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The enduring importance of family wealth: Evidence from the *Forbes 400*, 1982 to 2013

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ABSTRACT

The richest 1 percent in the United States is a largely unexplored group, despite its ever-increasing share of the national wealth. The *Forbes* roster of the richest Americans has often been used to demonstrate the fading of nineteenth-century hereditary fortunes. Based on full panel data from the annual American *Forbes 400* ranking (1982–2013), this article goes beyond previous work by examining not only the sources of the very wealthy but also the factors that increase or decrease the likelihood of remaining listed among the American super-rich and the typical patterns of mobility. We find that heirs are more likely to remain listed in the *Forbes 400* roster than self-made entrepreneurs, all other things being equal. While scions of great wealth are less likely to drop completely from the list, they are nevertheless more likely to fall gradually in ranking than are self-made multi-millionaires. Even though entrepreneurship matters increasingly for becoming super-rich, we conclude that it is first and foremost the ability of rich family dynasties to retain control over corporations and to access sophisticated financial advice that makes fortunes last.

In the past few decades, American society has witnessed a pervasive trend towards increasing wealth inequality. Growing wealth disparities have been fueled particularly by the widening gap between the super-rich and the rest of society. The share of the national wealth belonging to the top 0.01 percent of the population – a mere 160,000 families with a wealth cut-off of $20.6 million – increased from 7 percent in 1979 to 22 percent in 2012 and is almost as large as that of the bottom 90 percent (Saez and Zucman, 2016). Today, it appears to some that the United States is on the verge of a new Gilded Age (Bartels, 2008; Krugman, 2014).

Given these figures, the world seems to be divided into two blocs, the plutonomy and the rest. The consequences are far-reaching. In reports for investors produced by the New York-based financial services corporation Citigroup, Ajay Kapur and his colleagues opined that, given the high wealth share of the very rich, economic growth is mainly empowered by the holders of fortunes and consumed by them. Their behavior, it is argued, overwhelms by far that of the "average" consumer (Kapur et al., 2006). It is, however, not only the spending but also the investment capacity of the super-rich that shapes the economy. In retrospect, the collapse of the market for collateralized debt obligations (CDOs) was not only fueled by the stagnant income of the bottom 90 percent in the United States but also by the increasing concentration of wealth among the world's richest individuals, who were "searching for yield" and thus placing assets more and more in the hands of hedge fund managers (Goda and Lysandrou, 2014). Furthermore, recent research empirically substantiates some of the hypotheses about economic-

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elite domination. There is firm evidence that the economic elites and organized groups representing business interests in the United States have a substantial impact on US government policy, while average citizens and mass-based interest groups have only marginal influence (Giles and Page, 2014). However, the concentration of economic power not only produces a concentration of political power, it also gives rise to legislation that perpetuates this vicious cycle (Volscho and Kelly, 2012). Given these insights, research on the super-rich appears more urgent than ever.

Despite the recent surge in scholarship on wealth inequality and the super-rich (Beaverstock and Hay, 2016; Keister, 2014; Keister and Moller, 2000; Piketty, 2014; Saez and Zucman, 2016), the social processes that contribute to achieving and maintaining the status of being part of the top 0.01 percent remain largely a sociological lacuna. The social science literature proposes several explanatory frameworks for the existence and longevity of super-fortunes that are, however, difficult to test (for an overview see: McCall and Percheski, 2010; Medeiros and Ferreira de Souza, 2015).

An initial explanatory framework centers on the phenomenon of "superstars" and on winner-take-all markets. It is argued that (global) changes in technology, information, and communication are skill-biased and likely to reward disproportionally the relative productivity of highly talented individuals who apply their talent to a larger pool of resources and reach a larger number of people than in the past (Frank and Cook, 1995; Kaplan and Rauh, 2013b; Rosen, 1981). According to this logic, self-made entrepreneurs with exceptional talents in lucrative fields (e.g., hedge fund managers) increasingly populate the top of the wealth pyramid. As new money supplants old money, the importance of inheritance for ensuring a place in the highest echelon of wealth is declining.

A second explanatory framework, by contrast, does not focus on individual achievement but emphasizes the importance of the families into which individuals are born. It postulates that intergenerational mobility is so slow that, if people made it to the top, their children, grand-children and great-grandchildren will make it as well (Clark, 2014; Lundberg, 1937). Even if all inherited-wealthy elites are likely to be replaced by self-made elites, the process is assumed to happen only over the timeframe of many generations. Where we fall within the social spectrum is largely fated at birth. Family lineage, not individual talent, is thus expected to determine who maintains great wealth within a timeframe that stretches over as many as four generations.

Many forays into "exposing" the mechanism behind the (re)production of wealth do not fit into either framework. Villette and Vuillermot (2009), for example, argue that successful entrepreneurs are not big risk-takers; instead they prefer to aim for the "sure thing." They hunt for low-cost/high-profit opportunities and skillfully build up alliances enabling them to share risk. More than other people, they regard innovation as a "luxury you have to be able to afford." Analyzing the practices of selected businessmen, Villette and Vuillermot find that "one grows rich through innovating only on condition of having previously acquired the means of controlling the innovation and of being able to resist subsequent uncertainties" (Villette and Vuillermot, 2009: 84). Whether the money they need from other people for innovation has been inherited or not is secondary to their "predator" model of entrepreneurship. Research in general shows that those who receive inheritances or gifts are more likely to run their own businesses (Blanchflower and Oswald, 1998).

For Harrington (2016), the key to building and maintaining great fortunes lies with wealth managers, who use offshore banks, shell corporations, and trusts to shield billions in private wealth not only from taxation but also from all manner of legal obligations. Whether their high-net-worth clients are heirs or self-made entrepreneurs again makes little difference in the chosen approach.

While these last approaches clearly demonstrate that any thorough explanation of the rise and longevity of fortunes needs to move beyond the simple distinction of achieved versus ascribed status, recent controversies hint at unanswered questions regarding dynastic fortunes. In *Capital in the Twenty-First Century*, Piketty (2014: 439) postulates that "all large fortunes, whether inherited or entrepreneurial in origin, grow at extremely high rates, regardless of whether the owner of the fortune works or not." According to Piketty, the main reason for this competitive advantage of the already rich is the pronounced gap between the return on capital and the real economic growth that allows investors to live comfortably on investment income and to pass, often tax-free, the growing wealth to the next generation. If these arguments are conceived narrowly, one could expect wealthy families to grow ever richer over future generations. It is, however, well-known that many of the massive fortunes of the nineteenth century are largely depleted (Arnott et al., 2015). It thus appears more appropriate to ask whether *in the short term of two or three generations* scions of great wealth have advantages over competitors in amassing and further enlarging their own fortunes.

To examine these alleged comparative advantages, this study turns to the American *Forbes 400*, a relatively complete list of the super-rich in the United States. Drawing on unique panel data encompassing all the individuals listed in the yearly *Forbes 400* between 1982 and 2013, we probe factors such as the age of the fortune and family background that either increase or decrease the likelihood of remaining on the super-rich list. In addition, we analyze upward and downward mobility patterns in their ranking. Survival analysis naturally lends itself to the study of length of stay. While the few studies available in the literature on remaining super-rich are mainly descriptive, the inferential survival analyses applied in this paper allow us to distinguish between the most important factors and spurious relationships.

Our results indicate that the percentage of self-made multimillionaires on the list has increased sharply over the course of time. Moreover, the number of financiers and tech-derived super-rich individuals within the *Forbes 400* has also grown considerably over time. Both results support theories emphasizing the importance of economic dynamism and winner-take-all markets for the generation of large fortunes. However, our analysis also reveals that inheritance and belonging to well-off families are the main predictors for staying on the list. We also find that having other family members listed among the *Forbes 400* – an indicator for the concentration of fortunes within rich corporate families – lessens the risk of falling off the list.

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While the chances are small that heirs will drop off the list completely, they are more likely nevertheless to experience downward mobility in the list's ranking. Self-made multimillionaires, by contrast, face more volatility. They are more likely to rise through the ranks but also to drop completely off the list.

While the avenues to great wealth appear to have changed and the ranks of the rich prove remarkably open to the incorporation of newcomers, we therefore conclude that family wealth remains key to remaining on the *Forbes* list. In the case of the super-rich, the many advantages of kinship are enduring, even if these wealthy individuals have become increasingly entrepreneurial.

1. Self-made wealth or family wealth? Theoretical considerations

It is commonly observed that today's list of America's top wealth holders is no longer dominated by scions of great inherited wealth (Khan, 2012). In fact, we can find many representatives of the newly rich on a list of 153 "centimillionaires" published already in 1968 by the magazine *Fortune* (Louis, 1968): J. Paul Getty and H. L. Hunt, whose fortunes were amassed in oil operations; Howard Hughes, who made his fortune in the aerospace industry; or Daniel K. Ludwig, who purchased war-surplus tankers in anticipation of US dependence on foreign oil.

When *Forbes* magazine started in 1982 to publish annually a list of the richest 400 Americans, additional names on the roster emerged from the burgeoning computer industry, such as Bill Gates, who dropped out of Harvard to found Microsoft, or Ross Perot, who founded his own software company, Electronic Data Systems.

Today's list of the richest Americans still reflects the computer revolution with names such as Larry Ellison of Oracle, Jeffrey Bezos of Amazon, Larry Page of Google, Mark Zuckerberg of Facebook, or the late Steve Jobs of Apple. It also features Wall Street speculators like Warren Buffet and hedge fund managers like Steven A. Cohen.

Common to these different types of wealth holders is that individuals need not be born into riches but can access them through extraordinary skill, talent, and profitable market conditions (Rosen, 1981: 845). It is not lucky descendants, whose abilities may be quite ordinary, but self-made "superstars" who come to dominate the market activities in which they engage and manage to earn enormous amounts of money (Frank and Cook, 1995).

Kaplan and Rauh (2013a) find rather indirect evidence for the rise of "superstars" when exploiting data from the American *Forbes 400* for selected years between 1982 and 2011. First, when grouping those people according to the degree of wealth of the family they grew up in ("wealthy," "some wealth," "little or no wealth") they find that the percentage of people who grew up in a "wealthy family" has fallen since 1982, while the number of those on the list with middle-class backgrounds has grown steadily. Second, they show that the share of *Forbes 400* individuals who are the first generation in their family to run their businesses has risen from 40 percent in 1982 to 69 percent in 2011. Third, they complement these findings on individuals with an analysis of the wealth-generating firms. According to the authors, the share of the *Forbes 400* engaged in the technology business or businesses with a significant technology component increased from 7.3 percent in 1982 to 25.5 percent in 2011: thus, change in the profiles of the *Forbes 400* coincides with the rise of technology-based business.

While general economic theory (Goldin and Katz, 2008) attributes rising wage inequality to skill-biased technical change (SBTC), Kaplan and Rauh also theorize that SBTC has powered the rise of the super-wealthy (Kaplan and Rauh, 2013a, 2013b). The *Forbes 400*, they argue, comprises increasingly well-educated individuals "who accessed this education while young and then implemented their skills in the most scalable industries, where increasing technology and returns to skill allow for the greatest generation of wealth" (Kaplan and Rauh, 2013a: 161). Jeffrey Bezos can be cited as an example. In the retail sector, technology and the ability to scale up operations has helped players such as Amazon to transform the landscape and thereby generate billions for a handful of entrepreneurs. In another contribution, the same authors concede, however, that what remains unknown is the degree to which super fortunes are due to gains in skill as compared with improved access to networks (Kaplan and Rauh, 2013b: 49). Indeed, the overall evidence seems to indicate that technological change and the enlarged scale of companies are insufficient to explain all of the dynamics at the very top of the wealth distribution (Medeiros and Ferreira de Souza, 2015). Others attribute the emergence of new fortunes to multiple factors, such as the rise of financial markets, growing tax havens (Zucman, 2015), decreasing top rates of income and inheritance taxation since the 1950s (Scheve and Stasavage, 2016), business monopolies,[1] the political organization of the economy, and a freer flow of goods and information around the world (Frank, 2007; Freeland, 2012). Some argue strongly that returns in a globalized world amplify the rewards for superstars and that new liquidity opportunities for launching companies favor entrepreneurial talents (Frank, 2007).

Within all of these explanatory frameworks, accumulative advantages and better starting positions for heirs are of secondary importance. Technological change, outstanding productive abilities, or favorable market conditions are thought to propel highly talented middle-class individuals. This should result in the top of the wealth distribution becoming less dynastic. Decline is implicitly assumed to be the normal dynamic of family fortunes, since money is divided among heirs who may not be talented and may feel no need to work. Heirs – especially heirs in declining economic sectors – are therefore predicted to fall off the *Forbes 400* rich list more and more and be replaced by the entrepreneurial rich.

[1] History is full of examples. In 1998, for example, the US Justice Department filed an antitrust suit against Microsoft for unlawfully monopolizing computer software markets. Particularly at issue was the way that Microsoft had tied its web browser, Internet Explorer, to its Windows operating system.

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In contrast, theories that center on inherited advantages see the intergenerational transmission of material wealth as an important determinant of being rich (Medeiros and Ferreira de Souza, 2015: 875–877) and therefore postulate that the rich preserve their outstanding position at least in the short term of a few generations. While wealth mobility at the very top has not been studied for the United States, empirical findings for the overall population support the contention that wealth survives longer than just one generation. Investigating families with rare surnames, Clark and Cummins (2014) report substantial correlation between the wealth of families five generations apart. Studying three generations, Boserup et al. (2013) find that grandparental wealth can predict grandchildren's wealth. Even when focusing on households that have not received bequests and drawing on survey evidence, scholars find that the similarities in net worth between parents and their children turn out to be substantial (Charles and Hurst, 2003). Equally, case studies on the super-rich demonstrate that elite wealth clearly exceeds the lifespan of a particular individual (Lundberg, 1937, 1968). On the annual *Forbes 400* lists, the inheritors of some family wealth are found each time, such as members of the Walton, Cox, Mars, or Bass families.

There are various explanations for the intergenerational persistence of family fortunes. The general literature on the rich tends to pay most attention to the transfer of wealth upon death (Hansen, 2014). Studies of wealth research institutes reveal that keeping fortunes in the family hinges on a subset of family members ("stewards") who feel obliged to preserve the family company for future generations and provide the entrepreneurial spirit needed to maintain or even enhance the family legacy (Daniell and Hamilton, 2010). Family offices, private companies that manage investments of a single family, as well as wealth and estate managers also generally play an important role as integrators and coordinators of all wealth affairs within rich multigenerational families (Harrington, 2016). It is estimated that about 4000 super-wealthy families in the United States maintain family offices (Bernstein and Swan, 2007: 250). For example, a well-staffed family office has multiplied the Burden family fortune even six generations after Commodore Cornelius Vanderbilt built his wealth (Phillips, 2002: 116).[2] Moreover, anecdotal evidence suggests that the super-rich often succeed in perpetuating their fortunes through the use of lifetime gifts or family holding companies (Allen, 1987). The familial inheritance of abilities matters, and business networks are also considered as explanatory factors (Clark, 2014). Clearly, the children of the rich inherit not only wealth but also education, socialization, and connections (Khan, 2012). In his research on the American "power structure," G. William Domhoff emphasized the social nature of the managerial class, arguing that the cohesiveness of the "corporate rich" is largely a product of their common upper-class ties: "They belong to the same exclusive social clubs, frequent the same summer and winter sports, and send their children to a relative handful of private schools" (Domhoff, 1998: 2).

Regardless of the social mechanism they address, theories on inherited advantages refute the view that wealth is the product of merit or that fortunes are purely determined by market forces. Quite the contrary: it is argued that the rich are rich due to an inherited control of opportunities. Even if family fortunes are likely to eventually dissipate, this process is assumed to take many generations.

2. Empirical setting: The *Forbes 400*

The dissemination of rosters of wealthy families has a long history. At the height of the Gilded Age, social arbiter Ward McAllister organized balls of the season in the ballrooms of Caroline Webster Astor, the self-crowned queen of New York society. At the last of these balls, held in 1891-92, McAllister leaked the official list of "Mrs. Astor's Four Hundred" to the *New York Times*, granting the public insight into society's highest circles. The term "The Four Hundred" instantly became part of the national vocabulary (Patterson, 2000). Since McAllister's efforts, various rosters that identify the rich have been compiled (Lundberg, 1937, 1968).

In 1982, *Forbes* magazine started to publish annually a list of America's richest four hundred persons. With regard to the inaugural year, the popular magazine reports that setting up the list required an investment of "over a quarter of a million dollars on staff and research" (Forbes, 1983: 168, quoted from Capehart (2014)). In the process of its research, *Forbes* combs through holdings of publicly traded companies, court and tax records, and stories in the printed press. Direct wealth estimates are established by considering stakes in public and privately held companies, real estate, yachts, car collections, and planes, and by also taking debt into account whenever possible. To determine the affluence of a person, privately held companies are valued by coupling estimates of revenues or profits with prevailing price-to-revenues or price-to-earnings ratios for similar public companies.[3] Publicly traded stocks are valued at the closing on a particular day that can vary from year to year (Torgler and Piatti, 2013). *Forbes* also reports to rely on interviews with the listed persons and their "employees, handlers, rivals, peers and attorneys."

Of course, such an exercise finds many critics. The most vexing problems pointed out are the following:

- The assets covered in the estimates are likely to be restricted to those that can be easily identified in public records (Davies and Shorrocks, 1999).

[2] The New York-based William A. M. Burden & Co. has been acting as a steward of the Burden branch of the old Vanderbilt railroad fortune since 1949. *Forbes* reports that, by following an aggressive investment strategy, the family office outperforms the S&P 500.

[3] For a description of the underlying methodology see: http://www.forbes.com/sites/luisakroll/2013/09/16/inside-the-2013-forbes-400-facts-and-figures-on-americas-richest/ <10/24/2016>.

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- In the case of entrepreneurs whose personal wealth is tied to companies, estimates are thus unlikely to be biased. In the case of more diversified portfolios, data are considerably less accurate, even more so when assets have been acquired predominantly through inheritance (Blitz and Siegfried, 1992; Piketty and Zucman, 2015).
- Because of limited information, family fortunes might be attributed to individuals; and since assets are more visible than debts, net wealth estimators are likely to be biased (Atkinson, 2008).

While the *Forbes 400* editors themselves concede that a precise valuation of assets of the rich is impossible, they argue convincingly that the list is the best available "scorecard of who the most important people are."

When US federal tax authority researchers compared the tax data of deceased persons and the *Forbes* lists, it became apparent that "on average, the values reported for tax purposes are approximately half those estimated by *Forbes*" (Raub et al., 2010: 134). The differences most likely stem from the poor assessment of liabilities or the fact that *Forbes* includes the joint assets of married persons in their estimates.[4] Surprisingly, claims that the list is biased or incomplete are rarely made in public.[5]

According to *Forbes*, the richest 400 Americans have become wealthier since 1983, but not constantly. Fig. 1 shows an increase that is less than tenfold between 1983 and 2013 if real wealth is considered instead of nominal wealth. To consider periods of inflation we use two different deflators. CPI is regarded as a cost-of-living indicator for "ordinary people," while CLEWI matches most of the categories in the CPI, but considers more luxurious goods and services. Thus, CLEWI's basket includes, for example, a category for food and beverages, but the category includes a kilo of caviar rather than a loaf of white bread.

In CPI-deflated 2013 dollars the wealth of all 400 persons listed increased less than eightfold from a little over 260 billion to about two trillion constant dollars. The CLEWI-deflated wealth increased about 3.6 times from about 560 billion to again about two trillion constant dollars. It is controversial which of the two inter-temporal comparisons of wealth is more accurate. However, one can state with certainty that the growth of fortunes was considerably more pronounced from the perspective of the 'average consumer' than from the perspective of the 'ultra-wealthy,' who are generally known to purchase products of limited availability.

The aggregate wealth did not increase every year and even decreased in some years. Peaks in 2000 and 2008, as well as subsequent declines are associated with boom and bust cycles of the stock market (Capehart, 2014). It is, for example, safe to assume that when the dot.com bubble bursted, many Internet-based companies lost a large proportion of their market capitalization, causing a significant decline in the overall wealth of the *Forbes 400*.

Even if the people listed on the *Forbes 400* have become the epitome of the super-rich in general, they only represent their upper crust. The two trillion US dollars held by the 400 wealthiest Americans in 2013 amounted to 2.19 percent of total household wealth as measured by the Flow of Funds Accounts (FOFA) developed by the Federal Reserve System. Of course, the share of about two to three percent can be explained by the fact that the *Forbes 400* represent an infinitesimally small fraction of the total US population – roughly 50 times smaller than the top 0.01 percent wealth group (Kopczuk and Saez, 2004). One therefore has to bear in mind that findings on the *Forbes 400* are only informative about wealth dynamics at the very highest affluence level. It is hardly possible to derive generalizations about other top wealth holders.

The *Forbes 400* has never been just a list; it is also a celebration of wealth and capitalism. Like other magazines, it compiles the rankings as a "measure of industry" that lauds "businessmen as heroes, and capitalism as system which promotes opportunity and social mobility" (Gilding, 1999: 174). *Forbes* magazine is most likely marked by a bias in favor of entrepreneurs since inherited fortunes are harder to spot than self-made business fortunes. As Piketty and Zucman (2015: 1342) note, inheritors' portfolios tend to be more diversified and thus more difficult to grasp for *Forbes* reporters. Entrepreneurs' private wealth, in contrast, can be mostly approximated by publicly available information on business assets.

Despite the magazine's focus on entrepreneurship, *Forbes* also documents the accumulation of wealth by family lineage. In 2014, the magazine published its first ranking of the richest families in the United States (185 dynasties with fortunes of at least $1 billion) and started to rank the members of the top 400 by how much they had overcome adversity on the path to access, reserving the lowest score for those who inherited all of their fortune. Since its inaugural year, the *Forbes 400* has proven to offer insights into the role of inheritance for the accumulation of great fortunes (Blitz and Siegfried, 1992; Broom and Shay, 2000; Canterberry and Nosari, 1985).

Despite all its inherent limitations, the *Forbes 400* lists still provide the best available profile of American super wealth, whose potential evidence on the importance of family wealth has not yet been fully exploited. We are highly aware of the uncertainty entailed in all wealth estimates and thus take all numbers simply as orders of magnitude. We argue, however, that the consistent manner in which *Forbes* tracks fortunes on a yearly basis allows us to investigate who stays at the top. Previously listed persons are not taken from the ranking without providing comprehensible reasons and a close re-examination

[4] The authors identify 26 individuals whose net worth at death, as reported on the estate tax return, was sufficient for inclusion, although their names never appeared on the list. The authors put forth two possible explanations for the omission: first, *Forbes* reporters assigned wealth to individuals, that is, they dispersed wealth across families; second, the wealth was earned primarily through creative endeavors and the value of creative assets are difficult to estimate except at the time of auction.

[5] *Bloomberg*, which set up a rival ranking of the world's richest people, identified only a very few international billionaires who were overlooked by *Forbes* magazine in its "World's Billionaires" ranking.

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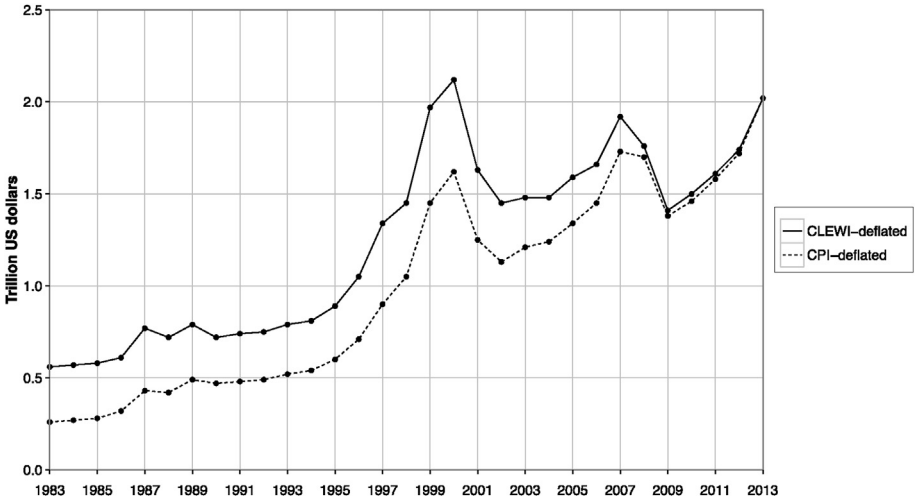

Fig. 1. Wealth of the 400 wealthiest Americans, 1982–2013.
Notes: The aggregate wealth of the 400 wealthiest Americans is shown in nominal dollars, CPI-deflated dollars, and CLEWI-deflated dollars, with 2013 as the base year. Figures are converted to constant dollars either on the basis of the CPI-U-RS series provided by the US Bureau of Labor Statistics or on the basis of the Cost of Living Extremely Well Index (CLEWI) provided by *Forbes* magazine. The CLEWI index tracks price fluctuations of items that are affordable to the ultra-wealthy.

of available evidence by *Forbes* wealth reporters. In the following analysis we give little weight to differences in estimated wealth but concentrate instead on the questions of who makes it onto the list and who stays on it.

3. Data and methods

3.1. Data

Our sample consists of all persons listed by *Forbes* magazine as being among the 400 wealthiest Americans. We included information on all persons and for each year between 1982 and 2013, which yields an unbalanced panel dataset recording the complete duration of *Forbes* members in the list. In total, the sample consists of 1488 persons in 12,792 person-years. Yearly information such as net worth, rank, or source of wealth was taken from the tabulations in all print editions. We complemented these data with additional information that was mostly taken from Marquis *Who's Who in America* and online biography resources (e.g., en.wikipedia.org). Kaplan and Rauh (2013b) provided us with data for four years (1982, 1992, 2001, and 2011). We adopted some of the variables used in their study, recoded others to fit our research interests, and revised a few codings (see below for details).

3.2. Methods

We use event history models to gauge factors that influence the number of years a person is listed ("survival time") until experiencing an event – that is, in our case, falling off the list ("failure"). "Failure" is a binary variable that takes the value 1 if a listed member drops out. Because dropouts can re-enter the list in subsequent years, we deal with multiple failure events.[6] We right-censor the data, which implies that failures in the last year of observation (2013) are not counted as such. Table A1 (Appendix) provides an overview of the total number of failures. As can be seen, the majority of individuals listed experience one or two dropouts. Among the 1488 people listed, 307 (20.63%) face no dropout; 895 (60.15%) one; and 234 (15.73%) two dropouts. The remaining 52 persons have three or four dropouts.

Cox regression is applied to estimate the factors that increase or decrease the likelihood that the failure event will occur. We fit proportional hazard models (Cox, 1972) – as the literature suggests these as the most flexible procedures for estimating survival data (Blossfeld and Rohwer, 2002; Box-Steffensmeier and Jones, 2004; Cleves et al., 2010) – using robust standard errors clustered by persons (Lin and Wei, 1989). For tied events, the Efron method is applied. To account for multiple failures, we employ the widely used marginal risk set model (Wei et al., 1989). This approach estimates the Cox regression with stratified coefficients based on failure occurrence. In the model applied in this study, individuals are at risk for all events at all times prior to experiencing that event (for detail, see Box-Steffensmeier and Zorn, 2002: 1075).

[6] Arguably, the failure event is imposed rather arbitrarily by the choice of the magazine to use a yearly ranking of 400 as a cutoff value. In a previous analysis, we therefore checked whether the results change if we use a cutoff value of 300 and 350. Results showed essentially no differences to those presented below (but are available upon request).

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3.3. Predictors

We use the following predictor variables for this study (see Table A2 for descriptive statistics of all variables).

3.3.1. Inherited

This is a dummy variable that takes the value 1 if the fortune was inherited and 0 if it was self-made. We deem a fortune to be self-made only if the individual built it (more or less) from scratch. According to this logic, the founder of the retailer Walmart, Sam Walton, who was born to a farm family, qualifies as self-made. Donald Trump, who built on his father's real estate company, is categorized as an heir. The variable thus does not capture whether someone succeeded in increasing family fortunes and is furthermore insensitive to the actual size of inherited estates. When coding the variable, we only partly relied on information from *Forbes* magazine, as its designation of self-made fortunes appears to be overstretched (Elwood et al., 1997).[7] We considered *Wikipedia* online biographies, various editions of the *Forbes 400* magazine and the Marquis *Who's Who* to check for *each and every* listed multimillionaire whether or not he or she received (smaller or larger) wealth transfers of different kinds.[8] To check the robustness of the "inheritance effect" in our models, we integrate in all analyses the alternative variable "wealthy family background" that is expected to yield similar results.

3.3.2. Number of family members

Individuals listed over the last thirty years often belong to family dynasties.[9] Jay Arthur Pritzker (b. 1922) and Robert Alan Pritzker (b. 1926), for example, form part of a powerful Chicago family whose roots date back to Abraham Nicholas Pritzker (b. 1896), who initially grew the family fortune by investing in real estate and small companies. To capture the importance of rich multigenerational families, this variable counts the number of a person's family members listed in each annual ranking.

3.3.3. Wealthy family background

As an alternative to the inheritance measure, a further variable measures the affluence level of the families of origin by adopting Kaplan and Rauh's threefold classification scheme ('no wealth in family', 'some wealth in the family', and 'wealthy'). The external validity check with Kaplan and Rauh's data can only be made for three selected years. For the year 2011, the codings match perfectly. For the 2001 data, we could identify three deviating codings, and for the year 1992 fourteen mismatches. With regard to the 1992 data we see disagreements on such persons as Ted Turner, who took over the father's billboard business in 1963 that was worth an estimated $ 1 million, or Barbara Hall Marshall, the daughter of an American businessman and founder of Hallmark Cards, Joyce Hall. In our view, the external check reveals that there is room, if only very limited, for diverging interpretations.

It has to be emphasized that we found it impossible to reliably implement a monetary criterion for the measure "wealthy family background," such as "inherited wealth in excess of $500 million," because little detailed information is available. However, we do have one criterion: the variable is coded "wealthy" for all offspring of families that own at least one large and prosperous corporation, such as the businesses listed in *Fortune 500*, or of families that have amassed enough assets (e.g., land) to qualify them easily for the list if they inherit these assets. Such descendants from rich families are, for example, Alice L. Walton or Charles G. Koch. We coded 'no wealth in family' (e.g., Oprah Winfrey) if the parents were blue-collar workers and "some wealth in family" if someone came from a background that was lower-middle class or middle class, but not rich (e.g., Steven Spielberg).

3.3.4. Sectors

By again adopting in part a coding from Kaplan and Rauh (2013b), we identify the sector in which the wealth of each individual *originated* by categorizing the relevant wealth-generating firms into thirteen categories (from retail to finance and real estate, see Table A2 in the appendix). Heirs to the Rockefeller family, for example, are thus assigned the category "industrial/energy," because the vast Rockefeller fortune was first made from oil. The fact that the Rockefeller group has branched out into other sectors such as real estate and even sells its investments in fossil fuels is not captured by the variable.

3.3.5. Age of fortune

This measure captures the approximate age of fortunes by considering the founding year of the corporation that generated the individual's wealth (for a smiliar approach, see Blitz and Siegfried, 1992). The measure is defined as 2013 minus the founding year. Here are some illustrations:

[7] In 2014 *Forbes* dropped the dichotomous information (inherited vs. self-made) and introduced instead the 10-point "self-made score." At the most basic level, the scores denote who inherited some or all of their fortune (scores 1 through 5) and those who made it on their own (6 through 10). For previous years, self-made scores are unavailable.

[8] For each of the 1488 cases, we double-checked all information by googling the respective name in combination with the keyword "inheritance." In the case of Rupert Murdoch, for example, Google referred us to a relevant text passage in a biography on Rupert Murdoch: "Twenty-one-year-old Rupert inherited his father's media business. And his father's estate taxes would take most of the inheritance" (Vander Hook, 2011: 21).

[9] Following Landes (2006: 294), we define "dynasty" as a "succession of at least three generations of a family business, marked by continuity of identity and interest."

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- The chemicals empire that delivered sufficient profits to keep Du Pont heirs on the *Forbes 400* list until 1998 dates back to 1802, when the company was founded by Éleuthère Irénée du Pont in Delaware to produce black powder (see also Table A4 in the appendix).
- The foundation of Wal-Mart Stores in 1962 laid the groundwork for the family's ascendancy to economic power.
- In cases of executives and lawyers who became rich due to astronomically high salaries, the origination date is defined by the year in which the person took up a particular job position that was key to his/her private wealth generation. Maurice Raymond Greenberg, former CEO of American International Group (AIG), for example, took over responsibilities for the company's domestic operations in 1962.

3.4. Controls

All control variables introduced serve the purpose of testing whether the relationships between inherited advantage and the probability to remain listed are confounded by potentially relevant variables. We use the following control variables.

3.4.1. Age

Failure from the list might be a function of a person's age, so we do control for this possibility. In particular, older people might benefit from longer careers or from establishing their fortune in “classical” sectors like energy, while younger people might benefit from high-tech knowledge and new digital technologies. Therefore, we include this measure with a squared term and expect a U-shape association between age and failure. The age information, measured in years, is taken from the birth years of the listed persons. In cases where there was no birth year indicated in *Forbes* magazine, we used information given in other sources (such as *Who's Who in America*). If no data on age was available, we used the average for all persons (which we did in 0.3 percent of all cases).

3.4.2. Female

The relationship between inheritance and survival time might be confounded by the fact that men and women might differ in their status as inheritors or self-made entrepreneurs, and controlling for gender disentangles a potential confounder effect. We derive a person's gender from the list member's first name.

3.4.3. Worth

This variable, measured in millions of US dollars, is the amount of wealth that is given in each of the *Forbes 400* yearly issues.[10] Survival in the list is clearly a function of the current wealth with which the person is listed. Controlling for this measure is necessary in order to estimate an inheritance effect net the level of wealth. We include this measure in squared form because dropout hazards may vary nonlinearly with the amount of wealth. Lower amounts may face larger dropout hazards, but the risk may attenuate sharply with increases in wealth. Higher levels of wealth may then only marginally affect the hazards of falling off the list.

3.4.4. Deceased

Persons who die obviously drop off the list. Fifteen percent of the four hundred people who were first listed in 1982 eventually fell off the list because they died. Having registered the year of death, we are able to control for such occurrences. Sample exits are coded as “exit by death” if the person died in the year in which the ranking was published or in the subsequent year.

3.4.5. University

This is a dummy variable that takes the value 1 if the person is listed in the *Forbes* ranking attended a university or a college. Otherwise it is 0. This means either that the person did not attend college or university or that the relevant information is not available. According to the *Forbes* data, 73 percent of all list members are associated with a college or university, so the unknown information applies to 27 percent of those listed. Further, the variable does not distinguish between people who actually hold an academic degree and those who only spent some time at the school. It also does not distinguish between top-tier and lower-tier schools.

3.4.6. Yearly changes in mean wealth

The yearly risk of failure not only depends on the wealth of each individual but also on changes in aggregate wealth of all listed persons. For instance, one might fall off the list if the wealth of all other listed members increases. Therefore, this variable computes the growth of real (i.e., inflation-adjusted) mean wealth, measured as the yearly percentage change (increase or decrease) from the previous year.

[10] In the years 1982–1989, *Forbes* magazine did not report an estimate of Malcolm Stevenson Forbes, who was editor-in-chief of the magazine *and* on the *Forbes 400* list. Due to this missing information we excluded Mr. Forbes from the list.

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4. Results

4.1. The rise of self-made entrepreneurs

Table 1 shows across all years (1982–2013) the average age of fortunes, the proportion and the mean rank of all listed persons according to their respective family background, and the fact whether they inherited or not. The average age of fortunes drops from 97 years in 1982 to 48 years in 2013. This suggests that old money (Burris, 2000) becomes increasingly supplanted by new money. In a similar vein, the share of persons who grew up wealthy drops from 56 to 29 percent. Consistent with these findings, listed individuals who inherited account for only 33 percent in 2013 compared with 58 percent in 1982. Taken at face value, the descendants of wealthy families occupy higher ranks than those with some wealth in the family. Especially in more recent years, those from working-class families tend to be ranked at the top most. Even if the role of inheritance appears to be diminishing with time and old money tends to fall gradually behind, a shrinking number of heirs continue to claim on average slightly higher ranks than purely self-made multimillionaires.

Throughout all years, heirs running the family business tend to belong to the second generation (Kaplan and Rauh, 2013a). Zooming in on the *Forbes* data, the number of list members from wealthy family backgrounds decreases over time. The Du Pont fortune, for example, generated the wealth of 30 different individuals on the 1982 *Forbes 400* list. By 1998, no member of the Du Pont family made the list anymore. Similarly, the number of Fords, Mellons, Hunts or Rockefellers plummets considerably.

To be sure, these findings do not imply that vast family fortunes that figured high in the initial years of the *Forbes 400* rankings dissipated within three decades. On the contrary, established rich families tend to increase their holdings (Phillips, 2002). For example, it is documented that the fortune of the Hearst family, whose members are involved in the ownership and management of a multinational conglomerate group, increased from $800 million in 1982 to $10.1 billion in 2006, implying an annualized increase of about 11 percent (Bernstein and Swan, 2007: 231).

To provide perspective on the origins of the industries behind the *Forbes 400*, we replicate Table 2 in Kaplan and Rauh (2013a: 47), but by using a modified selection of years. Table 2 aggregates businesses into thirteen categories. Exactly in line with Kaplan and Rauh, it reveals the growing importance of technology-based businesses, finance,[11] and retail. While finance was the primary wealth sector for only 4.6 percent of all multimillionaires in 1982, three decades later, in 2012, it surpassed all other areas. It thereby represented the main source of wealth for 20.7 percent of the *Forbes 400*, which was interpreted as indicating the "financialization" of the capitalist class (Foster and Holleman, 2010). The sectors of energy, diversified business, media, and consumer goods have not managed to maintain their overall shares of the distribution over recent decades, while those of technology (computer/medical) and retail grew by about 11 percent and became the nearest competitors to finance. The number of multimillionaires having made a fortune in real estate is most clearly in decline.

Taken together, the reported findings suggest that, at the top level, America is a mobile society without a hereditary upper caste. In line with prior research, the analysis suggests that the factors of a rich family background and inheritance have indeed lost importance over time. The decline is reflected in changes in the basis for the acquisition of enormous wealth, such as the advent of personal computers and the Internet, of new medical devices or financial products – a trend that speaks in favor of an increased importance of new money. However, one question remains: which fortunes tend to last and which tend to be edged off easily by others?

4.2. The enduring importance of inheritance and family structure

What commentators evaluating the *Forbes 400* list regularly observe is a different lineup of people from year to year. New faces appear; lots of people move up and down or drop off the list. If the super-rich do not dedicate their wealth to philanthropy or die, they either fall short of the *Forbes 400* because the stock prices of their companies fall or they do not manage to keep pace with the other members on the list or both of these things happen. When publishing the "drop-offs," *Forbes* reporters often explain why they think fortunes fall or underperform.[12] The question that has not yet been systematically investigated is what actually determines an individual's chances of retaining a position within the ranking. In order to understand whether self-made entrepreneurs and scions of inherited wealth are equally likely to remain on the list, we analyze the factors that influence the probability of being removed from it.

Table 3 presents results of a set of nested model estimations. We begin with a baseline model in which we enter the basic control variables (Models 1 to 2), and then we enter our key predictors in Models 3 to 6. Before we discuss the key predictors,

[11] Table 2 is constructed on the basis of the information on the primary source of wealth given by *Forbes* magazine. If we were to adopt a broader definition of finance and consider multiple sources of wealth, the great majority of listed individuals would classify as being connected to the field of finance, in the sense that they participate in financial markets (Shiller, 2012). Steven Spielberg, for example, is not only a film producer but also the co-founder of *DreamWorks Studios*, which financed films and was sold to *Paramount Pictures* for $1.6 billion.

[12] The justifications given are often not very elaborated. Usually one finds arguments similar to the following: "Among this year's biggest percent losers is 5-Hour Energy drink creator Manoj Bhargava. After debuting on the Forbes 400 list last year with a net worth of $1.5 billion, Bhargava saw his net worth more than halved to $800 million. Sales of 5-Hour-Energy drinks have been falling, leading FORBES to slash our valuation of Bhargava's Living Essentials, the 5-Hour Energy parent firm, which is also being hit with a class-action lawsuit for wrongful advertising," see http://www.forbes.com/sites/ryanmac/2013/09/16/falling-fortunes-the-ones-that-dropped-off-the-forbes-400/<10/21/2016>.

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Table 1
Forbes 400, 1983–2013: The rise of self-made fortunes.

Year	Age of fortune	Family background (%)			Forbes rank (mean)			Inheritance	Forbes rank (mean)	
	(mean)	no wealth	some wealth	wealthy	no wealth	some wealth	wealthy	(%)	inherited	self-made
1982	97.4	21	20	56	176.2	192.2	170.2	58	169.5	189.3
1983	95.4	21	21	54	160.1	181.4	193.4	60	196.0	177.9
1984	93.3	21	22	54	171.8	181.1	184.7	58	186.4	178.7
1985	96.1	19	23	53	159.5	182.9	194.7	58	195.8	180.7
1986	91.2	19	25	50	150.8	202.9	188.9	56	192.3	183.1
1987	83.4	22	28	44	180.7	202.2	186.0	50	192.0	194.9
1988	78.8	22	28	43	183.9	213.1	179.5	49	189.8	199.8
1989	80.3	24	27	44	201.1	215.5	171.9	49	181.1	210.1
1990	81.9	22	28	44	185.6	218.4	179.9	50	190.1	202.7
1991	80.3	21	31	44	188.4	207.1	184.8	50	191.4	200.2
1992	80.2	21	34	42	195.0	212.8	172.8	49	181.7	205.2
1993	79.2	19	33	43	193.5	211.1	176.4	50	181.3	210.5
1994	77.6	20	33	42	202.4	210.4	174.0	50	184.8	208.4
1995	75.1	19	35	41	200.8	220.1	167.7	48	179.6	212.7
1996	72.2	18	35	40	197.2	210.4	172.3	47	181.2	211.4
1997	71.0	17	38	39	194.2	215.5	164.8	47	182.3	210.4
1998	68.5	19	39	38	197.2	206.6	173.3	46	186.8	205.8
1999	60.0	20	41	34	191.0	200.6	178.9	41	189.2	200.5
2000	55.9	19	43	31	180.6	204.2	184.7	37	197.1	194.6
2001	58.8	20	45	33	176.9	215.0	168.0	39	182.1	203.9
2002	59.6	20	42	35	176.5	217.4	171.2	41	185.3	203.5
2003	59.6	21	41	35	181.2	212.2	175.9	41	185.5	203.0
2004	59.2	20	41	36	160.1	217.7	177.0	42	191.4	194.9
2005	56.1	21	41	33	158.0	222.1	168.5	39	184.3	197.3
2006	53.7	21	42	32	156.5	222.7	161.2	37	179.5	199.3
2007	51.9	22	43	31	169.2	227.8	151.9	34	173.9	203.2
2008	51.9	22	43	31	167.8	224.6	155.4	35	174.7	203.9
2009	51.7	22	44	31	153.9	225.6	165.3	34	187.4	198.5
2010	50.5	21	47	31	151.1	236.1	162.4	34	178.8	203.9
2011	48.8	20	49	31	138.6	240.5	161.6	32	181.1	202.0
2012	48.2	22	46	29	153.4	238.8	154.4	32	172.4	206.3
2013	47.8	20	44	29	147.0	234.6	161.8	33	182.1	203.4

Table 2
Sectoral distribution of wealth-creating businesses behind the *Forbes 400*.

	1982	1992	2002	2012	Change 1982 to 2012
	%	%	%	%	%
Industrial					
Retail/restaurant	5.5	11.4	12.8	16.3	10.8
Technology – computer	3.0	5.1	10.2	12.0	9.0
Technology – medical	0.5	1.8	2.3	2.8	2.3
Consumer goods	13.5	18.4	13.8	11.3	−2.2
Media	14.2	13.9	16.0	8.8	−5.4
Diversified	19.8	18.7	15.3	11.3	−8.5
Energy	21.8	9.9	6.8	9.8	−12.0
Total	*78.3*	*79.2*	*77.2*	*72.3*	*−6.0*
Finance and investments					
Hedge funds	0.5	1.0	2.5	8.3	7.8
Private equity/LBO	1.8	3.3	4.5	6.8	5.0
Money management	2.0	6.1	6.0	4.3	2.3
Venture capital	0.3	0.5	1.0	1.3	1.0
Total	*4.6*	*10.9*	*14*	*20.7*	*16.1*
Real estate	17.2	10.1	8.8	7.3	−9.9

we highlight the results of the control variables. Model 1 enters the variables age, female, worth, deceased, and the university dummy. Rather self-explanatory, the occurrence of death turns out to be the strongest predictor of failure. This result could be interpreted as an effect of immobility. People who dropped off the list due to death remained on the list until the end of their lives. The reported value of assets in each year lowers the risk of falling off the list. The effect is moderately nonlinear. Failure hazards are strongest for comparatively small fortunes and decrease sharply with increases in wealth. Especially large fortunes only marginally decrease the failure hazard. As expected, age has a similar effect. Older multimillionaires are more

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Table 3
Cox regression on hazards of dropping out of the *Forbes 400* list.

	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.954**	0.959*	0.942***	0.938***	0.933***	0.932***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.019)
Age (squared)	1.000	1.000	1.000*	1.000*	1.000*	1.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.925	0.938	0.825	0.883	0.937	0.876
	(0.091)	(0.090)	(0.093)	(0.105)	(0.102)	(0.098)
Worth	0.997***	0.997***	0.997***	0.997***	0.997***	0.997***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Worth (squared)	1.000***	1.000***	1.000***	1.000***	1.000***	1.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deceased	4.570***	4.888***	5.002***	5.021***	5.000***	5.562***
	(0.460)	(0.473)	(0.484)	(0.486)	(0.485)	(0.557)
University	0.678***	0.686***	0.705***	0.692***	0.685***	0.691***
	(0.053)	(0.051)	(0.055)	(0.054)	(0.053)	(0.058)
Sector 1.		(reference	(reference	(reference	(reference	(reference
Retail/restaurant		category)	category)	category)	category)	category)
Sector 2.		1.025	1.246	1.129	1.113	1.021
Technology – computer		(0.168)	(0.221)	(0.194)	(0.193)	(0.185)
Sector 3.		0.874	0.879	0.878	0.903	0.868
Technology – medical		(0.335)	(0.413)	(0.387)	(0.395)	(0.420)
Sector 4.		1.067	0.954	0.897	0.914	0.877
Consumer goods		(0.161)	(0.158)	(0.142)	(0.144)	(0.148)
Sector 5.		1.082	1.077	1.057	1.068	0.983
Media		(0.171)	(0.185)	(0.173)	(0.173)	(0.164)
Sector 6.		1.135	1.250	1.187	1.156	1.103
Diversified/other		(0.172)	(0.205)	(0.184)	(0.180)	(0.183)
Sector 7.		1.606**	1.420	1.331	1.340	1.281
Energy		(0.286)	(0.272)	(0.247)	(0.252)	(0.251)
Sector 8. Finance:		1.476	1.879**	1.750*	1.766*	1.928**
Other		(0.340)	(0.440)	(0.395)	(0.395)	(0.456)
Sector 9. Finance:		0.989	1.204	1.112	1.111	0.982
Hedge funds		(0.277)	(0.353)	(0.335)	(0.335)	(0.278)
Sector 10. Finance:		0.861	0.988	0.916	0.914	0.973
Private equity/LBO		(0.189)	(0.226)	(0.206)	(0.207)	(0.224)
Sector 11. Finance:		0.997	1.060	0.969	1.000	0.988
Money management		(0.176)	(0.190)	(0.164)	(0.168)	(0.179)
Sector 12. Finance:		0.559	0.642	0.591	0.588	0.609
Venture capital		(0.172)	(0.183)	(0.171)	(0.169)	(0.198)
Sector 13. Real estate		1.349	1.361	1.224	1.182	1.123
		(0.208)	(0.226)	(0.196)	(0.192)	(0.197)
Yearly changes in		1.021***	1.021***	1.021***	1.021***	1.020***
mean wealth		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age of fortune			1.018***	1.027***	1.031***	1.027***
			(0.003)	(0.004)	(0.004)	(0.004)
Age of fortune (squared)			1.000***	1.000***	1.000***	1.000***
			(0.000)	(0.000)	(0.000)	(0.000)
Inherited				0.609***	0.635***	
				(0.069)	(0.072)	
Number of family members					0.934**	0.924**
					(0.022)	(0.023)
Number of family members					1.004***	1.004***
(squared)					(0.001)	(0.001)
Wealthy family background:						(reference
No wealth in family						category)
Wealthy family background:						0.706***
Some wealth in family						(0.067)
Wealthy family background:						0.596***
Wealthy						(0.081)
Mc Fadden Pseudo R^2	0.121	0.129	0.131	0.132	0.135	0.144
AIC	18170.777	17856.765	17123.437	17091.588	17045.016	14189.088
BIC	18222.973	18005.823	17287.163	17262.756	17231.069	14381.492
Log likelihood	−9078.388	−8908.382	−8539.719	−8522.794	−8497.508	−7068.544
Number of failures	1523	1508	1455	1455	1455	1243
N (persons)	1488	1477	1426	1426	1426	1210
N (person-years)	12792	12745	12608	12608	12608	12090

Notes: Exponentiated coefficients (hazard ratios); cluster-robust standard errors in parentheses; $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (two-tailed tests).

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likely to make the list repeatedly than are younger multimillionaires. Survival chances do not significantly differ between men and women. A university degree decreases the failure hazard, meaning that graduates face lower risks of falling off the list. Models 2 and 3 add further control variables. Model 2 enters the sectors in which fortunes originated (with retail/restaurant as the reference category) and yearly changes in inflation-adjusted mean wealth.[13] The results show that fortunes generated in finance/other[14] (Models 3 to 6) as well as in the energy sector have a greater likelihood of failure (as compared with retail/restaurant), although the latter is significant only in Model 2.[15] The energy sector loses significance once we control for age of fortune in Model 3. Regarding the yearly changes in mean wealth, as expected, this measure has a positive impact. The hazard ratio of the coefficient is 1.021, implying that if the mean (aggregate) wealth of the previous year increases by one percent, the average risk of dropping off the list increases by about two percent. The logic is straightforward: the more the list's wealth increases in a given year, the more likely is an individual dropout.

How does the effect vary between old and more recently established fortunes? Model 3 includes age of fortune and its squared term. Accounting for a possible nonlinear effect of this variable enables us to test for the significance of business cycles or certain years with particularly high investment yields. Both variables show a significantly positive sign, although the squared term is not very pronounced. The dropout hazards tend to increase with age of the fortune, but then moderately decrease at a threshold of approximately 140 years of age. Dropout hazards thus decrease for America's oldest fortunes, those belonging, for example, to the Dorrance, Cargill, or the Mellon family.

Model 4 adds the inheritance variable. As can be seen, inheriting assets increases chances of survival.[16] This result supports the discussions on the enduring importance of family wealth for remaining among the super-rich. While the inheritance measure does not add much to the overall model-fit (in terms of McFadden's pseudo R-squared measure), the effect is significant nevertheless.[17] According to Table 3, the hazard ratio of the inheritance dummy is 0.609 (Model 4), which implies that the hazard of falling off the list is about 40 percent lower for people who inherited than for self-made multimillionaires [(1−0.609)*100]. Put differently, self-made multimillionaires are 60 percent more likely to experience the event of falling off the list.

The effect remains significant in Model 5, which additionally accounts for the number of family members on the list. We include a squared term in order to account for “diminishing returns” of having family members listed. The result does indeed suggest a nonlinear, U-shaped effect, although again at very moderate levels. A larger number of family members is generally associated with decreasing dropout hazards, while the hazards increase for families with more than about ten listed family members (such as the Du Pont family). However, this does not apply to the majority of the listed rich, as the mean number of family members is 1.67 with a standard deviation of 3.73. In fact, less than 5 percent have more than ten listed family members.

Finally, Model 6 includes the family wealth variable as an alternative to the inheritance dummy. Since both variables measure essentially the same, we include them separately into the models. As can be seen, descendants of wealthy families have better prospects for remaining on the list.

To facilitate the interpretation of these results, Fig. 2 displays the model-predicted cumulative failure hazards linked to inherited versus self-made fortunes with respect to the actual age of fortune (upper panel) and the number of listed family members (lower panel) (all based on Model 5 of Table 3). We use solid lines for inherited and dashed lines for self-made. The upper panel shows that the model-predicted cumulative failure hazards for fortunes that are older than the median (56 years) or the mean (65 years) vary systematically between heirs and self-made multimillionaires. In both cases, the failure hazards are clearly elevated for self-made individuals. Only for relatively recently established fortunes that are 39 years old do these differences disappear. The importance of inheritance and family structure is shown in the lower panel of Fig. 2. As can be seen, the cumulative failure hazard is always higher for self-made millionaires than for heirs, independent of whether there are other family members listed or not. The hazard is highest for self-made multimillionaires whose family members do not belong to the richest 400 Americans; it is lowest for inheritors who have many other family members on the same list (such as the Waltons).

[13] We choose retail/restaurant as the reference category because a) together with “diversified/other,” it is one of the largest groups (overall as well as over all time points) and b) “retail/restaurant” is a less abstract category than, say, “diversified/other.”

[14] The category “finance/other” encompasses 94 subcategories that we could not unambiguously assign to one of the categories featured in Table 2. In some cases, Forbes makes only the information available that someone's main source of wealth is “banking”, “debt collection”, etc., or that “bonds” or “financial services” have made someone super-rich. In these cases, as well as in a few cases where the indicated finance institution has no distinctive identity, we coded “finance/other”.

[15] Table A3 in the appendix tests additional interaction effects between inheritance and sectors as well as between age and sectors. We tested each of the 13 sector dummies separately and identified two significant interactions between inheritance and sectors: a positive interaction effect with hedge funds and a negative with technology/medical (see Models 1 and 2). In substance, dropout hazards increase for heirs investing in hedge funds and decrease for those in the technology/medical sector. As for the interactions between age and sectors, we found four significant interaction effects: age*retail/restaurant (positive interaction), age*media (positive interaction), age*energy (negative interaction), age*finance/other (negative interaction). That means that the negative effect of age (i.e., older people tend to have lower dropout hazards) is less pronounced if the sector is retail/restaurant or media. To the contrary, the negative effect of age (i.e., older people tend to have lower dropout hazards) is especially strong in the sectors energy and finance/other (see Models 4 to 6).

[16] This is supported by Table A1, which shows cross-tabulations and a significant correlation between source of wealth and number of failure events.

[17] Mc Fadden's pseudo R-squared is not directly comparable to the ‘explained variance’ logic of regular R-squared in OLS regressions. In nonlinear models, a pseudo R-squared value of above 0.2 is considered an excellent-fit model (Louviere et al., 2000: 54). Since the R-squared values in our models range from 0.122 to 0.144, we believe that our models capture substantial parts of the heterogeneity in the dataset.

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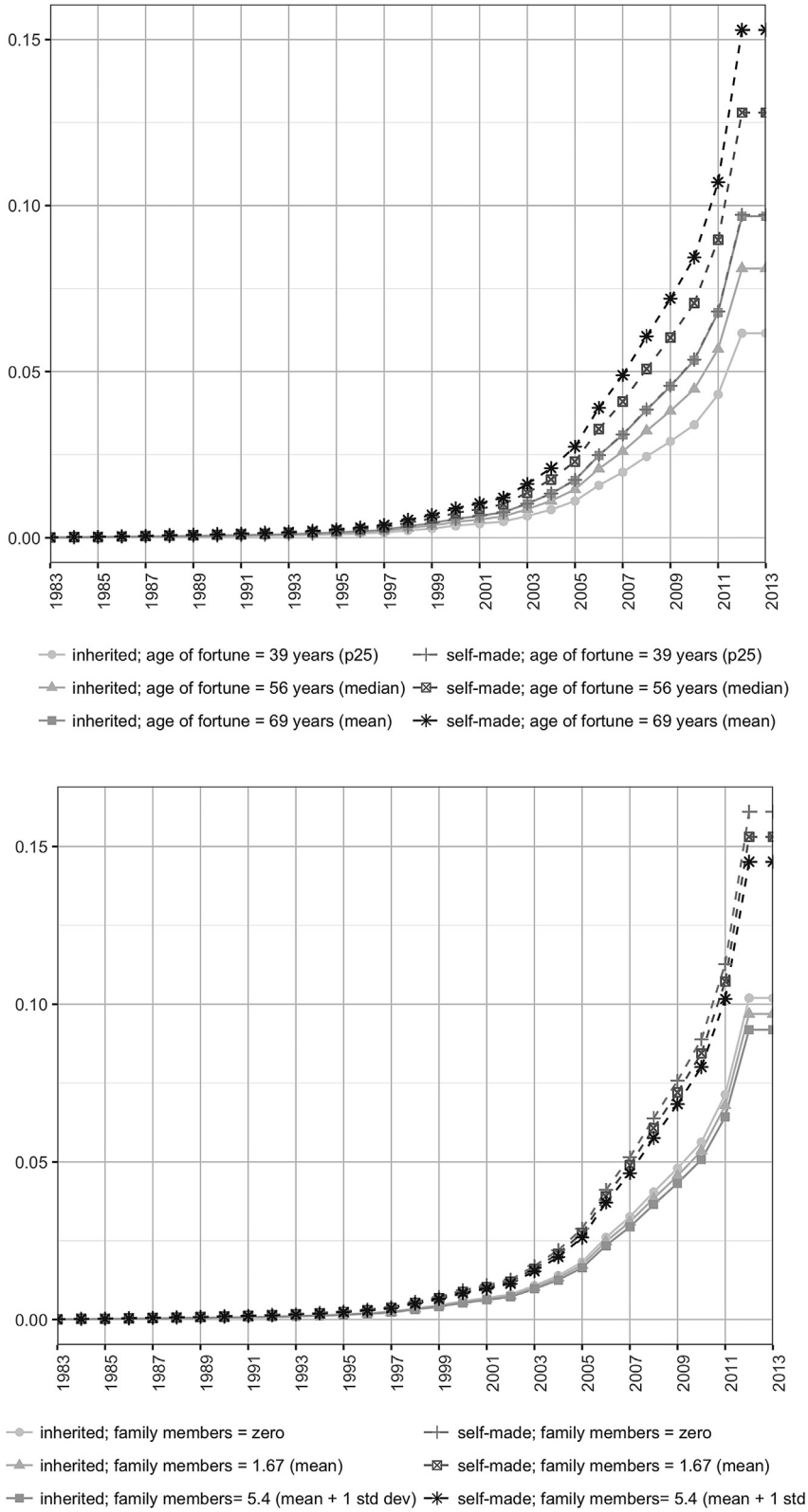

Fig. 2. Model-predicted cumulative failure hazards for source of wealth, conditioned on the age of fortune (upper panel) and the number of family members listed (lower panel).
Note: Based on Model 5 of Table 3. All covariates fixed at their means. Dashed lines indicate self-made wealth, solid lines indicate inherited wealth.

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When interpreting these results, one has to bear in mind that many scions of the super-rich are not "coupon-clipping rentiers," but rather are marked by entrepreneurial drive. For example, Richard Mellon Scaife (b. 1932), reclusive heir to the Mellon banking fortune, grew a suburban paper into today's *Pittsburgh Tribune-Review*. *Forbes* lists him among the 400 richest individuals for all years between 1982 and 2013. Edgar M. Bronfman Sr. (b. 1929), a second-generation heir in the Bronfman family that made a fortune in the beverage business during the twentieth century, took the Seagram company into the oil business when liquor profits began to falter. His son, Edgar Bronfman Jr. (b. 1955), transformed Seagram into a major player in Hollywood. *Forbes* magazine listed Edgar M. Bronfman Sr. for 28 years. One can safely assume that many other heirs actively manage the family wealth with the objective of not only preserving the fortune but accumulating even more wealth (see also Table A4 in the appendix). Inheritance and entrepreneurship are thus not mutually exclusive in the case of the *Forbes* 400.

To further examine our findings, we conducted an additional analysis that looks at mobility in the yearly ranking. In doing so, we have created three additional dependent variables (see Table A2 for summary statistics). The first is called "mobility" and measures the yearly differences in ranking between the current and the previous year. If there is a dropout and a later re-entry to the list, the measure codes the difference in ranking between the current year and the last ranked position before the dropout. Positive numbers on this measure indicate upward moves in the ranking, negative numbers indicate downward moves. The measure therefore captures whether a person experiences upward or downward mobility over the years on the *Forbes* list. Based on this variable, we computed two additional dummy variables. One measures downward mobility and takes on the value 1 if the person experiences a downward move in the ranking larger than the top 25 percentile of all yearly downward moves. The other variable captures upward mobility and takes on the value 1 if the person experiences an upward move in the ranking that is larger than the top 25 percentile of all yearly upward moves.

Table 4 replicates Models 4 and 5 of Table 3 using these three additional dependent variables and applying random-effects regression for the mobility measure and pooled logit models for the downward and upward dummies (all models use cluster-robust standard errors). The results reveal interesting additional insights into mobility dynamics. As can be seen, people who inherited their fortune are marked by significantly higher differences in their yearly ranking than people with self-made fortunes. The coefficients of the inheritance dummy in Models 1 and 2 are about - 2.9, suggesting that, on a yearly average, heirs rank lower by about three ranks between the current and prior years. Considering both the results of Tables 3 and 4, the most significant finding is that people who inherited will face lower risks of completely falling off the list in general, but they tend to be ranked lower than self-made multimillionaires over the years.

The same conclusion is supported by the two logit models on estimating the probability of a move downward (Models 3 and 4) or upward (Models 5 and 6) that is greater than the top 25 percentile. Heirs have a larger likelihood of facing a downward move than self-made people, while self-made multimillionaires have a higher likelihood of upward mobility. These results provide additional evidence for our main finding that inheritance explains longevity of fortunes but does not necessarily ensure a top ranking on the list. However, people who created their own fortunes show higher rates of volatility. On the one hand, they have higher chances of moving up the list, and on the other, they also are more likely to be edged off completely. The mobility pattern that emerges for heirs is diametrically opposed to this. Heirs face more downward mobility but are more likely to remain listed over the years.

To better understand the reported findings and especially the impact of the age of fortune (upper panel in Fig. 2), some additional information is needed. Most of the wealth considered by *Forbes* reporters was derived, at least initially, from the ownership of corporate stock. By and large, old business is associated with rich corporate families such as the Mellon, Bass, Getty, or Cargill families, who owe the bulk of their fortunes to stockholdings in a single large corporation that started as a small firm (see Table A4). Even if the historical evolution of wealthy capitalist families differs greatly, family fortunes turn out not to be transitory phenomena. Most of the corporations listed in Table A4 are still at least partly controlled by their respective families. More than a century after John T. Dorrance invented the formula for condensed soup and turned Campbell Soup Company into a global food empire, his heirs are still the company's largest shareholders. In the case of S. C. Johnson & Son, the management has even been passed down through five generations of the corporate family. The Cargill family is reported to own an estimated 88 percent of the largest private company in America, making at least six family members individual billionaires. Nearly a century and a half after Bavarian-born Levi Strauss invented the first pair of blue jeans, Levi Strauss & Co., the world's largest maker of pants, is still controlled by the Haas family.

In other cases, the descendants of the corporate rich stayed super-rich even if the original ownership became increasingly diluted. The Pritzker business empire, which included the Hyatt hotel chain, was broken up when the family patriarch left the empire to eleven cousins who decided to go their separate ways. The Texas oil tycoon Haroldson L. Hunt, having three families at once, split his fortune among them prior to his death. Gordon Peter Getty sold the family's firm Getty Oil in the late 1980s for $10 billion.

It is only in a very few cases that the enduring quality of family fortunes is not explained by the enduring importance of the family business. The oil tycoon Sid W. Richardson, for example, left the four sons of his nephew Perry Richardson Bass only $2.8 million each. Perry pooled his sons' $11.2 million inheritance into the investment management firm Bass Brothers Enterprises. As investment managers, the Bass brothers succeeded in multiplying their fortune about 80-fold to $5 billion within a short period of time.

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Table 4
Mobility analysis.

	(1) Mobility	(2) Mobility	(3) Downward move	(4) Downward move	(5) Upward move	(6) Upward move
Age	−0.674**	−0.643**	0.070***	0.072***	0.008	0.014
	(0.223)	(0.224)	(0.016)	(0.016)	(0.010)	(0.010)
Age (squared)	0.004*	0.004*	−0.000***	−0.000***	−0.000	−0.000
	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Female	−1.197	−1.279	0.004	−0.011	0.063	0.029
	(1.205)	(1.179)	(0.084)	(0.084)	(0.054)	(0.055)
Worth	0.003***	0.003***	−0.001***	−0.001***	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Worth (squared)	−0.000***	−0.000***	−0.000**	−0.000**	−0.000**	−0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deceased	1.494	1.507	−0.235	−0.235	0.142	0.143
	(3.053)	(3.051)	(0.193)	(0.193)	(0.143)	(0.143)
University	2.406*	2.348*	−0.163*	−0.158*	0.110*	0.109*
	(1.069)	(1.058)	(0.068)	(0.068)	(0.048)	(0.048)
Sector 1. Retail/restaurant	(reference category)	(reference category)	(reference category)	(reference category)	(reference category)	(reference category)
Sector 2. Technology − computer	−4.682*	−4.953**	0.051	0.074	−0.215*	−0.198*
	(1.844)	(1.859)	(0.128)	(0.129)	(0.085)	(0.088)
Sector 3. Technology − medical	−0.192	−0.382	−0.045	−0.035	−0.071	−0.069
	(2.716)	(2.743)	(0.233)	(0.233)	(0.115)	(0.118)
Sector 4. Consumer goods	0.821	0.428	−0.313**	−0.298**	−0.002	−0.015
	(1.351)	(1.345)	(0.104)	(0.105)	(0.063)	(0.066)
Sector 5. Media	−1.231	−1.354	−0.473***	−0.458***	−0.163*	−0.143
	(1.357)	(1.358)	(0.112)	(0.112)	(0.071)	(0.073)
Sector 6. Diversified/other	−1.154	−1.190	−0.349**	−0.340**	−0.124	−0.103
	(1.307)	(1.305)	(0.106)	(0.106)	(0.066)	(0.068)
Sector 7. Energy	−5.764***	−5.818***	−0.322**	−0.325**	−0.301***	−0.296***
	(1.615)	(1.599)	(0.114)	(0.114)	(0.071)	(0.073)
Sector 8. Finance: Other	−7.129	−7.484	−0.022	−0.003	−0.492*	−0.501*
	(4.966)	(4.986)	(0.279)	(0.280)	(0.195)	(0.197)
Sector 9. Finance: Hedge funds	2.975	2.605	−0.456	−0.435	0.038	0.035
	(2.075)	(2.079)	(0.271)	(0.272)	(0.096)	(0.098)
Sector 10. Finance: Private equity/LBO	1.969	1.696	−0.294	−0.281	0.152	0.151
	(2.114)	(2.129)	(0.164)	(0.163)	(0.081)	(0.085)
Sector 11. Finance: Money management	−0.263	−0.438	−0.475**	−0.470**	−0.050	−0.052
	(1.951)	(1.949)	(0.183)	(0.181)	(0.093)	(0.097)
Sector 12. Finance: Venture capital	−3.617	−3.994	−0.474	−0.453	0.155	0.149
	(3.081)	(3.089)	(0.324)	(0.322)	(0.108)	(0.115)
Sector 13. Real estate	−2.630	−2.676	−0.608***	−0.594***	−0.084	−0.057
	(1.430)	(1.443)	(0.108)	(0.108)	(0.068)	(0.070)
Yearly changes in mean wealth	−0.244***	−0.247***	0.021***	0.022***	−0.017***	−0.017***
	(0.046)	(0.046)	(0.002)	(0.002)	(0.002)	(0.002)
Age of fortune	0.127**	0.084	−0.020***	−0.019***	0.004*	−0.000
	(0.039)	(0.043)	(0.003)	(0.003)	(0.002)	(0.002)
Age of fortune (squared)	−0.001***	−0.000	0.000***	0.000***	−0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inherited	−2.920**	−2.998**	0.258**	0.245**	−0.124*	−0.159**
	(1.056)	(1.066)	(0.078)	(0.079)	(0.052)	(0.054)
Duration time in list	−0.681***	−0.695***	0.074***	0.074***	−0.001	−0.003
	(0.068)	(0.068)	(0.006)	(0.006)	(0.004)	(0.004)
Number of family members		0.185		0.020		0.060***
		(0.292)		(0.018)		(0.013)
Number of family members (squared)		−0.023		−0.000		−0.004***
		(0.012)		(0.001)		(0.001)
Constant	22.743**	23.184**	−2.499***	−2.607***	−0.701*	−0.800*
	(7.352)	(7.435)	(0.519)	(0.521)	(0.331)	(0.337)
McFadden Pseudo R^2			0.109	0.110	0.018	0.021
R^2 (between)	0.042	0.051				
Chi^2	309.698	322.156	632.911	648.312	228.900	255.676
Log likelihood			−5163.485	−5162.391	−8201.003	−8178.727
N (persons)	1426	1426	1426	1426	1426	1426
N (person-years)	12608	12608	12608	12608	12608	12608

Notes: Models 1 to 2: random-effects GLS regression; Models 2 to 6: pooled logit regression; cluster-robust standard errors in parentheses; $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (two-tailed tests).

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5. Conclusions

Applying survival models to individual panel data from the annual *Forbes 400*, this study analyzed the factors that increase or decrease the probability of remaining on the list of super-rich Americans. Existing theoretical and empirical research suggests that today's rich are entrepreneurs who have earned their wealth (Wolff, 2000). *Forbes* magazine itself has repeatedly announced the decline of the "silver spooners" and the rise of the "bootstrappers."

Similarly, we find that the very top of the wealth distribution has been changing in the direction of self-made wealth. The key finding of our study points, however, to the enduring importance of family wealth: controlling for a set of variables that may influence the hazards of dropping off the list, we find heirs to be more likely to remain listed than self-made multi-millionaires. The only caveat to this statement is that it does not hold for investments in hedge funds but can be observed for such different areas of the economy as the media or energy sectors with only minor differences in magnitude. There are also several secondary results that help to complete the picture. The hazards are especially low for old money (as long as the origination of the fortunes does not date back more than 140 years) and for family clans with many relatives listed (as long as that number does not surpass ten). We also showed that the identified differential between heirs and the self-made rich is reversed when upward mobility is considered, instead of the event of dropping off the list completely. While self-made multimillionaires are more likely to rise through the ranks, heirs tend to fall gradually behind in the *Forbes* roster. Thus heirs are more often outpaced by newcomers at the very top but are less likely to be edged of the list completely. More generally, these results suggest that individuals who made their own fortunes experience much more volatility on the list than heirs.

Our data does not allow us to draw firm conclusions about what exactly explains the enduring importance of family wealth. Much suggests that the phenomenon can only be fully understood when at least three survival strategies are considered: preservation of capital through the professional management of assets, tax avoidance, and the continuing control over family companies.

Owners of self-made fortunes might be inexperienced in wealth management, and their assets might be less diversified, resulting in higher vulnerability to bubbles and other market dynamics. Wealthy families, by contrast, transfer their market experience over generations and have become increasingly businesslike in running their private affairs, setting up family offices staffed by wealth managers, accountants, and lawyers to look after their personal finances. Thanks to sophisticated financial advice and the magnitude of their fortunes, some may succeed in drawing a better rate of return, which appears to be a critical condition for staying on the *Forbes 400* list. Unfortunately, there is no solid empirical basis to test such an alleged comparative advantage.

To prevent their fortunes from shrinking, families have to overcome the obstacles presented by taxes. The greatest threat to the fortune of a corporate rich family is that posed by the highly progressive gift and estate taxes that were specifically designed to impede the perpetuation of dynastic wealth (Beckert, 2008). Much suggests that the richest family dynasties have developed elaborate strategies to reduce taxes on their property, such as lifetime gifts or the foundation of generation-skipping (offshore) funds or of family holding companies that provide the rich with considerable tax advantages (Allen, 1987).

Given the fact that *Forbes* reporters predominantly derive wealth estimates from publicly available records on the values of business assets owned, the continuing importance of family businesses appears key for understanding how wealthy heirs manage to stay super-rich. If, in general, family fortunes are typically split and heirs continue to build their fortunes with a fraction of what the previous generation had, the fortunes of families that retain some control over their family corporations is kept together. Corporate wealth controlled (at least partly) by family members is likely to grow continuously within a generation and between generations. Mars Inc., S. C. Johnson & Son, Bechtel, Hyatt, Cargill, and the Hearst Corporation are all prominent examples of firms that not only turned into third, fourth or even fifth generation businesses but also continue to be among the most prosperous corporations in America.

A lot more research, especially case-study research, is needed to determine exactly why family wealth remains an important feature of the successful super-rich. Future research could, among other things, focus on race, elite networks, or family offices to better understand the identified comparative advantages of heirs. The main contribution of our study lies in demonstrating that *lasting* fortunes are likely to be embedded in the institution of "family," even though the typical avenues into the highest echelons of wealth have changed in favor of entrepreneurs. All family fortunes eventually hit a cliff, but if professionally managed, they do not erode as easily as the self-made fortunes that appear to be more exposed to risk.

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Appendix

Table A1
Number of failures: Total. and by source of wealth.

Number of failure events	Source of wealth		Total
	Self-made	Inherited	
	Frequency	Frequency	Frequency
	(Expected frequency)	*(Expected frequency)*	*(Expected frequency)*
	(Row percentage)	*(Row percentage)*	*(Row percentage)*
	(Column percentage)	*(Column percentage)*	*(Column percentage)*
0	198	109	307
	(187.5)	*(119.3)*	*(307)*
	(64.5)	*(35.5)*	*(100)*
	(21.78)	*(18.83)*	*(20.63)*
1	559	336	895
	(546.7)	*(348.3)*	*(895)*
	(62.46)	*(37.54)*	*(100)*
	(61.5)	*(58.03)*	*(60.15)*
2	121	113	234
	(142.9)	*(91.1)*	*(234)*
	(51.71)	*(48.29)*	*(100)*
	(13.31)	*(19.52)*	*(15.73)*
3	27	19	46
	(28.1)	*(17.9)*	*(46)*
	(58.7)	*(41.3)*	*(100)*
	(2.97)	*(3.28)*	*(3.09)*
4	4	2	6
	(3.7)	*(2.3)*	*(6)*
	(66.67)	*(33.33)*	*(100)*
	(0.44)	*(0.35)*	*(0.4)*
Total	909	579	1488
	(909)	*(579)*	*(1488)*
	(61.09)	*(38.91)*	*(100)*
	(100)	*(100)*	*(100)*
Mean # failures	0.988	1.083	1.025

Notes: Pearson $Chi^2(4) = 11.05$, $p < 0.05$; Pearson correlation $= 0.0641$, $p < 0.05$.

Table A2
Descriptive statistics for variables used in this study.

	N	Mean	Std Dev	Min	Max
Dependent variables:					
Failure event	12,792	0.12	0.32	0	1
Duration time	12,792	1997.51	9.23	1982	2013
Mobility	12,792	−2.43	53.63	−352	337
Downward move	12,792	0.17	0.38	0	1
Upward move	12,792	0.37	0.48	0	1
Independent variables:					
Age	12,792	63.83	12.97	22	99
Female	12,792	0.14	0.35	0	1
Worth	12,792	1914.26	3883.71	75	85000
Deceased	12,792	0.02	0.13	0	1
University	12,792	0.83	0.38	0	1
Sector 1. Retail/restaurant	12,745	0.12	0.32	0	1
Sector 2. Technology – computer	12,745	0.08	0.28	0	1
Sector 3. Technology – medical	12,745	0.02	0.13	0	1
Sector 4. Consumer goods	12,745	0.14	0.35	0	1
Sector 5. Media	12,745	0.13	0.34	0	1
Sector 6. Diversified/other	12,745	0.17	0.37	0	1

(*continued on next page*)

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Table A2 (*continued*)

	N	Mean	Std Dev	Min	Max
Sector 7. Energy	12,745	0.10	0.30	0	1
Sector 8. Finance: Other	12,745	0.01	0.09	0	1
Sector 9. Finance: Hedge funds	12,745	0.03	0.17	0	1
Sector 10. Finance: Private equity/LBO	12,745	0.04	0.20	0	1
Sector 11. Finance: Money management	12,745	0.05	0.21	0	1
Sector 12. Finance: Venture capital	12,745	0.01	0.07	0	1
Sector 13. Real estate	12,745	0.11	0.31	0	1
Yearly changes in mean wealth	12,792	8.10	13.02	−23.14	37.44
Age of fortune	12,650	69.14	41.28	5	215
Inherited	12,792	0.45	0.50	0	1
Number of family members	12,792	1.68	3.74	0	33
Wealthy family background: No wealth in family	12,225	0.21	0.41	0	1
Wealthy family background: Some wealth in family	12,225	0.38	0.48	0	1
Wealthy family background: Wealthy	12,225	0.41	0.49	0	1

Notes: Summary statistics based on person-years.

Table A3
Testing interaction effects between inheritance/sectors and age/sectors.

	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.924***	0.925***	0.925***	0.925***	0.936***	0.925***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.017)	(0.016)
Age (squared)	1.000**	1.000**	1.000**	1.000**	1.000*	1.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.926	0.935	0.870	0.878	0.868	0.871
	(0.104)	(0.105)	(0.093)	(0.095)	(0.092)	(0.093)
Worth	0.997***	0.997***	0.997***	0.997***	0.997***	0.997***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Worth (squared)	1.000***	1.000***	1.000***	1.000***	1.000***	1.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Deceased	5.088***	5.089***	5.044***	5.065***	5.101***	4.966***
	(0.485)	(0.482)	(0.479)	(0.476)	(0.482)	(0.473)
University	0.675***	0.668***	0.692***	0.677***	0.693***	0.679***
	(0.053)	(0.052)	(0.054)	(0.052)	(0.053)	(0.052)
Yearly changes in mean wealth	1.021***	1.021***	1.021***	1.021***	1.022***	1.021***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age of fortune	1.031***	1.031***	1.022***	1.021***	1.019***	1.022***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Age of fortune (squared)	1.000***	1.000***	1.000***	1.000***	1.000***	1.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of family members	0.933**	0.931**	0.925***	0.919***	0.911***	0.919***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.021)	(0.022)
Number of family members (squared)	1.004***	1.004***	1.004***	1.005***	1.005***	1.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Inherited	0.637***	0.618***				
	(0.073)	(0.070)				
Sector 3. Technology − medical	1.318					
	(0.490)					
Inherited * Sector 3. Technology − medical	0.153*					
	(0.112)					
Sector 9. Finance: Hedge funds		0.957				
		(0.273)				
Inherited * Sector 9. Finance: Hedge funds		2.745**				
		(1.035)				
Sector 1. Retail/restaurant			0.267*			
			(0.150)			
Age * Sector 1.			1.018*			

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Table A3 (*continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
Retail/restaurant			(0.009)			
Sector 5.				0.381*		
Media				(0.151)		
Age * Sector 5.				1.014*		
Media				(0.006)		
Sector 7.					3.900**	
Energy					(1.919)	
Age * Sector 7.					0.983*	
Energy					(0.008)	
Sector 8. Finance:						8.537***
Other						(4.623)
Age * Sector 8. Finance:						0.974*
Other						(0.010)
McFadden Pseudo R^2	0.134	0.134	0.132	0.132	0.133	0.132
AIC	17044.392	17053.193	17076.139	17077.432	17065.691	17073.044
BIC	17156.023	17164.825	17180.329	17181.621	17169.880	17177.233
Log likelihood	−8507.196	−8511.597	−8524.070	−8524.716	−8518.846	−8522.522
Number of failures	1455	1455	1455	1455	1455	1455
N (persons)	1426	1426	1426	1426	1426	1426
N (person-years)	12608	12608	12608	12608	12608	12608

Notes: Exponentiated coefficients (hazard ratios); cluster-robust standard errors in parentheses; $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (two-tailed tests).

Table A4
All companies that make up the primary source of wealth of at least five wealth holders listed in the *Forbes 400* ranking between 1982 and 2013.

Company	Year founded	Corporate families	Number of listed wealth holders	Years listed (mean)	Years listed (min)	Years listed (max)
DuPont	1802	Du Pont	36	8	1 (Marion du Pont)	17 (Alice Francis du Pont Mills)
Hyatt Hotels	1957	Pritzker	15	10.5	1 (Jennifer Pritzker)	22 (Robert A. Pritzker)
Standard Oil	1870	Rockefeller	14	8.8	3 (Steven Clark Rockefeller)	32 (David Rockefeller, Sr.)
Cargill Inc.	1865	Cargill/ MacMillan	13	18.4	2 (Gwendolyn Sontheim Meyer)	30 (Whitney MacMillan)
Hearst Corporation	1887	Hearst	12	15.4	1 (W. R. Hearst grandchildren)	30 (George R. Hearst, Jr.)
Levi Strauss & Co.	1853	Haas	11	6.5	1 (Phyllis Koshland Friedman)	17 (Peter E. Haas, Sr. and family)
Campbell Soup Co.	1869	Dorrance	11	18.5	2 (Marie Ingersoll Hamilton)	29 (Charlotte Colket Weber)
Wal-Mart	1962	Walton	10	17.2	9 (Christy Walton & family)	25 (Alice L. Walton)
S. C. Johnson & Son, Inc.	1886	S.C. Johnson	10	10.1	1 (John S. Johnson)	32 (Samuel C. Johnson)
T. Mellon & Sons Bank	1869	Mellon	9	15.2	8 (Lavinia M. Currier)	32 (Richard Mellon Scaife)
Hunt Oil Co.	1921	Hunt	9	12	5 (Lamar Hunt)	32 (Ray Lee Hunt)
Sid Richardson Gasoline Co.	1919	Bass	5	26	7 (Anne Hendricks Bass)	32 (Sid Richardson Bass)
The Walt Disney Company	1923	Disney	6	8.2	1 (Diane Disney Miller)	26 (Roy E. Disney)
Microsoft	1975	/	6	15.5	1 (Jeffrey Raikes)	28 (Bill Gates)
Getty Oil Co.	1919	Getty	6	13.7	1 (Ariadne Getty Williams)	32 (Gordon Peter Getty)
Belridge Oil Co.	1911	Whittier	6	3.3	1 (Leland K. Whittier)	7 (Dolly Green)
McCaw Cellular	1986	McCaw	5	16.6	2 (Wendy McCaw)	27 (Craig O. McCaw)
The Coca-Cola Company	1892	/	5	9.2	3 (Robert W. Woodruff)	15 (Elizabeth L. Davenport)
Stryker Corporation	1941	Stryker	5	10.4	1 (Lloyd Stryker)	13 (Ronda Stryker)
MBNA Corporation	1982	Lerner	5	7.2	2 (Nancy Beck)	15 (Alfred Lerner)
Koch Industries	1940	Koch	5	23.6	1 (Elaine Marshall & family)	31 (Charles G. Koch)
Enterprise Products	1968	Duncan	5	4.4	4 (Scott Duncan)	6 (Dan Duncan)

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