs between the income groups, whereas the weights in dividend paying stocks do not.

4.3 Style preferences

As stated in the theory section, previous research suggests that dividend yield and the payments of dividends may be due to the type of firm. Therefore, to test the findings in 4.2 with regards to dividend preferences, we also check for style preferences which may in turn be connected to the dividends investors receive. From the multivariate regression using the Fama-French three-factor model and momentum, it is possible to determine if the portfolios

---

3 Style preferences is used to denote preferences for a certain type of stock. In this case, either large or small and value or growth
of the age and income groups are specifically weighted towards large or small capitalization stocks (by observing whether the SMB coefficient is negative or positive) and specifically weighted towards value or growth stocks (by observing whether the HML coefficient is negative or positive). Theory and Swedish stock market statistics, suggest that large capitalization stocks pay more dividends than small capitalization stocks. Theory also suggests that market-to-book value affects the dividend payments, and that those with a high book-to-market value (value stocks) pay more dividend than growth stocks.

As seen in Panel A Table 3, all three age groups have a negative SMB value. This indicates that in general, more of the investors’ returns are driven by the fact that they own stocks in large companies. However, there is a statistically significant difference between the oldest and youngest group, which indicates that older investors are more heavily weighted towards large companies than younger investors. Furthermore, the youngest age group shows a negative value for HML, indicating that they are more heavily weighted towards growth than value stocks. For the middle and oldest age groups however, there is a positive value for HML indicating that they are more heavily invested in value stocks. Overall, it can be concluded that the oldest age group is more heavily weighted in large stocks and value stocks than the younger age groups. This is in line with our earlier findings that the oldest investor group has the highest average dividend yield and in relation to the other age groups also has the largest portfolio weight in dividend paying stocks.

As seen in Panel B Table 3, no statistically significant difference exists between the highest and lowest income group with regards to SMB, indicating that there is no clear pattern with regards to income and firm size preference. There is however a discernable pattern with regards to HML. The two lower income groups are more heavily weighted towards value stocks, and the two higher income groups seem to prefer growth stocks. The difference between the highest and lowest income group is statistically significant. Lastly, we found a statistically significant difference between the highest and lowest income group. Overall, we can conclude that while no clear pattern is distinguished for firm size preferences, the lower income groups prefer value stocks, while the higher income groups prefer growth stocks. While the differences between the income groups are small, the two lowest income groups show a higher dividend yield than the two higher income groups. Thus, it does not come as a surprise that the two lower income groups are more heavily invested in value stocks than growth stocks, as value stocks tend to be more mature and stable firms.
more weighted
As reported, quintile, and dividend yield. The portfolio returns with the highest dividend yields are found in the highest quintile, and the portfolios with the lowest dividend yields are found in the lowest quintile. As reported, the SMB for the highest quintile is consistently negative and this quintile is thus more weighted towards large firms than all lower quintiles. The results for SMB are however

### Table 3
Portfolios performance and style preferences

**Panel A. Individual investors sorted into age groups**

<table>
<thead>
<tr>
<th></th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.002</td>
<td>0.003</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td>MKT</td>
<td>0.978***</td>
<td>0.923***</td>
<td>0.916***</td>
<td>0.906***</td>
</tr>
<tr>
<td>SMB</td>
<td>-0.107</td>
<td>-0.119</td>
<td>-0.018</td>
<td>-0.098</td>
</tr>
<tr>
<td></td>
<td>(-1.124)</td>
<td>(-1.124)</td>
<td>(-0.929)</td>
<td>(-1.221)</td>
</tr>
<tr>
<td>HML</td>
<td>0.115</td>
<td>0.115</td>
<td>0.106</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>(-0.110)</td>
<td>(-1.130)</td>
<td>(0.101)</td>
<td>(0.106)</td>
</tr>
<tr>
<td>MOM</td>
<td>-0.109***</td>
<td>-0.159**</td>
<td>-0.164***</td>
<td>-0.211***</td>
</tr>
<tr>
<td></td>
<td>(-2.972)</td>
<td>(-3.162)</td>
<td>(-3.162)</td>
<td>(-3.185)</td>
</tr>
</tbody>
</table>

Adjusted $R^2$: 0.871 0.855 0.854 0.889 0.904 0.868 0.904 0.076 0.512

**Panel B. Individual investors sorted into income groups**

<table>
<thead>
<tr>
<th></th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
<th>CAPM Fama-French</th>
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<td>0.003</td>
<td>0.002</td>
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<tr>
<td>MKT</td>
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<td>0.923***</td>
<td>1.003***</td>
<td>1.035***</td>
</tr>
<tr>
<td></td>
<td>(22.039)</td>
<td>(21.996)</td>
<td>(21.607)</td>
<td>(20.822)</td>
</tr>
<tr>
<td>SMB</td>
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<td>-0.119</td>
<td>-0.018</td>
<td>-0.098</td>
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<tr>
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<td>(-1.025)</td>
<td>(-1.212)</td>
<td>(-1.172)</td>
<td>(-1.195)</td>
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<tr>
<td>HML</td>
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<td>0.115</td>
<td>0.106</td>
<td>0.111</td>
</tr>
<tr>
<td></td>
<td>(-0.110)</td>
<td>(-1.130)</td>
<td>(0.101)</td>
<td>(0.106)</td>
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<tr>
<td>MOM</td>
<td>-0.109***</td>
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<td>-0.211***</td>
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<tr>
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<td>(-2.972)</td>
<td>(-3.162)</td>
<td>(-3.162)</td>
<td>(-3.185)</td>
</tr>
</tbody>
</table>

Adjusted $R^2$: 0.877 0.855 0.872 0.909 0.875 0.905 0.883 0.885 0.880 0.885 0.655 0.702

The table presents the results of the multivariate time series regressions on the stock portfolios of the three age groups and the four income groups of Swedish investors between the years 2005-2010. The table presents abnormal return (alpha) and coefficients for MOM, MKT, SMB, HML, the latter two indicating style preferences. The regression is based on the Fama-French three-factor model, including Carhart’s momentum variable, which can be expressed as:

$$R_i - R_f = \alpha_i + b_1(R_{M} - R_f) + s_iSMB + h_iHML + p_iMOM_i + \epsilon_i,$$

Where the independent variables, SMB, HML and MOM are all based on monthly returns on the Stockholm Stock Exchange. The dependent variable is the average portfolio return minus the risk-free rate of the investors in each group, reported on a monthly basis and based on market values as reported by Datstream. The intercept reported in the table shows the value for alpha. For CAPM, the independent variable MKT represents the return on the market portfolio minus the risk-free return. Values for CAPM are reported in the left hand column for each quintile and Fama-French variables are reported in the right hand column. Coefficient estimates are reported for each of the independent variables, and the $t$-stat is reported in parenthesis for each of the coefficient estimates.

* Significance level of 10%.
** Significance level of 5%.
*** Significance level of 1%

### 4.3.1 Age quintiles and style preferences

Table 4 shows investors in each age group sorted into quintiles based on their dividend yield. The portfolio returns with the highest dividend yields are found in the highest quintile, and the portfolios with the lowest dividend yields are found in the lowest quintile. As reported, the SMB for the highest quintile is consistently negative and this quintile is thus more weighted towards large firms than all lower quintiles. The results for SMB are however
Table 4
Portfolio performance and style preferences, age quintiles.

Age groups sorted by dividend yield into quintiles, from low DY to high DY

<table>
<thead>
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<th>18-44 years</th>
<th>45-66 years</th>
<th>65-100 years</th>
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<tbody>
<tr>
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<td><strong>Fama-French</strong></td>
<td><strong>CAPM</strong></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>MKT</td>
<td>0.031***</td>
<td>0.021***</td>
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<tr>
<td>SMB</td>
<td>0.078</td>
<td>-0.019</td>
</tr>
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<td>HML</td>
<td>-0.017***</td>
<td>0.037***</td>
</tr>
<tr>
<td>MOM</td>
<td>-0.005</td>
<td>-0.019</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.574</td>
<td>0.676</td>
</tr>
</tbody>
</table>

The table presents outputs from the multivariate time series regressions, based on the Fama-French three-factor model, including Carhart’s fourth factor between the years 2005-2010. The quintiles were constructed by placing investors (within each group) with the lowest dividend yield into quintile one and the highest dividend yield into quintile five, and so on. The dependent variable used, monthly portfolio return, is based on quintile averages. The independent variables used are those in the Fama-French three-factor model, including Carhart’s momentum variable as presented in the following equation:

\[ R_p - R_f = \alpha_p + b_p (R_m - R_f) + s_p SMB + h_p HML + p_p MOM + \epsilon_p, \]

where the independent variables; SMB, HML and MOM, are all based on monthly return on the Swedish stock market. The regressions yield an alpha value (the intercept), indicating the abnormal return. It also presents coefficients for MKT, SMB, HML and MOM. For CAPM, the independent variable MKT represents the return on the market portfolio minus the risk-free return. Values for CAPM are reported in the left hand column for each quintile and Fama-French variables are reported in the right hand column. Coefficient estimates are reported for each of the independent variables, and the t-stat is reported in parenthesis for each estimate of the coefficients.

* Significance level of 10%
** Significance level of 5%
*** Significance level of 1%
not statistically significant. We also find that the SMB for all quintiles decrease as each age group increases. This indicates that the older the investor, the more they are weighted towards large stocks. Overall, our findings are consistent with what we expected to find given the results presented in section 4.2; the highest dividend yield quintile is relatively more weighted towards large stocks than the lower quintiles and as age increases so does the preference for large stocks.

We find a distinct pattern with regards to HML. Consistently for all age groups, the lowest dividend yield quintile shows a negative HML value, indicating that they are more weighted towards growth stocks. For each successive quintile the HML value increases. For all three age groups, there is also a statistically significant difference in HML between the highest and lowest quintiles. The highest quintile is thus heavily weighted towards value stocks. The found relation is in line with presented theory, as value stocks tend to be consistently high dividend paying firms. Consistently and in the majority of cases for all age groups, HML has a larger effect on the investors’ portfolio than SMB. This could indicate that the results found in this paper with regards to dividend preferences is a result particularly of their ownership in value stocks rather than their ownership in large stocks.

Lastly, we find no significant differences between MKT or MOM between the highest and lowest quintiles. In general each age group and their varying quintiles do not deviate significantly from the market. However, the highest quintiles for all age groups are consistently more inclined to hold on to badly performing stocks than the lowest quintiles. This may be an indication that the investors with the highest dividend yields have a preference for these firms for other reasons than their performance and may appreciate the dividends received each year. It may also be due to a lack of interest in actively managing their portfolios, instead being satisfied with the stability that value stocks typically entail.

### 4.3.1 Income quintiles and style preferences

Table 5 contains investors in each income group sorted into quintiles based on dividend yield, with the highest (lowest) dividend yields found in the highest (lowest) quintile. The SMB is consistently negative for the highest quintile, indicating a preference for larger firms. Furthermore, the SMB is consistently positive for the lowest quintile in all income groups, indicating a preference for smaller companies. There is however no statistically significant difference between the highest and lowest quintiles in any income group. There does not seem to be a distinct pattern regarding SMB between income groups;
Table 5

Abnormal return and style preferences, income quintiles

Panel A. Income groups sorted by dividend yield into quintiles, from low DY to high DY

| Quintile | Intercept | SMB | HML | MKT | Difference quintile high-low | Intercept | SMB | HML | MKT | Difference quintile high-low |
|----------|-----------|-----|-----|-----|-----------------------------|-----------|-----|-----|-----|-----------------------------|-----------|-----|-----|-----|-----------------------------|-----------|-----|-----|-----|-----------------------------|
| Low      | 1.402**   | 0.648| 0.822*** | 1.348*** | 0.832*** | 1.822*** | 0.928*** | 1.362*** | 0.616*** | 0.832*** | 1.822*** | 0.928*** | 1.362*** | 0.616*** | 0.832*** | 1.362*** | 0.616*** | 0.832*** | 1.362*** | 0.616*** |
| Mid      | 0.872*** | 0.422*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** | 1.248*** | 0.648*** |
| High     | 0.822*** | 0.593*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** | 1.169*** | 0.715*** |

The table presents the results of the multivariate time series regressions, based on the Fama-French three-factor model for the years 2005-2010. The regressions were run on the portfolio returns for five equally weighted quintiles, within each of the four equally weighted income groups; Low, Mid/Low, Mid/High, High. All quintiles are weighted based on their dividend yield. The dependent variable, portfolio monthly returns are based on group averages for all investors sorting into each quintile. The regressions yield an alpha value (called intercept in the table), indicating the abnormal return of, as well as coefficients for MKT, SMB, HML and MOM, indicating the style preferences of investors. For CAPM, the independent variable MKT represents the return on the market portfolio minus the risk-free return. The independent variables in the Fama-French three-factor model, including Carhart’s momentum variable are derived from the following equation:

\[ R_p - R_f = \alpha_p + \beta_p (R_m - R_f) + s_p \times SMB + h_p \times HML + p_p M_0 + \epsilon_p, \]

where the independent variables, SMB, HML and MOM are all based on monthly return on the Swedish stock market. Values for CAPM are reported in the left hand column for each quintile and Fama-French variables are reported in the right hand column. Coefficient estimates are reported for each of the independent variables, and the t-stat is reported in parenthesis for each estimate of the coefficients.

* Significance level of 10%.
** Significance level of 5%.
*** Significance level of 1%
be a distinct pattern regarding SMB between income groups; the SMB does not consistently decrease or increase as the income groups do. The findings however suggest that while no distinct firm size preferences exist between different income groups, there seems to be insignificant preferences within the income groups.

We find a statistically significant difference with regards to HML between the highest and lowest dividend yield quintiles for all income groups. The highest quintiles with positive HML values are heavily weighted towards value stocks, while the lowest quintiles are weighted towards growth stocks. There is also a distinct pattern: as the quintiles increase so does HML. These findings are similar to the aforementioned findings for the age groups, and the results are in line with earlier presented theory: value stocks tend to be more consistent dividend payers than growth stocks. As for the age groups, HML has a larger effect on the investors’ portfolio than does SMB, when considering the income group quintiles. Again, this indicates that dividend preferences may mainly connected to book-to-market value of the stocks that the investors hold.

We find no evidence of significant differences between MKT or MOM between the highest and lowest quintiles. As with the age groups, we can see that the highest quintiles with negative MOM values are most persistent in not selling badly performing stocks. Earlier presented theory suggests that poorer households are more likely to make investment mistakes due to a lack of financial sophistication. Here however we see a consistency of holding on to badly performing stocks regardless of income level, which indicates that it does not seem to be a lack of financial sophistication, but rather of preference for a certain type of stock.

4.4 Abnormal return among age and income groups.

As reported in Panel A Table 3, the alpha found for all three age groups is the same, although not statistically significant; all groups have an alpha of 0.3% per month, indicating that the investor groups outperformed the benchmark market with an average of 3.6% per year. Korniotis and Kumar (2011) suggest that the older you become, the poorer your portfolio performance, because your investment skills deteriorate. However, we do not find evidence to support this.

The alpha for the income groups shows some variation, although they are not statistically significant, as reported in Panel B Table 3. The lowest income group has an alpha of 0.3%, the Mid/Low 0.2%, Mid/High 0.4% and the highest group 0.4%. On a yearly basis, this means that the highest income group outperforms the lowest in terms of abnormal return.
with 1.2% (4.8% compared to 3.6%). This gives some support the notion within household finance that wealthier households differ from poor households because they have access to financial advisors, or because they have higher financial expertise themselves, suggesting a higher performance. According to Peress (2004), the higher your income, the better your portfolio performance as you are more likely to have access to more information. Although the results are not significant, they indicate that the abnormal return increases somewhat with increased income.

Turning next to the age quintiles, sorted in accordance with section 3.2, yields additional insights into portfolio performance, this time in relation to the dividend yield of the investor. When comparing the highest quintile (highest dividend yield) to the lowest quintile (lowest dividend yield) within each age group, we found that the highest quintile shows the highest abnormal return. Note that, with one exception, the alpha values in Table 4 are not statistically significant. Comparing the portfolios with the highest dividend yield to the lowest dividend yields within the age groups indicates that the largest difference in abnormal return between quintiles is found among 18-44 year olds. Here, the alpha for the highest quintile is 0.4% higher per month than for the lowest quintile, corresponding to a difference in abnormal return of 4.8% on a yearly basis. The results were even stronger when CAPM was used, resulting in a 0.8% monthly, or 9.6% yearly difference. It is however not possible to discern a specific pattern for performance between the groups - positive or negative - when studying all quintiles.

The income groups, as presented in Table 5, show similar tendencies for abnormal return as the age groups; the highest quintile consistently has a higher abnormal return for all income groups than the lowest quintile. The largest difference within a single group reported is seen within the highest income group with a difference in monthly abnormal return between quintiles 1 and 5 of 0.3%, resulting in a yearly 3.6% difference. Note however that the alphas found are insignificant. The CAPM again indicates a larger performance difference of 0.7% monthly, or 8.4% yearly. However, as in the age groups there is no clear pattern between the middle quintile groups. Since there are no clear patterns between the performances of the different groups, we find it unlikely that the differences found between the highest and lowest groups are due to the portfolio’s dividend yield. This is in line with Black and Scholes (1973) who find that you cannot change your expected return simply by changing your dividend yield.
5. Robustness checks

To further test our findings on dividend clienteles exist in Sweden, we perform a couple of additional tests. We start by performing the same tests but this time presenting them on a yearly basis, as shown in Figures A1-A6 in the Appendix. We do this to control that our findings are not driven by any extreme years. These tests do not lead us to question our previous findings. With regards to weight in dividend paying stocks, we still find that the older you are, the higher your weight in dividend paying stocks. Furthermore, we find no differences in weight in dividend paying stocks between income groups. There is still a positive relationship between age and dividend yield, and a negative relationship between income and dividend yield. Note however that in the years immediately during and after the crisis of 2008, the relationship reverses somewhat. It is likely that the changing economic environment, reflecting adjustments in dividend payments of companies that had previously paid large dividends, affects the years of 2009 and 2010. Overall, investors seem to follow the market closely, both when it comes to weights in dividends and dividend yields. Although values for the groups differ from the market, we see that any increases (decreases) in market values, correspond to an increase (decrease) in group values. However, a slight exception to this can be seen immediately after the crisis. It is possible that this is due to large and temporary effects that the crisis had on certain firms rather than reversing dividend preferences.

In order to test the finding that age plays a larger role than income in determining dividend preferences, a regression is run testing the relative effect of these two variable in affecting the dividend yield preferences. We set dividend yield as the dependent variable and both age and income as independent variables in the OLS regression. The results presented in Table A1 confirm our earlier findings indicating that dividend yield increases with age and that increased income has a negative effect on dividend yield. Furthermore, it shows that the relative strength of age is stronger than that of income on dividend yield.
6. Conclusion

We hypothesized that the higher the age of an investor, the higher the dividend preference. We find a positive relationship between age and both weight in dividend paying stocks and dividend yield. We conclude that investors tend to favor dividends to an increased extent the older they are. Our results are therefore consistent with our first hypothesis. Furthermore, and in line with these findings, older investors tend to be more heavily weighted towards large capitalization and value stocks. Thus age clienteles are identified also in a Swedish setting.

We further hypothesized that the higher the income of an investor, the lower the dividend preference. The results found with regards to income do not support this. Although investors with lower income tend to have higher dividend yields, they do not allocate a larger portion of their portfolio to dividend paying stocks. While we did not find a pattern with regards to firm size preferences between the income groups, we do find that the lower income groups are more weighted towards value stocks.

Finally, we hypothesized that there will be no performance differences between investors with varying dividend yields. We found no significant differences in abnormal return between investors with varying dividend yields. The third hypothesis is therefore supported.

In addition to these hypotheses, this study aims to contribute to existing knowledge on household finance. As discussed in the theoretical section, a typical obstacle within household finance is the lack of reliable data on individual investors. By analyzing individual investor data from the unique database with information from Euroclear Sweden, we were able to circumvent this obstacle and study investor behavior in Sweden. Our findings contribute to household finance by showing that dividend preferences differ depending on age and also by showing differences in what type of firms various investor groups prefer. We also show that dividend levels do not affect the returns on investors’ portfolios.

The findings in this paper are of value for companies trying to understand their investors’ dividend preferences. As seen in the discussion in this paper, it is important for companies to understand their investor base. This however is a difficult task. By shedding light on the dividend preferences of Swedish investors, our findings show that it may be possible for companies to attract certain investors by paying dividends. Having developed the area of household finance further, as well as extended the study of age and income clients to a Swedish setting, this paper has also contributed to academia.
Further research could include a similar study investigating also the preferences of Swedish institutional investors. A study considering institutional holdings would increase the understanding of dividend preferences for Swedish investors as a whole. It would furthermore be interesting to see whether investors’ dividend preferences differ depending on the individuals’ industry preferences as well as trading habits. Industry preferences could have a direct effect on the dividend yields of the investors, and trading habits may serve as a further test of the existence of dividend clienteles.
References


Korniotis, G.M., Kumar, A. “Do older investors make better investment decisions?” *Review of Economics and Statistics* vol. 93, no. 1, 244-265


Appendix

Figure A1
Actual weights in dividends, compared to expected (market) weights for each of the years, 2005-2010, presented per age groups.

Panel A. Actual weights, age group 18-44

Panel B. Actual weights, age group 45-64

Panel C. Actual weights, age group 65-100

Panel D. Actual weights in dividends per year of comparing all age groups

Panel A-C shows the average portfolio weight in dividend paying stocks, each for one of the three age groups, split into six years. The weight in dividend paying stocks reflects the portion of the total portfolio value that is invested in stocks that paid dividends. Calculated by: (i) identifying the stocks in an individual’s portfolio that paid dividends (ii) calculating the market value – in each portfolio - per December 31st of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio per December 31st. These are average values for the time period 2005-2010, trimmed with 5% on dividend yield. Panel D compares the yearly average weights of the three income groups.
Figure A2
Actual weights in dividends, compared to expected (market) weights for each of the years, 2005-2010, presented per income group.

Panel A. Actual weights, income group Low

Panel B. Actual weights, income group Mid/Low

Panel C. Actual weights, income group Mid/High

Panel D. Actual weights, income group High

Panel A-D shows the average portfolio weight in dividend paying stocks, each for one of the four income groups as well as the expected dividend yield, split into six years. The weight in dividend paying stocks reflects the portion of the total portfolio value that is invested in stocks that paid dividends. Calculated by: (i) identifying the stocks in an individual’s portfolio that paid dividends (ii) calculating the market value – in each portfolio - per December 31st of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio per December 31st. These are average values for the time period 2005-2010, trimmed with 5% on dividend yield.
Figure A3
Panel A. Actual weights in dividends per year, comparing income groups

Panel A compares the yearly average weights of the four income groups during each of the six years studied. The weight in dividend paying stocks reflects the portion of the total portfolio value that is invested in stocks that paid dividends. Calculated by: (i) identifying the stocks in an individual’s portfolio that paid dividends (ii) calculating the market value – in each portfolio – per December 31st of those dividend paying stocks (iii) dividing the market value of the dividend paying stocks in each portfolio, by the total market value of that portfolio per December 31st. These are average values for the time period 2005-2010, trimmed with 5% on dividend yield.
Figure A4
Actual dividend yields (DY), compared to the expected (market) market dividend yield for each of the years, 2005-2010, presented per age groups.

Panel A. Actual DY, age group 18-44

Panel B. Actual DY, age group 45-64

Panel C. Actual DY, age group 65-100

Panel D. Actual DY per year of comparing all age groups

Panel A-C shows the average dividend yield of one of the three age groups per year studied (after trimming with 5% on dividend yield), as well as the expected dividend yield. Each group dividend yield is calculated by adding the dividend payments received in the previous year for each individual. The previous years’ dividend payments were then divided by the portfolio value per December 31st. To find the aggregate yearly portfolio dividend yield for each group, all the individual portfolio dividend yields are added together, and then divided by the number of observations in each group. Panel D compares the dividend yields of the three age groups in each of the six years.
Figure A5

Actual dividend yields (DY), compared to the expected (market) market dividend yield for each of the years, 2005-2010, presented per age groups.

Panel A. Actual DY, income group Low

Panel B. Actual DY, income group Mid/Low

Panel C. Actual DY, age group 65-100

Panel D. Actual DY per year of comparing all age groups

Panel A-D shows the average dividend yield of the four income groups in each of the years studied (after trimming with 5% on dividend yield), as well as the expected dividend yield. Each group dividend yield is calculated by adding the dividend payments received in the previous year for each individual. The previous years’ dividend payments were then divided by the portfolio value per December 31st. To find the aggregate yearly portfolio dividend yield for each group, all the individual portfolio dividend yields are added together, and then divided by the number of observations in each group.
Figure A6
Panel A. Actual DY per year, comparing income groups.

Panel D shows the average dividend yield of each of the four income groups, presented per year studied after trimming with 5% on dividend yield. Each group dividend yield is calculated by adding the dividend payments received in the previous year for each individual. The previous years’ dividend payments were then divided by the portfolio value per December 31st. To find the aggregate yearly portfolio dividend yield for each group, all the individual portfolio dividend yields are added together, and then divided by the number of observations in each group.
Table A1
OLS Regression relating age and income of investor to dividend yield, relative strengths

Panel B. Regression relating dividend yield to age and income, LN

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</table>

This table presents the results from the OLS regressions relating the income and the age of an individual to their dividend yield between the years 2005-2010. Investors with dividend yields of zero and persons over 100 years of age are excluded. Furthermore, each group is trimmed with 5% on dividend yield. Age and income constitute the independent variables, and the dividend yield is the dependent variable. Because of a positive skew, OLS regressions were run using natural logarithms for the independent variables. t-statistics are shown in parenthesis and N reports the number of observations for all six years. Average dividend yield is calculated by first adding the dividend payments received for each individual. These are then divided by the portfolio value at the end of December each year.

* Significance level of 10%
** Significance level of 5%
*** Significance level of 1%