

Family, Education, and Sources of Wealth Among the Richest Americans, 1982-2012

by

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Abstract

We examine characteristics of the 400 wealthiest individuals in the U.S. over the past three decades as tabulated by Forbes Magazine, and analyze which theories of increasing inequality are most consistent with these data. The Forbes 400 in recent years did not grow up as advantaged as in decades past. They are more likely to have started their businesses and to have grown up upper-middle class, not wealthy. Today's Forbes 400 were able to access education while young, and apply their skills to the most scalable industries: technology, finance, and mass retail. Most of the change occurred by 2001.

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It is well known that inequality in earned income has risen around the world, and particularly in the US. The share of income accruing to the top 1% of households in the US increased from 10% in 1979 to 15% in 1994 to 21.5% in 2000. Since 2000 it has fluctuated between 16% and 24% and stood at 19.8% in 2010, according to data from Piketty and Saez (2012). There also has been some evidence that intergenerational income and wealth mobility have declined over time in the U.S. Income inequality also increased over the same period in other English speaking countries, as well as China and India, but less so in the countries of continental Europe (Atkinson, Piketty, and Saez (2011)).

Inequality in wealth has followed inequality in earnings only to some extent. Using data from the Survey of Consumer Finances (SCF), Wolff (2010 and 2012) document that the top 1% of US households held 33.8% of total net worth in 1983, rising to a peak of 38.5% in 1995, falling back to 34.6% in 2007 and increasing slightly to 35.4% in 2010. However, over the same time period there was an increase in the number of very rich households. Wolf (2010 and 2012) show that the share of households with more than \$1 million in wealth measured in constant 1995 dollars increased from 3.0% in 1995 to 6.3% in 2007 and to 6.5% in 2010; the share with more than \$5 million rose from 0.5% to 1.3% and then dropped to 0.9% in 2010. The wealth distribution also has widened around the world, with Switzerland and the United States having the greatest wealth concentrations of the top decile at 71.3% and 69.8% respectively (Davies et al (2008)).

The sources of rising inequality have been long debated. Theories include trade or globalization (Heckscher 1931; Ohlin 1933; Stolper and Samuelson 1941), increasing returns to generalists rather than specialists (Murphy and Zbojnik 2004; Frydman 2007), theories of managerial power (Bebchuk and Fried 2004), social norms (Piketty and Saez 2006a; Levy and

Temin 2007), greater scale (Gabaix and Landier 2008), skill-biased technological change (Katz and Murphy 1992; Garicano and Rossi-Hansberg 2006; Autor, Katz, and Kearney 2006; Garicano and Hubbard 2007), and superstars (Rosen 1981). As pointed out in Kaplan and Rauh (2010), theories of rising inequality must explain why the rise has been broad-based across professions.

In this paper, we take a dynamic look at the characteristics of the top 400 wealthiest individuals in the US economy as tabulated by Forbes magazine, and analyze which of these theories are more consistent with the patterns in the data. In contrast to other studies, we look not just at the present, but also at the 1980s, 1990s, and early 2000s. The top 400, of course, represent the very top of the distribution, the top 0.0003% of 132 million US households and the top 0.0001% of 311.5 million US individuals.¹

We focus on three primary factors. First, we examine the extent to which the individuals made their money on their own as opposed to inheriting it. We study several variables including the generation of the wealthy individuals in families, and the extent to which they grew up wealthy. Second, we examine the industrial activities through which the wealth was made, and the extent to which technology played a role. Third, we consider the educational backgrounds of the top earners, and specifically the importance of having a college education. We investigate how these factors have changed over time, and we also compare the results in the US to the changes in the composition of billionaires from other countries, also drawing on data from Forbes.

We find that the Forbes 400 in recent years did not grow up as advantaged as in decades past. Those in the Forbes 400 today are less likely to have inherited their wealth or to have grown up wealthy. They are equally likely to have grown up with no wealth as in the 1980s.

¹ Figures on total households from the US Census Bureau <http://quickfacts.census.gov/qfd/states/00000.html>.

The biggest change is that they are more likely to have started their businesses having grown up with some wealth, what we consider to be the equivalent of upper middle class. The Forbes 400 of today also are those who were able to access education while young and apply their skills to the most scalable industries: technology, finance, and mass retail.

This paper proceeds as follows. In Section I we describe the data. Section II discusses the results. Section III concludes.

I. Data

The Forbes 400 is a list of the wealthiest individuals in the US by net worth. It has been published annually since 1982. The list presents an estimate of wealth as of August of each year. According to Kroll and Dolan (2011), a candidate set of somewhat more than 400 individuals is used as a starting point (570 in 2011). Interviews are sought with all candidates as well as “employees, handlers, rivals, peers, attorneys and ex-spouses.” Magazine staff then use SEC documents, probate records, and public financial disclosures to estimate net worth, in addition to information provided by the honorees themselves when they are willing to disclose it.

We collected these lists approximately every ten years, in 1982, 1992, 2001, and 2011. For each individual, we used Who’s Who and Internet searches to collect and code certain biographical details. We identified the founding date of the business that generated the individual’s wealth and then determined the generation the individual is in the family of the founder of that business. The generation is usually an integer but if the individual inherited a relatively small business and built it into a much larger one we coded it as a 1.5, as for example David and Charles Koch of Koch Industries.

We separately code the extent to which the individual grew up wealthy, defining three categories: little or no wealth in the family, some wealth in the family, or wealthy. For example, the Koch Brothers grew up wealthy. Bill Gates, whose father co-founded a successful law firm, grew up with some wealth, as did, for example, sons and daughters of U.S. Congressmen (Warren Buffet), factory owners (James Simons), newspaper publishers (Philip Knight), retail owners (Stephen Schwarzman), and psychiatrists (Dustin Moskovitz). We view the “some wealth” category as the equivalent of an upper middle class upbringing.

We then code industries of the wealth-generating firms into three broad categories: industrial, finance/investments, and real estate. We further subdivide the first two into eleven categories, assigning firms to the precise business activity. Within the industrial category, the sub-categories are computer technology, medical technology, retail/restaurant, energy, consumer, media, and diversified/other. Within the finance category, the sub-categories are hedge funds, private equity / leveraged buyouts, venture capital, and money management. This leaves us with twelve separate categories.

We also create an indicator variable for whether the business had a technology component. Certainly any business that is actually a technology business has a technology component, but being a technology business is not a necessary condition for having a technology component. Other businesses that we code as having a technology component include pharmaceuticals, energy firms that develop new extraction technologies (such as fracking), financial firms that exploit new technologies (such as online brokerage), and venture capitalists who invest heavily in technology firms.

There is some history of using Forbes 400 data in economic research. Kennickell (2009) tabulates total wealth of the Forbes 400 over 1989-2008, with the primary goal of measuring how

much total wealth is missing from the Survey of Consumer Finances (SCF), a survey that intentionally excludes the Forbes 400. He finds that the \$1.54 trillion of wealth in the Forbes 400 represented approximately 2.3% of total household wealth as of 2007, up from 1.7% in 1992. Klass et al (2006) examine the distribution of wealth within the Forbes 400 for statistical properties and find that it follows power law properties. Wealth distributions were the fundamental object of inquiry for Pareto (1896) who posited that the distribution of the number of people with income or wealth above a certain level followed a power law (see also Gabaix (2009)).

II. Results

The Forbes 400 represent \$92 billion of wealth in 1982, \$301 billion in 1992, \$943 billion in 2001, and \$1.525 trillion in 2011. In constant 2011 dollars, the wealth amounted to \$214 billion in 1982, \$483 billion in 1992, \$1.197 trillion in 2001, and \$1.525 trillion in 2011.

Figure 1 shows that in the U.S., the share of Forbes 400 individuals who are the first generation in their family to run their businesses has risen dramatically from 40% in 1982 to 69% in 2011. Figure 2 illustrates that the percent that grew up wealthy fell from 60% to 32% while the percent that grew up with some money in the family rose by a similar amount. The share that grew up poor remained constant at roughly 20%. The Forbes 400 of recent years therefore did not grow up nearly as advantaged as those in decades past. Those who grew up with some wealth in the family were far more likely to start their own businesses rather than inherit family businesses. Furthermore, these findings about generation and wealth in the family are very similar when the results are weighted by wealth. These results suggest that there has been an increase, not a decrease, in wealth mobility at the very top.

The figures also show that these changes largely occurred between 1982 and 2001. From 2001 to 2011, the percentage of Forbes 400 that started their businesses increased only slightly while the percentage that grew up wealthy declined only slightly.

Access to education appears to be of increasing importance. Figure 3 demonstrates that the share of the Forbes 400 that graduated from college rose from 77% to 87%. However, the share of college dropouts also rose from 6% to 8%, while the share of those without college dropped markedly from 17% to 5%. These results are very similar when the observations are weighted by wealth.

Table 1 documents the industries of the wealth-generating businesses of the Forbes 400 members in each year of our sample. The industries for which representation among the US Forbes 400 increased the most are retail and restaurants, computer technology, and private finance including hedge funds and private equity. The representation of real estate and energy declined the most. Weighting each observation equally, finance overall grew in representation by around 16 percentage points, technology by 11 percentage points, and retail by 10 percentage points. Energy shrank by 12 percentage points, real estate shrank by 10 percentage points, and the remaining groups that lost share were the non-technology industrial businesses. The rise in computer technology and the decline in energy is even more pronounced in the value-weighted results shown in the bottom panel of the table.

Even in the businesses started by the Forbes 400 that are not computer technology business per se, technology has become more important. The share of these businesses that had some technology component rose from 7.3% in 1982 to 17.8% in 2011. On a value-weighted basis, businesses with a technology component grew from 7.1% in 1982 to 25.5% in 2011, over one quarter of the total wealth in the 2011 Forbes 400.

This growth in the importance of technology occurred mostly in the 1990s. The share of computer and medical technologies in the businesses behind the Forbes 400 peaked in 2001 at 15.1%, before falling back to 14.6% in 2011. The share of industries that had a technology component rose from 9.1% to 17.5% between 1992 and 2001, but between 2001 and 2011 rose only very slightly. The growth in private equity, hedge funds, and venture capital, on the other hand, occurred largely in the 2000s, at the expense of media, consumer, and diversified businesses during that decade.

We interpret these findings as most consistent with theories of technological change that favors skill in scalable areas (Gabaix and Landier (2008), Kaplan and Rauh (2010)). Entering the elite group of the wealthiest individuals no longer requires having already grown up rich, but having some wealth confers advantages, particularly in access to education. The wealthiest individuals increasingly comprise individuals who accessed this education while young and then implemented their skills in the most scalable industries. These are the industries in which increasing technology and returns to skill allow for the greatest generation of wealth: finance, technology, and also retail. The findings are less consistent with the rise in inequality being the result of broken governance or cultural changes.

As we show in Kaplan and Rauh (2013), some of these patterns are reflected globally but others are not. The share of global billionaires who are first-generation in the business rose by a similar amount abroad as in the US. The technology component has become more important globally, but nowhere has it become as important as in the US. Computer technology and money management are increasingly represented among billionaires globally, but the category that gained the most is mining/metals. Energy also saw substantial gains globally, whereas it fell in

the US. There is clearly a greater increase in wealth being derived from natural resources outside than within the U.S.

Perhaps the most striking difference between the wealthiest individuals in the US and around the world is that the share of non-US billionaires who grew up without any wealth at all has risen from under 30% in 1987 to over 50% in 2012. The share that grew up with some but not large wealth has hovered around 20%, whereas the share that grew up wealthy plummeted. While the share that grew up wealthy also fell in the US, the rise of the poorest group globally as opposed to the middle group in the US is striking. We can only speculate about the sources of these differences. Most likely is that in the US there is better access to education when the family has some wealth, and such access is increasingly important to success in the United States.

III. Conclusion

With the large improvements in information technology and the substantial increase in value of the securities markets over the last 30 years, skilled individuals can now apply their talent to much larger blocks of capital and pools of assets. Evidence from the composition of the wealthiest individuals in the US is supportive evidence of these trends. Having extensive wealth and inheriting family businesses have become much less important. Having access to education has become more important. Future research should aim to understand what facet of educational access is driving its increasing importance for wealth generation. Specifically, education provides skills but it also provides access to networks.

The rise in the overall college wage premium may have flattened somewhat in the past decade (James (2012)), but our evidence from the identity of the super-rich suggest that the premium for technological skill has continued to rise in the right-tail of wealth outcomes. These

findings are most consistent with the frameworks of Goldin and Katz (2010), in which technological progress widens inequality among skill groups, an effect that can possibly be countered by the continuing broad-based accumulation of human capital, particularly (as pointed out by Acemoglu and Autor (2012)) when there are deep interactions between skills and technologies in accomplishing job tasks.

References

- Acemoglu, Daron, and David Autor. 2012. "What Does Human Capital Do? A Review of Goldin and Katz's *The Race between Education and Technology*." MIT working paper. <http://economics.mit.edu/files/7490>.
- Atkinson, Anthony, Thomas Piketty, and Emmanuel Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49(1): 3-71.
- Autor, David H., Lawrence F. Katz, and Melissa S. Kearney. 2006. "The Polarization of the U.S. Labor Market." *American Economic Review* 96 (2).
- Bebchuk, Lucian, and Yaniv Grinstein. 2005. "The Growth of Executive Pay." *Oxford Review of Economic Policy* 21(2): 283-303.
- Davies, James, Susanna Sandström, and Anthony Shorrocks, and Edward Wolff. 2008. "The World Distribution of Household Wealth." In *Personal Wealth from a Global Perspective*, edited by James B. Davies, 395-418. Oxford University Press.
- Dolan, Kelly. 2011. "The Forbes 400 Methodology." <http://www.forbes.com/sites/kerryadolan/2011/09/21/the-forbes-400-methodology/>.
- Frydman, Carola . 2007. "Rising Through the Ranks: The Evolution of the Market for Corporate Executives, 1936-2003." working paper, Harvard University.
- Gabaix, Xavier, and Augustin Landier. 2008. "Why Has CEO Pay Increased So Much?" *Quarterly Journal of Economics* 123(1): 49-100.
- Gabaix, Xavier. 2009. "Power Laws in Economics and Finance." *Annual Review of Economics* 1: 255-293.
- Garicano, Luis, and Esteban Rossi-Hansberg. 2006. "Organization and Inequality in a Knowledge Economy." *Quarterly Journal of Economics*.
- Garicano, Luis, and Tom Hubbard. 2007. "The Returns to Knowledge Hierarchies." working paper, University of Chicago.
- Goldin, Claudia, and Lawrence F. Katz. 2010. *The Race Between Education and Technology*. Harvard University Press.
- Heckscher, Eli. 1931. *Merkantilismen*. Stockholm: Norstedt & Söner.
- James, Jonathan. 2012. The College Wage Premium. *Economic Commentary*. Federal Reserve Bank of Cleveland, Issue 2012-10. <http://www.clevelandfed.org/research/commentary/2012/2012-10.cfm>.
- Kaplan, Steven N., and Joshua Rauh. 2010. "Wall Street and Main Street: What Contributes to the Rise in the Highest Incomes?" *Review of Financial Studies* 23(3): 1004-1050.
- Kaplan, Steven N., and Joshua Rauh. 2013. *Journal of Economic Perspectives*.

- Katz, Lawrence F., and Kevin M. Murphy. 1992. "Changes in Relative Wages, 1963-1987: Supply and Demand Factors." *Quarterly Journal of Economics* 107: 35-78.
- Kennickell, Arthur. 2009. "Ponds and Streams: Wealth and Income in the U.S., 1989 to 2007." Working paper, Finance and Economics Discussion Series, Federal Reserve Board.
<http://www.federalreserve.gov/pubs/feds/2009/200913/200913pap.pdf>.
- Klass, Oren S., and Ofer Biham, and Moshe Levy, and Ofer Malcai, and Sorin Solomon. 2006. "The Forbes 400 and the Pareto wealth distribution." *Economic Letters* 90(2): 290-295.
<http://www.sciencedirect.com/science/article/pii/S0165176505002995>.
- Levy, Frank, and Peter Temin. 2007. "Inequality and Institutions in 20th Century America." Working paper, MIT.
- Murphy, Kevin J., and Jan Zabojnik. 2004. "CEO Pay and Turnover: A Market Based Explanation for Recent Trends." *American Economic Review Papers and Proceedings* 94: 192-196.
- Ohlin, Bertil. 1933. *Interregional and International Trade*. Cambridge: Harvard University Press.
- Piketty, Thomas, and Emmanuel Saez. 2006a. "The Evolution of Top Incomes: A Historical and International Perspective." *American Economic Review* 96 (2): 200-206.
- Piketty, Thomas, and Emmanuel Saez. 2012. "Income Inequality in the United States: Tables and Figures Updated to 2010." <http://elsa.berkeley.edu/~saez/>.
- Rosen, Sherwin. 1981. "The Economics of Superstars." *American Economic Review* 71(5): 845-858.
- Stolper, Wolfgang F., and Paul A. Samuelson. 1941. "Protection and Real Wages." *Review of Economic Studies* 9: 58-73.
- Wolff, Edward N. 2010. "Recent Trends in Household Wealth in the United States: Rising Debt and the Middle Class Squeeze – An Update to 2007." working paper. Levy Economics Institute.
- Wolff, Edward N. 2012. "The Asset Price Meltdown and The Wealth Of The Middle Class." NBER Working Paper #18559.

Table 1: Industries of the Wealth-Creating Businesses Behind the Forbes 400

Equal Weighted

	1982	1992	2001	2011	Change 1982 to 2011
Industrial					
Retail / Restaurant	0.053	0.118	0.132	0.150	+0.097
Technology – Computer	0.033	0.053	0.130	0.123	+0.090
Technology – Medical	0.005	0.018	0.021	0.023	+0.017
Consumer	0.131	0.174	0.125	0.108	-0.023
Media	0.136	0.132	0.164	0.100	-0.036
Diversified / Other	0.207	0.205	0.156	0.123	-0.084
Energy	0.214	0.089	0.062	0.098	-0.117
Finance and Investments					
Hedge Funds	0.005	0.011	0.018	0.075	+0.070
Private Equity / LBO	0.018	0.034	0.039	0.068	+0.050
Money Management	0.018	0.055	0.062	0.045	+0.027
Venture Capital	0.003	0.005	0.008	0.015	+0.012
Real Estate	0.179	0.105	0.081	0.075	-0.104

Value Weighted

	1982	1992	2001	2011	Change 1982 to 2011
Industrial					
Retail / Restaurant	0.041	0.183	0.171	0.157	+0.116
Technology – Computer	0.036	0.079	0.218	0.204	+0.167
Technology – Medical	0.004	0.013	0.012	0.015	+0.011
Consumer	0.105	0.171	0.115	0.097	-0.009
Media	0.115	0.158	0.151	0.079	-0.036
Diversified / Other	0.233	0.159	0.110	0.135	-0.097
Energy	0.285	0.085	0.046	0.067	-0.219
Finance and Investments					
Hedge Funds	0.004	0.021	0.049	0.101	+0.097
Private Equity / LBO	0.009	0.027	0.024	0.052	+0.043
Money Management	0.009	0.033	0.054	0.034	+0.025
Venture Capital	0.001	0.002	0.003	0.006	+0.005
Real Estate	0.157	0.068	0.045	0.055	-0.102

Figure 1: Generation of the Wealth-Creating Businesses in the Forbes 400, Share

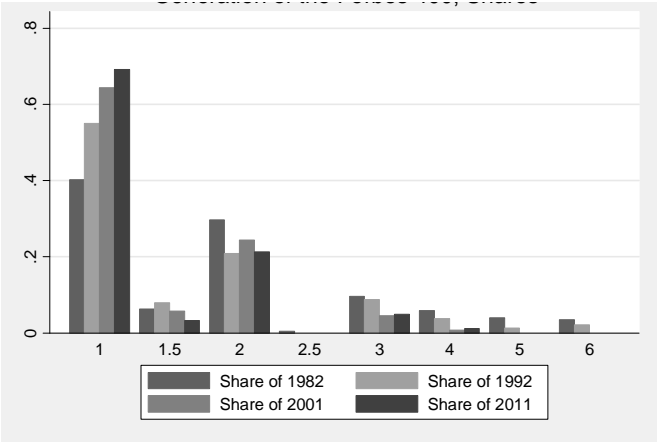


Figure 2: Did The Forbes 400 Grow Up Wealthy?

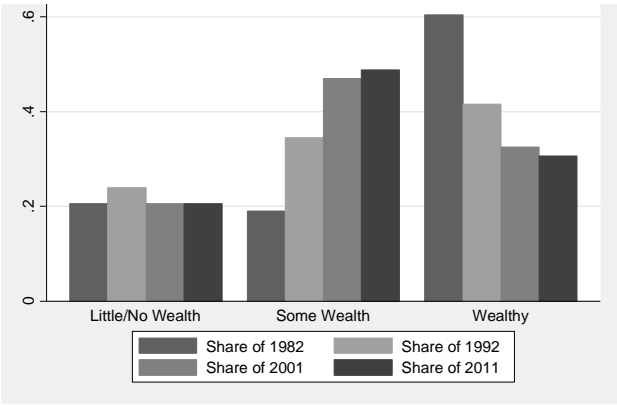


Figure 3: Higher Education of the Forbes 400

