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NOT JUST FOR THE PROFESSIONALS? UNDERSTANDING EQUITY MARKETS FOR RETAIL AND SMALL BUSINESS INVESTORS

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PARTICIPANTS:

Welcome and Introductions:

MARTIN NEIL BAILY
Senior Fellow, Economic Studies
Bernard L. Schwartz Chair in Economic Policy Development

Keynote Address:

RICHARD G. KETCHUM
Chairman and CEO
Financial Industry Regulatory Authority

Moderator:

AARON KLEIN
Fellow and Policy Director, Initiative on Business and Public Policy
The Brookings Institution

Panelists:

TIM COHEN
Chief Investment Officer, Fidelity

JOSHUA GOTBAUM
Guest Scholar, Economic Studies, The Brookings Institution

CHARLES HIMMELBERG
Head of Global Strategy, Goldman Sachs

TOM O'SHEA
Associate Director, Cerulli Associates

Keynote Address:

MARTIN NEIL BAILY
Senior Fellow, Economic Studies
Bernard L. Schwartz Chair in Economic Policy Development

ROGER FERGUSON
President and CEO
TIAA

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P R O C E E D I N G S

MR. BAILY: Welcome to Brookings. I hope everyone has their taxes filed and can relax and enjoy our program this morning.

Equities are important for the economy, making up a large part of most retirement portfolios and financing growth and investment. But there are concerns about our economy. Many households are anxious about how to manage their own retirement funds, while capital spending and startup companies are both down. Are American equity markets working and are they playing the role they need to play in our economy?

We have a great line up of people today to talk about that and we're going to start. It's my great pleasure to introduce Richard Ketchum, who is chairman and CEO of FINRA. Everyone has bios here so I don't need to go at length. I'll just mention that prior to becoming CEO of FINRA Mr. Ketchum was CEO of NYSE regulation from 2006 to 2009. He served as the first chief regulatory officer of the New York Stock Exchange, a position he began on March 2004. From 2003 to 2004 he was general counsel of the corporate investment bank group of Citigroup, and previous to that he spent 12 years at NASD and the NASDAQ stock market where he served as president of both organizations. Prior to that Mr. Ketchum was at the Securities and Exchange Commission for 14 years, with 8 of those years as director of the Division of Market Regulation. So will you please welcome Rick Ketchum. (Applause)

MR. KETCHUM: Thanks, Martin. Good to be with you all and, Martin, in particular I want to commend you for the work you do here in Washington, bringing greater understanding of the interface between business and the economy. I think on the other side of 2008-2009 and Dodd-Frank and the variety of things in Europe, there's never been a more important time for the work that you're doing.

And it's a pleasure for me to be here today to participate in this important discussion on the role of equities in the economy. I want to focus my remarks this morning on one aspect of this broad topic, the important role of the securities markets for retail investors.

I have been involved in securities market regulation for a really long time. I've got a great appreciation for the regulatory changes over the years that made the U.S. markets more accessible for retail investors. The 1975 Act amendments to the Security Exchange, the Act of 1934, which mandated the creation of a national market system, the implementation of regulation national market system, Reg NMS in 2007, and a variety of other actions brought a series of positive effects for investors and spurred a technological revolution that continues to this day. As a result of these regulatory changes investors now benefit from lower trading costs, tighter spreads, timely execution of firm quotes, a wider variety of order types to achieve their investment objectives -- maybe every once in a while too many order types -- and the availability of multiple innovative trading platforms. Investors today can pay as little as $4.99 or less for a stock trade and get instantaneous electronic confirmation. Compare that to 1975 when it would have cost an investor hundreds of dollars to buy 500 shares of a blue chip company. Because fixed trade costs were the norm an investor buying 100,000 shares of the same blue chip stock would have paid the same amount per share for the trade and fundamentally restricting the effective operation of institutions in this country.

Since the 1980s the number of households owning equities, whether individual stocks or mutual funds, has increased significantly. You all know these statistics, but just to go over them quickly, today nearly 54 million, or 43 percent, of U.S. households own mutual funds which represents a significant component of the savings investment of many U.S. households. Indeed the democratization of the markets for retail investors is probably the most notable inflection point in markets, certainly in my lifetime.

This growth isn't all due to regulatory changes. As companies have shed their defined benefit plans and shifted instead to defined contribution plans consumers have assumed the greater responsibility for wealth building and retirement saving. According to the ICI's 2015 profile of mutual fund shareholders, between mid 2000 and mid 2015 assets held in mutual funds increased from $7.1 trillion to $16.1 trillion. And ICI's 2015 fact book tells us that retail investors hold the vast majority, 89 percent of that $16 trillion, in mutual fund assets. Looking at these statistics I can only come to one conclusion, the securities markets are of great importance for retail investors and retail investors are important for the securities markets.

Now the questions posed for this event, what role equity markets can play for individual retirement, security, small business investment, and whether they can jump start American innovation culture by fostering the transition from startups to billion dollar companies? Those questions are exceptionally wide ranging and frankly beyond my reach to deliver in a single talk, but they all began with the fundamental question of whether the efficiency, flexibility, and fairness of the equity markets is sufficient to encourage retain investors to participate directly and indirectly in the marketplace to a degree that supports continuous and diverse capital raising. It is this more narrow question that I'll try to structure my remarks around.

The only constant to describe the equity markets has been change. And when you examine the changes that have occurred as a result of technology and regulatory action it's frankly breathtaking. The SEC, through enacting its order display rule, decimalization, and Reg NMS, made a momentous decision to increase competition, reduce barriers to entry, and expand the interaction of orders. These changes also caused a shift from an environment where the New York Stock Exchange and NASDAQ stock market accounted for the vast majority of equity trading and where single specialists, who are a relatively small number of market makers, dominated price discovery to equity markets characterized by fragmented trading across a dozen or so exchanges, more than 40 automated trading systems, and a countless number of active traders who directly impact price formation.

As I discussed earlier the result has been a market which by classic statistical measurements delivers the ability to handle vast amounts of trading volume at a considerably lower cost to both retail and institutional investors. And yet this success story is greeted with substantial concerns regarding the market's lack of transparency, tendency towards periods of extreme volatility, allegations of unfairness, and finally, concerns of creating an inhospitable environment for smaller public companies.

In the last few years we've heard a lot about allegedly rigged markets. Well, I can assure you that the market is not rigged. The concerns I described earlier raised valid questions about the structure of the markets. Since it underlines much of perception of unfairness by investors, let's start with the concerns raised by extreme volatility with the May 2010 flash crash operating as an illogical starting point. I won't spend time restating the specifics of the extraordinary volatility that day, but instead focus on the conclusion, that notwithstanding the positive impacts gained from a more competitive open market structure and normal trading times, the flash crash demonstrated that the equity market when placed under pressure was considerably more fragile, or as some might suggest unsafe at any speed. The reason for this fact is not really difficult to discern. In the previous centralized market environment most orders travel to a single market, providing the specialist with the opportunity, when faced with a sudden imbalance of buy and sell orders, to call an immediate trading halt and effectively impose a new price setting option before reinstituting continuous trading. This was not so easy in the highly electronic fragmented environment in 2010.

While the majority of high frequency trading effectively employ market making, instead our strategies across the equity and derivatives markets, they suffer from the limitations of algorithmic coding which generally avoids addressing extreme market volatility because of the risk of other market participants having access to superior market information. Accordingly, when market making algorithms encounter exceptional imbalances of buy and sell orders they tend to drop out of the market until a human trader concludes that it's safe to return to the water and that western civilization is indeed not ending. This creates effectively a vacuum in liquidity just when it is most needed.

Since the May 2010 flash crash the SEC, FINRA, and the U.S. Stock Exchange has implemented a variety of initiatives to minimize the impact of extreme volatility. These initiatives have created a multifaceted safety net for the markets and it a design to promote investor confidence. Among the changes regulators adjusted the market wide trading pause or circuit breaker which gives market participants an opportunity to assess their positions, valuation models, and operational capabilities when extreme periods of volatility occur. More importantly we eliminated what we was called, for those of you familiar for how things are handled in the futures markets, a limit up-limit down initiative which addresses the type of sudden individual stock price movements that the market experienced during the flash crash. Under the plan a limit up and limit and limit down mechanism prevents trades in national market system stocks from occurring at prices outside of certain ranges. And if the changes in price are more significant and prolonged the limit up-limit down plan would trigger a trading pause in that security.

We had an excellent opportunity to evaluate the affect of these changes last August 24 when the Dow plummeted more than 1000 points within the first 10 minutes of trading. The events of last August illustrated not a market out of control, but the value of having appropriate controls in place and the importance of continuing to review how they're in place. Were it not for the limit up-limit down procedures the market fluctuations last August, to my mind, would have been more dramatic. There were more than 1200 trading pauses that day with more than 1000 incurring in exchange traded products, many of which were repeats of the same exchange traded product.

Clearly the August event showed that refinements to these processes are serving a critical function, but also show that additional enhancements are necessary. For example, while the index recovered a portion of the early losses the extreme volatility raised questions about the operation of exchange traded funds and equities more generally. One of the issues that day was the big gaps between the value of underlying indexes and the exchange traded funds that track them. ETFs combine aspects of course of both mutual funds and conventional stocks. They operate like a mutual fund by offering an investor an interest in a professionally managed diversified portfolio of investments. Unlike mutual funds, however, ETF shares trade like stocks on exchanges and can be bought or sold throughout the trading day at fluctuating prices.

On August 24 unusual trading affected many of the major ETFs. While trading volumes surged, public trading, display of trading interest in liquidity dropped and we saw pricing volatility in ETFs partially because of the conflicts between halts on the underlying stocks within the indices and the pricing in the index. The volatility and the issues we saw with the ETFs offer a great opportunity for the SEC, with input from its recently formed Equity Market Structure Advisory Committee, of which I'm a member, to take a look at the effectiveness of the initiatives put in place after the 2010 flash crash as well as our market structure generally.

Among the issues that I think are ripe for review are the opening processes on primary listing exchanges, the operation of the limit-up and the limit-down at the opening of trading, at re-openings after trading pause, and where the price is rebounding, the use of single market prices rather than consolidated prices for index calculations at times when the primary market opens outside its normal process, the use of stop orders, which become market orders when triggered and can execute a price substantially worse than anticipated by the investor, particularly in volatile markets, and whether market making quoting obligations from the standpoint of high frequency trading firms are stringent enough to promote market stability. Liquidity in the U.S. markets has thrived because of confidence in the markets and investors need to be sure that the markets will operate predictably. And it's important for us as regulators to implement programs that minimize the impact of market volatility and limit market disruption.

The second point I want to raise is market fairness. Investors must have confidence that they can access current, accurate, bona fide market prices that reflect true investor supply and demand. Market structure must provide retail investors with accurate prices and low trading costs. I've been part of many significant regulatory changes that have benefitted investors, but it's critical that any equity market structure review focus on retail investor confidence. The Equity Market Structure Advisory Committee, which I'm a member as I mentioned, also has been focused on that aspect of the markets and has been considering initiatives to protect investor interest and promote investor confidence. These initiatives include finding ways to provide more granular and meaningful information to investors through amending what we refer to the SEC Rule 605 and 606, which provide basic execution information from the standpoint of both institutional and retain transactions. And also seeking opportunities to educate retail customers on things like order types and market volatility.

One of the concerns raised by the new market environment is whether information is available from all trading venues, allow investors to assess valuations in a timely and accurate manner, and enables regulators to investigate and analyze market events. And both we and FINRA and the SEC have taken steps to enhance transparency in the markets. Dark pools is clearly one of the areas where there has been a great deal of attention with respect to that. And as all of you know a substantial amount of trading today takes place in dark venues which are not transparent in many respects. For example, the orders placed in a dark pool are not displayed, and while a trade once executed within a dark pool is reported to the tape the trading by an individual dark pool is not separately identified. So while dark pools have their place in the financial market ecosystem subject to appropriate regulation we're right to be concerned about their lack of transparency.

We've taken steps to increase market transparency of alternative trading systems including dark pools. We currently make the volume and trade count information for equity securities executed in an automated trading system, some of whom are dark pools, available on the FINRA website and plan later this year to start providing additional information about the levels of block activity as well as other information. In addition the SEC has recently proposed amendments to Reg ATS, a bit controversial in their specifics, that I think go directly at the type of questions from the standpoint of clear disclosure with regard to how ATSs handle orders, how they're matching systems operate, and provide greater assurance that how they treat various different participants is clearly and totally disclosed.

Competition and regulatory changes have also led to a more complex and fragmented market. In today's increasingly fragmented market bad actors can consciously disburse their trading activity across markets, asset classes, and broker dealers in an attempt to hid their footprints and avoid protection. And it's part of our job, indeed a critical part of our job, at FINRA to monitor what's happening in the market and ensure that the markets operate fairly.

It's absolutely critical that anyone looking at market surveillance ahs a bird's eye view across all markets given the way trading occurs today. Through our agreements with exchange clients we've been able to reach that point, monitoring more than 99 percent of listed equity market and over 65 percent of the listed options market. That's allowed us to develop cross market surveillance programs that run dozens of surveillance patterns and threat scenarios across the data we gather to look for manipulation and front running, as well as layering, spoofing, algorithmic gaming, and other abusive conduct. This sophisticated surveillance allows us to detect areas and activities we were not able to see before. For example, 47 percent of our cross market alerts identify potential manipulative activity by two or more market participants acting in concern, and 60 percent of our cross market alerts identify potential manipulation by a market participate in multiple markets. This isn't surprising because of the change in the impact of pricing formation today, from a world where that was capable for a very small few entities to a world in which high frequency traders spread around both the United States and throughout the globe are impacting through and can shift their activity from firm to firm to be able to cover any manipulative activity.

I'll just mention briefly without talking further, although you'll see more in my remarks, that the SEC's proposal with respect to the implementation of a consolidated auto trail, or CAT, is a critical next step from the standpoint of creating investor confidence and ensuring an environment where there is less opportunity for manipulation. If you will, the more granular information provided in a consolidated audit trail identifying the trading of active traders allows a regulator to move dramatically more quickly to identify where there is a problem from the standpoint of high frequency trading activity.

As the markets continue to evolve there are several other lessons that we need to keep in mind. In particular I'd like to focus on the impact of decimalization and the minimum pricing variation in which securities can be quoted and traded, particularly decimalization in the U.S. equity markets. While the academic literature indicated a number of potential benefits from decimalization, such as an overall reduction in effective and quota spreads, there was some evidence that at least for some small cap stocks the decline was not statistically significant. The academic literature also found post decimalization evidence of the decline in the quota depth on average, smaller trade sizes, and an increase in the total time to work institution orders. The SEC's report also noted the U.S. has a flat one size fits all tick size regime as compared with many foreign jurisdictions that have adopted tier regimes where the tick size varies depending on the price level of the stock.

Now the SEC led a decimalization round table discussion these issues and I think properly concluded that legitimate questions have been raised as to whether the minimum tick size regime for U.S. equity markets should be refined and mandated, and that there be a targeted short-term pilot program to assess whether wider minimum tick sizes for small capitalization stocks would enhance market quality to the benefit of market participants, issuers, and U.S. investors.

So as seems to always be the case these days, while the pilot has taken a while to be developed and has gotten remarkably complex with respect to the alternatives that are involved. But as part of this, and part of the SEC's request, the exchanges and FINRA have implemented an NMS plan that requites wider coding and trading increments for certain small cap equity securities on a pilot basis. The criteria for these securities to be included in the pilot included a market cap of $3 billion or less, an interesting definition of small cap, consolidated average daily volume of 1 million shares or less, and a closing price of at least $1.50. The pilot consists of three test groups of 400 securities each and a control group. Okay, you've got to hold onto your hat to deal with these details. Test group one, securities must be quoted in a $.5 minimum increments, but may continue to trade at any price increment that is currently permitted. Test group two, securities must be quoted in $.5 minimum increments and can only be traded in $.05 minimum increments. And finally, test group three, securities must be quoted and traded in the $.05 minimum increments, but also subjects trading away from an exchange to a trade out rule. So more to what has been implemented in Canada for a couple of years now that essentially requires some level of meaningful price improvement if trades are going to occur a way from an exchange. Should be fun.

The tick size pilot plan also includes extensive data collection requirements because really, any evaluation of the theory as to whether this does deliver value requires that, including data relating to market quality, market maker participation, and market maker profitability. We will provide the data to the SEC and publish it on an unattributed and aggregate basis to make it widely available for research and analysis. The pilot goes into effect this October with pre pilot data already started this month.

I'm a huge fan of pilots and I think as someone who has spent a good deal of his career in the NASDAQ stock market I care deeply about the ability of public markets to be able to support trading and the ability to raise capital with respect to small companies as an alternative to the private capital regime. But I do think there's a couple of things to know. There are a lot of things that are different than the 1980s and '90s with respect to when small capitalization financing really flourished. One of the things is we're on the other side of the NASDAQ bubble as opposed the first side of the NASDAQ bubble. There are two other parts that made financing small cap stocks much more profitable at the time. One was the greater flexibility for the analyst to become a cheerleader with respect to those securities that personally I think has been an important step in regulation to eliminate. And the second is the reality of a NASDAQ market at that time in which trading with regard to those small cap stocks were dominated by the lead underwriter, in most cases remarkably profitable during the first couple of weeks of trading for that lead underwriter, and in which there may have been a little bit more flexibility from the standpoint of suitability analysis than existed at the time today with respect to recommending those offerings. I think it's great to look for ways to create, encourage sponsorship with respect to small cap stocks, and we should do that. We don't need to move to an environment that may once again put investors at peril.

While I could talk personally about market structure all day the concerns of investors obviously go way beyond market design. Equally damaging to healthy capital markets are the all too numerous industry compliance breakdowns that have harmed investors. Whether it be regarding the packaging of subprime mortgages, the marketing to retail investors of complex and liquid products, the lack of transparency of many direct and indirect fees, and the shocking efforts to manipulate a range of market indexes, these failures have led investors and clients to question the industry's commitment to put their interest first.

Now there has obviously been an overwhelming regulatory response to these events, some of which FINRA has taken, but mostly related to ranging across Dodd-Frank to the most recent inflection point of the DOL's rulemaking regarding retirement plans. I leave to the next panel to discuss if they want the road of effectiveness of those efforts, however I think it is important to recognize, and probably a difficult thing for a regulator to cope with, that rules alone cannot address the very real challenges that financial firms have in ensuring not getting bad people out of their firm or out of the industry -- financial firms do that and do that well -- but ensuring that good people do not take actions that harm their clients and expose their firms. This is truly a challenge because you don't walk through with respect to the people operating the financial industry and easily identify the ones that are going to make that misstep. They're the same people in your M.B.A. classes or your law school classes that you would have been glad to go out and have a beer with, and they stay having that way, having worked out with them at Citigroup on the other side of the problems that they may have been involved with or caused. And the challenge of identifying those persons or creating less temptations and less incentives is really an enormously difficult challenge for the financial industry. It always has been, but particularly given the complexity today even more.

Accordingly I want to take a minute to talk about culture at broker-dealer firms. After nearly 40 years in the securities industry I can say unequivocally that firm culture has a profound on how a securities firm conducts business. And I have seen over the years how a culture that doesn't value ethical behavior leads to failure for the firm and significant harm to investors. It's important that the securities industry embrace a culture that puts investors first and clients first, a culture that consistently places ethical considerations and client interest at the center of business decisions helps protect investors and the integrity of the markets.

FINRA has been focused on firm culture for some time as many regulators around the world, including the FED, FCA, and the like have as well. That starts with a focus on conflict of interest and professional ethics. And we think firms should also be paying keen attention to these related areas. In 2013 we issued a report on conflicts of interest that highlighted some best practices. We're also concerned about conflicts that a firm's compensation system may create. Specifically, conflicts in the compensation area can impact the quality of advice provided to investors, especially to retail investors.

In our reviews with firms FINRA will assess five indicators of firm culture, whether control functions are valued within the organization, whether policy or control breaches are tolerated, whether the organization proactively seeks to identify risk and compliance events, whether supervisors are effective role models of firm culture, and whether subcultures, e.g., at a branch office, a trading desk, or an investment banking department may not conform to overall corporate culture, identified and addressed.

Now let me say what we're not going to focus on and also what's the risk of focusing on these soft things from the standpoint of the regulatory interface with the firms. We're not about deciding and identifying firms that don't get it. Regulators must fundamentally be about outputs and be about what things that actually impact on the other side in an adverse way investors or markets. But at that same time we are about making risk based decisions as to where we focus our attention with respect to firm's activity and which firms we focus more attention. And firms fundamentally need to be focused from the standpoint of culture because what I believe had become very clear notwithstanding the enormous commitment and investment in compliance functions in technology over the last 15 years, that a rule based approach from the standpoint of compliance simply is not enough to cut it and simply does not eliminate the risk here. So I think there's a common cause across regulators and firms to get at this soft area and begin to wrestle with as much as possible. And I think as well those that are interested and focused and studying from the financial industry in order to try to increase the science of addressing the questions of what makes good people do bad things.

I'll close now. I look forward to the conversation. It's great to have the chance to talk to you. I look forward very much to the panel and you can think of an enormous amount of ways to really try to look at how equity markets and equity investments impact our economy and I look forward to the rest of the day.

Thank you. (Applause)

MR. BAILY: So thank you so much. I'm going to ask the audience for questions, but I'm just going to start us off with a couple of questions. You mentioned dark pools which is something that attracts a lot of people's attention and they think what's that, does that sound like something that's unfair, sounds like dark energy that I don't understand, or Lord of The Rings darkness or something. So let's talk for a minute about dark pools.

First of all, is there some positive element to dark pools? Are dark pools something that we should be willing to tolerate because they play a positive role?

MR. KETCHUM: Sure. First, if you look at the generation and the history of dark pools they essentially come --

MR. BAILY: Can you just tell everybody what's the definition of a dark pool?

MR. KETCHUM: Well, a dark pool is an electronic trading system -- this is not an SEC definition -- but essentially an electronic trading system that because it hasn't reached a percentage of order flow and because it has not been required to register as an exchange through SEC's Reg ATS, does not have to display pre-trade transparency. It must report all its trades just as any firm that executes a trade must report their trade on a post trade transparency standpoint, but it does not, if you will, have to display the liquidity that exists in the system, whether it be with respect to quotes or a range of more complicated orders.

MR. BAILY: I do want to mention before we go on that we have about 90 people who have registered for watching us on line. So we do have the ability to go outside this room. So you are sort of speaking to that audience as well this morning.

MR. KETCHUM: Now you asked is there a positive impact in this and I think you sort of described -- essentially dark pools respond to the continuing frustration that occurred over time by institutional investors with regard to information leakage and regard to the fact of the cost of executing block transactions. And the history of dark pools, though it has evolved from there, really begins there. As we move to a much quicker electronic marketplace institutions divided up their orders into much smaller executable size, but they continued to have the challenge with respect to price movements and price impact with respect to large sized order. Economically you'd expect that to occur. The question is how do you minimize it? So dark pools, by not displaying post trade transparency, allows for an -- in the first design from the standpoint of a few that are truly about trying to execute large trade size, allows for exactly that type of transparency.

Now the next set of things, which again reflects the change of our markets with respect to automated trading, is it provided an alternative for institutional investors in particular to look for price improvement without interacting with respect to the LIT markets that as a basic part of the statute are required to be non discriminatory and can't restrict any participation. It's another way of saying they can't restrict the participation of professional high frequency traders. Many institutional traders putting -- this is not to return to the book and talk about latency arbitrage, but many professional traders were concerned about the ability, particularly until they increased their sophistication with respect to how they manage their executions, their concern was the ability of tipping off and encouraging trading running ahead of them by a range of probability to assessments that trading (inaudible).

So those are the positive things ATSs do. There are a bunch of concerns, which I guess may be your next question.

MR. BAILY: Okay, so tell me about the downside, which you referred to a little bit in your speech.

MR. KETCHUM: Well, the downside, you know, or at least the arguable downside is a variety of things. First, these are less transparent systems so the ability to understand more about the supply and demand developing in the markets is more difficult to analyze. Secondly, because they get to pick and choose who participates in the system there are risks that they may not fully and accurately disclose the restrictions of participation they have that in one way or another can be discriminatory or mislead institutional investors who think that they're trading in an environment where there aren't active traders when obviously some of the disciplinary actions are brought suggest that's not true. Now the third argument would be the question of how you feel about interaction of order flow and how you feel about the fragmentation that exists in the United States markets today and a lesser extent in Europe. ATSs by finding different pools of liquidity or by a goal of finding pools of liquidity -- and it should be said that most ATSs today have an average trading size of a couple hundred shares, so they've gone a long way from their institutional block roots -- arguably you're reducing efficiency from the standpoint of pushing all buy and sell interest to a single place. Instead you're pushing it now to 12 exchanges, 50 or 60 ATSs, and upstairs firms that also have the ability to trade against retail order flow themselves.

So the argument would be -- the other concern outside of controlling for disclosure and increasing transparency, would be that you're creating an inefficient market structure. Statistics don't drive a conclusion, that's correct, although your statistics obviously always have to take the market that exists in evaluating, but certainly it shows generally that they're pretty good structures from the standpoint of providing liquidity and finding price approval.

MR. BAILY: Thank you. Let me turn my next question and then I'm going to ask the audience for questions. So we've seen a fairly steady decline -- well, I shouldn't say that because now maybe it's picking up a little bit -- in the number of startup companies in the United States. Now obviously the recession had quite a bit to do with that, but we've been recovering now for a number of years. There are a lot of people, including me, that see startups particularly that the percent of them that are gazelles and grow rapidly as being important to both the overall growth of the economy and the employment growth. There's also been a decline in the number of companies going public, which may be, you know, in a way is natural if the number of startups is down and so on. Now there are various reasons for this. That private equity plays a bigger role, companies sell to larger companies, and so on, but are you concerned about that and do you think there is anything -- you know, there is some discussion of startups going to London -- do you feel our markets are in a good competitive position? Are you concerned about whether going public is too expensive or too costly? How do you view that issue?

MR. KETCHUM: I think it's a valid concern, but I think there has to be a realistic discussion of a variety of pieces, as I briefly indicated in my talk. Look, part of the shift in IPOs reflects the growth of a global economy and is basically a good thing. And as innovation no longer fully focuses in the United States and as other markets that were really inefficient from the standpoint of encouraging capital markets have changed and adjusted, some of that's fairly natural.

Some of the points you raised I think deserve a review. The tick test pilot seems to me to be one small piece of that. But certainly the other pieces that deserves a review is the enormous growth of the Reg D market, and certainly the significant participation of that from the standpoint of international securities, but also as a means in a variety of ways for companies to either raise capital or raise funding without going in the public markets. You know, I think Chair White has been right in kicking off a review from a disclosure standpoint. I noted my concerns of not returning back to some of the regulatory gaps that existed in the '80s and '90s, but I take this from FINRA's standpoint as well as the SEC. I think we need to step back and look and ask whether some piece in the regulatory structure as it starts to apply to different types of broker-dealers and small firms need to be streamlined with respect to small cap stocks. So I think tick test pilot -- pilots are a good way to start at this, but I think looking at those set of questions, not from the standpoint of unicorns, not from the standpoint of the most attractive private capital securities -- they do just fine and I think their choices come from decisions rightly or wrongly of how to maximize their concern from the standpoint of the company -- but as you move to tier down that's not in the hot industries, that is a more complex story or simply needs that capital to continue to maintain and suffers from the inefficiency of depending purely on bank financing, it seems to me that it is right for us to look at our set of regulatory requirements and ask where they can be streamlined.

MR. BAILY: I'm looking for questions. Yes. Could you identify yourself and just wait for the microphone so the audience on line can also hear you. Apparently we have a dead microphone. So why don't you just go ahead and we'll --

MR. KETCHUM: I guess you could walk up to there if you want or just --

MR. BAILY: Why don't you just ask the question and we'll repeat the question.

SPEAKER: I personally would like to see a transaction tax if your holding period is less than an hour or less than a day, unless you are truly an exchange. I think the public would happily give up the volatility or give up the -- the public would happily give up this very thin spread or the so called liquidity, pay an extra nickel spread in exchange for a much safer, less volatile market.

MR. BAILY: So it was a question about essentially high speed trading. I think you heard maybe a good part of that question and maybe the concern for other investors. You probably do a better job of answering and summarizing than I'm doing, but --

MR. KETCHUM: Sure. I think the basic suggestion was that because high frequency traders and because the fragment environment has basically eliminated effective market maker requirements even when they operate as market makers on the exchanges, that the net effect is negative and not liquidity providing. And then you call for a transaction tax, at least for trading away from exchanges to discourage the activity to some degree and raise money, as some politician seems to have suggested is a really good idea.

I empathize with your concerns, but I think they're one sided. I don't think the data really supports the conclusion that high frequency traders any less than the competitive traders that operated on the floors of the New York Merc and the Chicago Board of Trade in days before, which if you want to look at the trading strategies that high frequency traders generally use are the closet analogies don't provide value from that standpoint. It really -- as a long-term investor I do like narrow spreads and the statistics are difficult to come to any conclusion that they are narrow for the day to day activities, and that's not only important to me there, but probably way more important to me with respect to my mutual fund investments where I particularly would like those mutual funds to be as efficient as possible. Now the concerns are valid as I said and addressing the right things from the standpoint of short-term volatility, one of which ought to be talking about the fact that if you're an active high frequency trader that is meaningful in the market you have some level of -- for lack of a better word -- social responsibility. And I think rethinking what market making obligations may be appropriate for at least the largest high frequency traders, as well as what incentives should exist there -- because it's difficult to have one without the other -- is very fair. And there are, you know, certainly things like encouraging animals like IEX that provide a different environment as well as ATSs that provide an environment -- as long as they're telling the truth -- where people can choose to trade in a less active trader environment I think are good things. But I would be careful to sacrifice all of the efficiencies that existed by really chasing them out of the market. I think it's a more nuanced thing. But I do agree with you, looking at the downsides of their activity is a very important thing to do.

MR. BAILY: Yes, question in the back.

MR. SCHOEFF: (off mic).

MR. BAILY: Can you identify yourself? Oh, they got the microphone.

MR. SCHOEFF: I'm Mark Schoeff with InvestmentNews. Rick, FINRA wrote a comment letter that was highly critical of the DOL fiduciary rule. Have you had a chance to review the rule and what do you think of -- the final rule -- and what do you think of it?

MR. KETCHUM: I think the final rule is much better. And I think that the -- I agree generally with much of the work done by analysts in evaluating it and, you know, I think the steps done from an operational standpoint, particularly in not looking backwards with respect to existing investments and incentives that are already in there and from the standpoint of the ability for negative acceptances with respect to the BIC or the contract that's involved in DOL are major steps forward. There is also some useful clarifications though I'd love to see more detail with respect to the standards with regard to differential compensation for advisors. The clarity from the standpoint of firms and their obligations with regard to third payments and proprietary products that I think is much more balanced. And I again give credit to the DOL for design changes that I think, as well as eliminating the black list of products that are very important.

They still to me could be valuable in having greater guidance with respect to exactly how neutral factors that allow for some differential in compensation with regard to advisor compensation actually should work in reality. And I'm hopeful that given the response that this deal has in the last few months that interacting with the firms they'll be able to provide greater guidance there. But, no, I think -- look, as you know, Mark, I strongly believe that we need to move to a fiduciary environment where there's clarity that the best interests of customers are put first. All my concerns with DOL is that that be done in a way that doesn't force all customers either to be self driven or to be in fee only accounts because the basic fact is for most investors fee only accounts are more expensive, and self driven investors on any economic analysis I've ever done do worse than investors that are advised. So I think I'm not smart enough and I certainly haven't completed the evaluation to conclude, but I think DOL has taken major strides to get at the important steps from the standpoint of managing conflicts in the respective best interests without driving everything into either self driven accounts or fee only. Whether they've done enough, I think we'll see. And certainly FINRA will look at it very closely. And obviously I continue to hope that eventually we have a single consistent standard driven by the SEC. But I give great credit for the DOL in making I think some very significant changes in this version.

Okay. More than -- anybody besides Mark may have wanted hear.

MR. BAILY: No, that was very helpful. Yes, a question here. Just wait for the microphone. Thank you.

MR. APGAR: Sandy Apgar, friend of Brookings. What role are you personally and FINRA institutionally playing in improving economic and financial literacy, which I personally see as one of the underlying risks in the economy as a whole?

MR. KETCHUM: I could not agree with you more. I think it is --

MR. BAILY: And especially as we've got people now managing their own accounts.

MR. KETCHUM: Well, exactly. Obviously that's the primary inflection point in the United States from the standpoint of shifting the defined contribution, 401Ks and IRAs and the decision making involved there. Putting aside, talking about my kids' generation, the enormous leverage that has been built in without a lot of thinking of the cash flow returns on the other side with respect to huge concentrated student loans, which is as well are the type of decisions --putting aside the use of credit cards -- that our millennial generation is faced with challenges that frankly I never had when I was growing up.

So I think the answer is we have a foundation that we've just funded with -- was fortunately funded from the bad actions of enforcement actions in the past, but we've just funded with an additional $50 million contribution a year ago that's absolutely focused on this. And I think the amount of economic literature from the standpoint of analyzing how investors and consumers make decisions is extremely encouraging.

Short answer, our conclusions and what we try to do with respect to our foundation is look for leverage. There is plenty of stuff out there that's provides wise guidance from the standpoint of making solid decisions with respect to the range of consumer decisions that you make. The question is getting studies that really cast clarity into the type of disclosure and variety of encouragements that can help from that standpoint. And then it is getting information for folks with different decisions and different economic levels from the financially at risk to the better off. And getting that information delivered ubiquitously through trusted persons. We work with the libraries, we work with the United Way, we work with a variety of different entities embedded into the community that in one way or another can deliver and create incentives for trusted persons to interact with people so that we're not just putting crap on the web that nobody is reading.

MR. BAILY: We're sort of running out of time. I had a couple of more questions, so let's take both of them together; if you can respond. So a question over there and then we'll go right to a question here, and then get your response.

Yes.

MR. MICHAELS: I'm Dave Michaels with The Wall Street Journal. You talked about August 24, you said there were issues that were ripe for review and you mentioned four or five. What are the changes that the NMS plan amendment will recommend in terms of changes to limit-up or limit-down or other sort of market stability mechanisms to address what happened on the 24th?

And then could I ask a second question? Now that IEX has amended the way that their affiliated router works, on balance do you think that the IEX exchange should be approved?

MR. BAILY: Okay. And we'll take the next question here.

MR. KETCHUM: On the first one I think that's still a discussion among the exchanges, FINRA and the SEC, and I do expect it to be a subject of discussion at the next Advisory Committee. So I don't think there are decisions. I tried to identify some of the areas that I think are sort of no brainers. You do have very brief time windows before the price reset occurs in limit-up limit-down that caused some of the problems. There were specific separate requirements in Arca from the standpoint of price movements that deserve to be looked at.

Having the same restrictions and slowdowns when a stock is recovering, it sometimes occurs after this type of event, deserves to be rethought. And looking at the opening and the fact that there are way wider bans as well as bans applied during the trading around the opening are sort of some of the examples as I said in my talked that I think deserve to be looked at. But everything relates to everything else and it will come out. But I think all those things are things that are certainly being looked at by the plan, the SEC, and the Advisory Committee.

MR. BAILY: Okay. Then quickly our last question.

QUESTIONER: I'm talking about dark pools. I trade through a broker firm. Is that broker firm obligated to tell their clients which securities are traded through dark pools and which are outside?

MR. KETCHUM: Yes. The broker --

QUESTIONER: We don't get any information about what we are trading and how the prices are influenced. Thank you.

MR. KETCHUM: This is where I'd love to see the 605 information from the standpoint of investors be much clearer from the standpoint of the execution that you get (inaudible).

MR. BAILY: Just tell the audience the 605 regulation.

MR. KETCHUM: Okay. The SEC adopted two rules back 15 years ago that basically tried to increase information out for execution quality. But it did that in a world where still most of the trading occurred in exchanges. So I agree with you, there needs to be more disclosure to individual investors about dark pools, there needs to be more disclosure that allows individual investors to understand when their orders are being executed with respect to firms not in dark pools, but firms from the standpoint of their own principal activity that they can understand and evaluate the relative quality.

Now most individual investors aren't going to do that, but it's important they have the information. And of course once that information is public it gets looked at by media analysts and a variety of other things and that tends to impact behavior.

MR. BAILY: Thank you so much, Rick.

MR. KETCHUM: Thank you.

MR. BAILY: Would you please join me in thanking Rick Ketchum. (Applause) Thank you; that was terrific.

So I'm handing over to Aaron Klein.

MR. KLEIN: Thank you, Martin, and thank you, Rick. I'm Aaron Klein. This is my first event here at Brookings as a fellow in the Initiative on Business and Public Policy. I have been on this stage in different capacities before. I'm excited to be here. And it's my pleasure to introduce what I think is a fantastic panel. We're going to invite the panelists one by one to come up, give their presentations, and then we'll all sit for a moderated discussion.

For those of you who are algorithmic traders or think like algorithmic traders, there's a secret algorithm in the order in which the panelists will give their presentations. The panelists are unaware of this so we'll see how many of you can figure that out.

I'm going to introduce everyone and then let them come by one by one. First would be Tom O'Shea. Tom is over 20 years experienced in the financial services industry prior to joining Cerulli Associates. He played a leadership role at Fidelity. He is a Harvard graduate. Following Tom will be Susan Lund. Susan is a partner at McKinsey & Company and the leader of the McKinsey Global Institute, which produces must read economic information and analysis on basically the state of the world. She holds a Ph.D. from Stanford University and is frequently cited in the media and gives major economic and public policy addresses. Following Susan will be Charles Himmelberg. Charlie, as he's known, is head of credit and mortgage strategy research at Goldman Sachs. Prior to joining Goldman he served as research and academic positions at the Federal Reserve Bank of New York, Columbia University, and previously the Federal Reserve Bank of Chicago and the World Bank in an advisory role. Next will be Josh Gotbaum. Josh is a guest scholar at the Economic Studies Program at Brookings. From 2010-14 he directed the U.S. Pension Benefit Guarantee Corp, or PBGC. Prior to that in the Clinton

Administration he was assistant secretary of treasury for economic policy. And then closing out our panel is Tim Cohen. Tim is the chief investment officer at Fidelity Management and Research Company and the investment advisory arm for Fidelity's family of mutual funds. He served a variety of roles at Fidelity previously and is a Wharton grad.

So with that let me hand it over to Tom to start us off.

MR. O'SHEA: Thank you so much, Aaron. To get us started this morning I'm going to focus on the practical aspects of investing in retirement given the low returns in today's capital markets.

So the average 401K balance is a little over $79,000. Now when you look at financial advisors and you study their target market, by the size of investable assets of their clients you'll find that only about eight percent of advisors focus on clients with less than $100,000. The vast majority, 92 percent of advisors, want clients with assets of more than $100,000. The issue here is that advisors, financial advisors, need to get paid and it's very difficult for them to generate meaningful income from small balance accounts. Now most advisors will assume that the sustainable withdrawal rate for a retiree is about four percent on their retirement assets. This figure is based on a study that was done by some professors at Trinity University in Texas. There's a couple of things to think about this.

The capital markets were offering a lot more in 1998 when this study was done than they are today. So many academics have questioned whether four percent can really be a sustainable withdrawal rate considering how low the returns of today's fixed income and equity markets are. But let's assume that four percent is a good number and let's assume that instead we're dealing with the average rollover IRA balance, which is about $119,000. Now what's 4 percent of $119,000? It's $4800. That's not really meaningful income per year for a retiree is it?

Now fees are another issue. The average balanced mutual fund in a 401K charges about 66 basis points to the plan participant. When the participant rolls over their 401K into an IRA managed by a financial advisor they often roll it into say a mutual fund wrap product. That's the typical product that they land in. And that advisor charges roughly 198 basis points, or 1.98 percent. Now 1.98 percent may have been acceptable when capital markets were offering balanced portfolios in 8-10 percent return, but as that number drops to 5-6 percent the fee becomes a meaningful portion of the client's return. It's as if the tide has receded and exposed all these rocks on the beach and these rock are guess what -- fees.

Also it's interesting to note that a sizeable portion of the fee is not readily apparent to the customer. The fees for most mutual fund and exchange traded funds come out of the net asset value of the fund and the client really never sees the money being deducted or feels the cash moving out of their account. And when we survey consumers, interesting statistic, 25 percent will tell you they don't know how they're paying for their advice. Another 25 percent will tell you that they're getting their advice for free. So there's a lot of lack of understanding about fees from consumers.

Now there's an emerging class of advisor which we term digital advisors, but which are typically known in the industry as robo advisors. These firms typically charge only 25 basis points for advice and used passively managed exchange trader funds which cost about 10-20 basis points. These advisors remove the human advisor to a large extent and replace this person with a website and an algorithm that allocates clients' investments across asset classes and rebalances these investments regularly. Based on modeling we've done at Cerulli Associates we anticipate the market for digital advice, for robo advisors, to grow to about $489 billion by the year 2020. Several venture capital funded firms, notably Wealthfront and Betterment, pioneered this approach to investing, but it is rapidly being adopted by major companies. Vanguard and Charles Schwab have launched digital advisors in the past couple of years and Fidelity Investments is scheduled to launch one later this year.

There may be a limit though to how much consumers will accept technology as a substitute for human advice, at least in the short-term. Based on our research even the most technologically inclined cohort of investors, which most people in the industry consider to be the millennials, they don't completely buy into the notion of on line advice. Almost half, or about 46 percent, do not want an exclusively on line advisor. This number may change over time, but this is sort of where we're at right now. Apart from client dissatisfaction with digital advice there may be some regulatory issues with this product. The FINRA has taken some of our research, looking into the dispersion in the way these digital advisors invest client assets. And pointed out the importance of understanding a little bit better how their algorithms are constructed.

Additionally, this month the Massachusetts Secretary of State published a position paper questioning some of the practices of digital advisors and wondering whether they were true fiduciaries. The paper reveals a lot of digital advisors disclaim fiduciary obligation in their contracts, something they can't do and still claim to be an advisor under the Investment Advisors Act of 1940. The paper also argues that there may be some inherent problems in acting as a fiduciary without having a person involved. Now, for instance, they say can a website really determine whether the client is of sound mind without actually interacting with them over the phone or in person. Still, these consumer and regulatory concerns aside, the industry really needs to figure out a way to scale the delivery of financial advice so that the costs are reasonable.

Fifteen years ago, when the capital markets offered substantial returns to client portfolios consumers might have been able to afford high fees, but the reality of today's low returns is that every dollar counts. Consequently it's important for financial firms to figure out how to leverage technology to deliver financial advice in the most efficient and cost effective way possible.

Thank you. (Applause)

MS. LUND: Hello. Thank you for inviting me. We have a very fascinating session today. I'm going to take a step back and share some of our research that looks at the history of equity investing in the U.S. and I'll share some results of forthcoming research about what we can look at in the years ahead.

So first of all, for the history, public equity investing is a distinctly Anglo-Saxon phenomenon. Here in the U.S. virtually everyone in this room has grown up in an era where it's been many people hold shares, invest in stock markets, we watch the indexes every day, we hear it in the morning, we hear it in the evening, but in virtually most of the rest of the world this is simply not the case. So stock market capitalization in the U.S. is about 140 percent of GDP. In the United Kingdom it's 130 percent, and Australia and Canada have relatively deep in liquid equity markets as well. But when you go to Western Europe -- think France, Germany, Spain -- equity market capitalization is only 80 percent of GDP. And then in the emerging market world it's even smaller, China at 70 percent, India and developing Asia at about 50-60 percent, until you get down to Africa, 35 percent, and Eastern Europe, less than 30 percent.

So how did this come about that we and our British brethren and other Anglo-Saxon countries develop this fondness for retail equity investing? Well, there were a couple of things, and a couple of market design choices back in the 1950s that opened the doors for retail investor participation in equity markets in the U.S. Part of it was a push to democratize shareholding. After World War II when many people bought war bonds there was a shift towards realizing that there was another avenue for households to build wealth, and this was in the form of equities. And it was considered somewhat patriotic to buy shares of Coca Cola or General Electric or the big corporations of the day. It was also a good inflation hedge. There was a lot of public education about equity investing and holding shares became a common thing to do. But in the rest of the world that's simply not the case. So as we look to the future one thing to note is there's nothing innately human about being attracted to equity investing. Indeed this is a construct that's been nurtured over time.

Now when we look at what's happening in the U.S. already several factors are reducing retail investor appetite for equities. So when you look at the share of household financial assets in the United States, the portion devoted to public equities has been declining over the last 15 years steadily. You see a same trend in Europe. There are a couple of facts at play here. One, the population is aging, and as people near retirement they've been told to shift into less risk averse types of investments like bonds and other fixed income deposit type accounts. That's playing a role. A second shift has been the shift from defined benefit pension plans where assets are managed by professionals into 401K plans where individuals themselves choose their asset allocation. And what we see clearly time and again is that individuals choose a less risky, more fixed income oriented portfolio. So when you look today at the asset allocations of defined benefit versus defined contribution you see that equity holding in defined contributions plans is much lower.

So what happens as we look ahead? In two weeks we're going to be publishing a paper looking at the past and the future of equity in fixed income returns in the U.S. and Europe. And to give you a preview of what we're finding, it's that whatever golden era we've had over the last 30 years of returns, it's very likely to come to an end. So in the U.S. real equity returns between 1985 and 2015 were 7.9 percent. Western Europe was only slightly less, 7.7 percent. That was 140 basis points higher than the 100 year average. So we looked at what caused equity returns to be so healthy and is this going to continue.

What we found is that we model equity and fixed income returns based on what happens in what we recall the real economy. And when we do that, unlike many financial market analysts, we find that there are four critical factors over the last 30 years that explains why investors did so well. One is declining inflation rates from the 1970s and '80s, and along with it declining interest rates. Declining interest both helps boost corporate profits and helped shift a substitution in portfolios towards equity. In addition we had very robust global GDP growth. We had people entering the workforce not only in advanced economies but emerging markets. We had strong growth in China and other parts of the emerging world. And then finally we had an extraordinary 30 years of profit growth. You see that in North American publicly listed companies profit margins grew by 65 percent over that period. Globally you see that net corporate income growth outstripped global GDP growth by 70 percent. So today in most countries around the world corporate profits as a share of GDP are higher than they have ever been.

Now when you look forward you can see that those four factors have run out of steam. Inflation is low and interest rates are low, hard to see further declines, and in fact interest rates may well reverse. Global GDP growth is no longer being fueled by the number of working age people. In Europe, in the United States, even in China and Japan, Korea, what you see is aging populations. And so in the absence of significant pickup in productivity growth we calculate that global GDP growth is going to be 40 percent lower than it has been in the past 30 years.

And then finally we look at what's happening in the corporate landscape. Well, certainly there are new technologies on the horizon that could boost corporate profit margins, but it's hard to see that they would continue to grow or certainly increase as a share relative to global GDP the same way that they have. So in the two scenarios we look at going forward we see equity returns falling by 150-250 basis points below what you saw in the last 30 years.

All of that paints a very cloudy picture for the future of equity markets for investor interest in equities and the returns they're going to get. It makes market structure and market performance ever more important, as some of my other panelists will discuss.

Thank you. (Applause)

MR. HIMMELBERG: Well, thanks for having me here today. I want to first start with a couple of disclaimers. First, that my views represent my own and not the official views of Goldman Sachs. I sit in the Research Department of Goldman and I'm obligated to tell you my opinions to the best of my ability to discern what's going on in the world. I also want to offer the disclaimer that I'm a strategist, which means that I talk to investors like Tim and his colleagues about what's going on in the market and I always think of my job as professional brainstormer. My job is to write short notes and talk to investors. I spent yesterday in Boston meeting with half a dozen or so big institutional investors who are managing portfolios on behalf of mutual funds and the like. And essentially what everybody is trying to figure out is what's the sensible smart thing to do, where should I be investing, how should I be investing.

So that's my touch point to the markets, is really on the wholesale institutional side. We obviously at Goldman Sachs serve those clients by providing market intermediation services. So I might be at a slight departure from the other panelists in the sense that I have a perspective that I think is informed by the issues and the problems that traders, institutional professional traders in the markets are facing on a daily basis as opposed to the experience that I have, for example, when I use my Fidelity account, which I have, to execute my own trades for my own investments.

So that's my perspective. I just wanted to give that context. Susan made an interesting comment about the U.S. and UK markets and how distinct they are in the global experience in the sense that they have the biggest, deepest most liquid, by most measures most successful, equity markets. I want to make sure of an unusual tangent, take an unusual tangent from that observation to point out another similarity between the U.S. and the UK, which is that they also have the most successful patent systems around the world. And I actually had to do a little work on this to learn this. The patent system in the U.S. is over three centuries old, but it predates the U.S. It actually started back in the 1600s. It actually predates that monopoly in grants, but the modern motivation for patents, which is to grant market power, to subsidize innovation and growth, that actually has roots that go all the way back to the 1600s in the UK.

And the reason I wanted to start with that metaphor I guess, is to point out that it's a kind of remarkable accident of history -- maybe not an accident of history, there was obviously a lot of thought that went into the innovation, you know, the development of the patent system and its evolution over the centuries. But the goal of the patent system is functional. The goal is to create incentives that foster innovation and growth and productivity in the economy. And I want to argue that I think a question that we are not asking, either in the industry or in policy circles, or in academics circles, the question we're not asking ourselves enough is what is the functional role that we want to ask capital markets to do. Now I was an academic, I'm a Ph.D. economist, I taught at Columbia and NYU for over a decade. So I speak with some authority when I say I say I think academics at least take it for granted that markets work, whereas the experience in my new career in the last decade talking to folks like Tim and his colleagues is that markets work pretty good, but they're working less and less well all the time. And so the message I really want to give is that -- and again I'm just the messenger. I actually don't have answer for you I'm afraid. I have some thoughts about what the answer might be, but the message I have is that when I talk to investors my goal -- so I'm a fixed income strategist most of the time although I now do both fixed income and equity, but my objective, my day job is to talk to investors about what's the smart way to be investing in the market, where are the expected returns the highest, where should I be allocating the portfolio. For the last two years in the credit market I've only been talking about one thing, liquidity. The market doesn't work. My research assistants have figured out, you know, these 20 names that we think are undervalued and offer great value to our investors. We can't actually source the bonds. We go to the secondary market to buy these bonds, and let's say we want to buy a $25 million position for our portfolio. After we've traded $2 million the price, you know, value that we saw in that bond in the first place has already been priced away. And why is that? Because everybody in the market knows that we're trading, everybody knows that we've done research, and as a result the market is trading in front of us and we can't actually implement the risk or benefit from doing the research on the idea in the first place because the minute we try to implement the research idea the price moves against us and we're stuck.

So what does that have to do with R & D? I think that we should be asking the question -- this is again what's been on my mind the last two years talking to traders in the market -- I think we need to be asking the question from regulatory perspective, what do we have to do to have high quality markets where the quality of the markets is not just the types of things we heard from in the opening address and the discussion having to do with the retail experience but also quality of markets form the function question of are capital markets generating the information about the allocation of resources in society that's helping to foster growth and prosperity. I would argue that we're heading in the wrong direction, just based on my gut feeling talking to folks. It doesn't seem like the markets pay institutional investors whose job it is after all to be smart about where is the highest marginal value project in the economy, where should our society be allocating resources that have the highest returns in terms of growth and prosperity. I don't think that the market is compensating the private actors who are investing in the market to produce the amount of information that we take for granted in finance departments and in policy circles just automatically happens by magic. It doesn't happen by magic any more than innovation and research and development happens by magic. Those things are not magic boxes that just spring forth, you know, year after year of matter from heaven. They're actually deliberate policy decisions to foster the production, the functional behavior of markets in a way that we think is socially desirable.

So what I think we're missing in discussions about the retail experience, which are obviously important -- I don't want to address that at all except to say that I think policy has actually done a good job of focusing on fairness issues and transparency issues and fiduciary duties. Those are sort of transparent goods in my view. But at the same time I think sometimes that focus comes at the expense of disregarding or not fully appreciating the social value of asking what's important to do for the institutional markets from a functional perspective that we care about.

So I want to just leave it there. I'm really asking a question more than answering one, but I do think keeping the R & D metaphor in mind is important because I think that we want to have quality markets where we define quality as not just does it provide a good retail experience for day traders sitting at home in front of their computers, but does it also provide a good opportunity for institutional investors to basically express informed trading ideas in the market and not have the market sort of that research. I think that will come up in the discussion because, for example, it addresses issues of active versus passive management of funds. And one way I always like to ask this question is, you know, do we want a market where 100 percent of the investment activity is passive? And would a market where 100 percent of the investors were passive have any information that was worth anything at all? Would our markets still be the envy of the world? (Applause)

MR. GOTBAUM: All right. I'm really glad that Martin asked me to join this panel. I'm really sad that one only gets seven minutes, but I'm also glad that Tom O'Shea provided slides so I don't feel quite so odd.

The most widespread of equity ownership directly or indirectly is through tax deferred retirement accounts. My view -- and taking a tip from the previous speaker I should point out the fact this is my view, it's not Brookings' view or Brookings' management's view, or Brookings' trustee view, et cetera, and it's not even probably Martin Baily's view -- is that regulation of retirement accounts drove the change from corporate plans to individual accounts. And this in turn completely changed the market for retirement investing from one that was overwhelmingly institutional to one that is broad based in retail. The financial services industry has figured this out, they have adapted. Government is only beginning to do so.

Widespread adoption of traditional pensions didn't occur until after World War II. As you can see from this graph the percentage of private workers covered by a defined benefit plan rose from 20 percent in 1950 to just a little less than 40 percent in the mid '70s. Ironically the passage of ERISA, which was intended to protect traditional pension plans, instead began their decline. Employers decided that they didn't want to be solely responsible for funding retirement, that they didn't want to be responsible for insuring against longevity risk, having fiduciary responsibility, and having the market variations of pension funds reflected in their financial accounts.

So they switched to defined contribution plans and reduced their financial legal obligations. This converted tens of millions of formerly employees into investors. In 1979, which was the earliest date for which we have data, most private sector workers who had any kind of employer provided plan had defined benefit pensions, all of which paid out as annuities. They had no decisions to make. By 2011 only 14 percent had a defined benefit plan and most of those plans had lump sum options. In other words they started to make decisions. Forty-two percent had defined contribution plans with the percentage paid in an annuities has been continually declining. With the advent of defined contributions plans individuals became responsible for deciding whether and how much to save, but companies could still help them. They could negotiate fees and limit manager and investment choices, they could set up a default investment option, and they could auto enroll their employees.

Unfortunately the shift from defined benefit to defined contribution was only the beginning. The more significant move was from both defined benefit and defined contribution into individual retirement accounts. In 1974 about three-quarters of retirement assets -- and I'm switching to an asset case here just because it's where we have data -- were annuitized. Nineteen percent were actual annuities and more than half of the rest of the assets were in defined benefit plans, all of which were paid as an annuity at that time. By 2015, by comparison, three-quarters of retirement assets are either defined contribution or individual retirement accounts.

I would also note -- and this is most important -- that in 1974 the fraction of assets that was in individual retirement accounts was miniscule, .004 percent. In 2015 it was 39 percent and growing. With the individual retirement account the transition of retirement saving and investing responsibility from corporate sponsors who knew what they were doing, who invested professionally, et cetera, to individuals is complete. Employers can do nothing.

So then how well do we think the individual retirement investor is doing compared to the institutions or compared to the high net worth individuals, which is what we used to consider individual investors being? My answer, quite badly. Let's be clear, these are not day traders. Just to note a few of their limitations, Tom O'Shea mentioned fees. Fees have been the subject of extensive discussion, extensive disclosure efforts, attempts to educate people. And despite that most retail investors have no idea what they pay. As Tom pointed out a quarter of them think that these services are free and a quarter admit they have no idea how they're paid for.

My favorite one actually from this list of decisions that consumers implicitly have to make is asset allocation. Olivia Mitchell and Annamaria Lusardi, who are experts in financial literacy, nonetheless have documented how little of it there actually is. They asked a sample of folks which was safer, to invest in a single stock or to invest in a mutual fund. There were only two choices. You had a 50 percent chance of getting it right. Guess what percentage of the population guessed right -- 52 percent. (Laughter) One could discuss this for days; however I have I think two minutes left. So I think the critical challenge here is that because this is a new market we need to think of consumer protection differently than we have for traditional institutional investors or even traditional high net worth individuals.

Now the good news is that for the portion of this population that is still in the employer provided plan universe, 401Ks, employers are taking these limitations into account. They're doing auto enrollment, they're constraining choices, they're negotiating terms of products, so that as result fees are considerably lower than -- again as Tom O'Shea -- thank you very much -- pointed out -- they are when people enter the IRA market. However, employers still can't help employees with withdrawals, they can't help with annuitization, and when it comes to IRAs becoming the dominant retirement vehicle, now companies can't help at all. Individual investors are entirely on their own.

So who then can help? Let me be clear that this is not a ding on the financial services industry. They are doing their job; they're getting customers, et cetera. The financial services industry has adapted to its new customer base, but government is only beginning to do so. There is plenty of regulation, as everyone from the financial services industry will tell you, but it is impressively out of date. The SEC model, and the SEC is full of very talented, very intelligent, very well meaning people, nonetheless presumes the sophisticated investor that these folks are not. The Department of Labor started in this world not by paying attention to financial services providers, but by regulating employers; however, employers are getting of the business. So now the Department of Labor has to wrestle with how to handle financial regulation service providers.

I view its conflict of interest Reg as a start, an attempt, clearly imperfect, clearly attempting to get better, but that's what it is. And it is part based on a disclosure notice and part based on a prohibition notion. Now, I don't have a considered judgment as to what ought to be done here, but I think it's worth noting as a person who's been both a regulator and a regulated for most of my life that there are lots of options. To name a few, there could be disclosure that people could actually understand, written by English teachers instead of lawyers. Or you could require disclosure on an annuitized lifetime income basis so that people have some sense of what it is they're getting. The Food and Drug Administration regulates the marketing of drugs. We could think about overseeing and regulating the marketing of financial services products. In other regulatory arenas they actually attempt to standardize and define products so that you can actually have comparisons and do shopping for products. So there are lots of possibilities.

And then there is the turf problem. Here too, which is who regulates. This is already like my kid's soccer game, which is you have lots of folks going after the ball and they are the opposite of a team. Here too I can't tell you -- I don't have a considered opinion, I just have a few observations. Number one, DOL, when you look at the Department of Labor, has regulated largely by preserving the threat of fiduciary liability, but they have thus far generally avoided specifying the terms of products, their marketing, or their fees. It's not clear whether they can. Sadly the Consumer Financial Protection Bureau, arguably a plausible source of help in what is in my opinion the single most complex consumer financial decision, was prohibited in Dodd-Frank from entering either Department of Labor's or the Department of Treasury's turf. So can't say who.

What I can say confidently in closing is that this is an entirely different class of investors, that they will need consumer protections, and that we are at the beginning, not at the end of discussing how to protect them.

Thank you. (Applause)

MR. COHEN: Good morning, everyone. Thanks a lot for having me here. I'm Tim Cohen from Fidelity Investments and, like my predecessors, I'd like to start out by saying these are my opinions, they are not official opinions from Fidelity.

Well, all my comments, they are going to echo what we've heard from prior panelists, but I'm going to really drill down on the active versus passive debate in terms of which one is better, and also talk a little bit about the policy angles, that I think people should be thinking about in active versus passive investing.

So, the first thing I'm going to talk about, a little bit about the data, which one is better, and compared to everything else that most have read, that I've read in the press, this is probably going to sound a bit like a man bites dog story, because you probably haven't heard it too often. And then I think I'm going to drill in on the policy side. But first, the man bites dog story.

I'm going to argue that good, active funds are better investment choice, at least historically, than good, passive fund strategies. And the second point which is critical is, it's actually not that hard to find good, active funds for the average investor out there, even in advance without hindsight bias.

So I'm going to give a simple view of the data, some of it will sound familiar, and some of it might sound new. When you drove down on the three largest fund categories that Morningstar would define for U.S. Mutual Funds, the first one is U.S. Large Cap Funds, which is by far the farthest. And the simple data there show that the average active fund has underperformed the index by about 71 basis points, we look back over about two-and-a-half decades and then looking at the data. And that would show that the average fund is doing a little bit better than the index before fees, but after fees it's trailed.

The next two biggest categories of mutual funds out there are U.S. small caps stock funds and international funds, and in those it doesn't get nearly as much press, but the average active fund has outperformed the indexes by close to 100 basis points a year, close to 1 percent a year better performance for active mutual funds. The simple averages compared to the indexes.

And now I'm going to drill down a bit on that first category, that's when they formerly get the most press, it's the biggest category, and it looks challenging for the active fund industry, which I live in, you know, day-to-day. And we drilled down behind the data, everyone has heard the phrase about lies, damn lies and statistics, well, I think that really applies in spades here. The math is correct, but some of the assumptions behind it, I think, are silly, and not what the average customer out there really experiences.

Suffice that we are in the room to consider investing in two different funds, the first fund A is managed by one person, it has 5 or $10 million in it, so very small from the fund consideration, and charges about 1.5 percent in fees. The second fund, fund B, offered by a large company, like a Fidelity, a large fund management firm, with a global investment team, with research analysts and traders and portfolio managers, all around the world, talking to companies every day, digging up ideas, trying to come up with some of those ideas that Charlie was talking about before.

And, by the way, that fund will probably charge about half the fees, about 75 basis points per year in fees. To me, it seems like a very simple decision, but if you think about it, that second category which has attracted about half of the assets in the industry, is a very small fraction of the number of funds, when you look at their -- when we studied the data there were over 2,000 funds in the Morningstar database, and this database is survivor-bias free, going back over that time period.

Over 2,000 funds, a small fraction of them fit that category, but those funds have gathered about. Over 2,000 funds, a small fraction of them fit that category, but those funds have gathered about, or those fund families, have gathered about half the assets in the industry. Customers are smart, they don't go out and buy the average fund, they buy funds from well-resourced firms with low fees. And the statistics bear that out.

So we sliced the data and looked at funds that are from the top five fund families which, again, have about half of the assets in the industry, and charge fees are in the bottom quartile of the universe. They cut off today, it varied over time; we looked at this month-by-month or going back years, the cutoff today would be about 80 basis points in fees. And the funds that met those criteria beat their benchmarks by about 18 basis points a year after fees.

Almost 1 percent better than that simple average that they gave at the beginning, which was minus-71 basis points. Another point that's important to remember is that passive funds, while a good option, and we offer them at Fidelity, they don't match the index perfectly. The average passive fund out there, which can include varying levels of fees, actually delivers about 35 basis points per year less than the index.

And really good performing funds, we did similar filters on the passive side, underperforming the benchmarks by only 4 or 5 basis points which is, frankly, what most folks in the room, most well informed customers, would choose anyway. But you are still getting about 22 basis points a year better from the average active fund that met our filters compared to the average passive fund. And while that's not headline-grabbing, it is very meaningful, especially when we think about modeling a retirement savings timeframe that's going to be about 45 years for the average saver in a 401(k) plan, and another 20-plus years in the distribution phase, and extra 20 or 25 basis points is meaningful. It adds years to the retirement income of the average customer.

The second part of the discussion I want to talk about is the policy side. Why should -- you know, we hear in Washington, D.C., and why do we think, and certainly an argument we want to make with our customers, and let them know about the power of good, active management, why do we think policymakers should be concerned about it?

Some of these themes have already been discussed by the other panelists, but I'm going to walk through what I think are a series of indisputable facts. They are going to lead us to the conclusion that this is something that policymakers need to think about, and need to be concerned about as we go forward.

So the first point is that I think vibrant capacity markets, stock and bond markets, are a critical part of a strong and growing economy, It allows companies to access new capital to grow their businesses, create jobs and grow the economy. I know it's popular, recently especially, for some to vilify the markets and market participants, but I think this link between healthy markets and a healthy economy is indisputable. In fact, some of the statistics that Susan cited, the economies that have had vibrant capital markets, have had very strong economies, and I think are really the envy of the world.

The second point I want to do is make the distinction between primary markets and secondary markets. Primary markets, no one ever throw stones at. Primary markets are companies going to the market for an IPO, or a new bond issuing, raising new capital to help grow their businesses and grow the economy. That's what we view as a positive. It's a secondary market activity that often gets the stones thrown at it, called speculation or other things, but a strong primary market is impossible without strong secondary markets. That's a very definitive link that we need to keep.

The third point is passive investing; the entire concept is essentially a free-rider on an efficient secondary market. The entire basis of it is that investors can buy in or out of the whole market with low costs, reasonable liquidity, and that the market will be roughly efficient when they do it. Without active investors -- and this is a point that Charlie was touching on before -- without active investors, you can't have an efficient market. You need active investors to create that price mechanism, and what that does for the entire economy in terms of driving signals on where to grow, and where not to grow in the economy, you need the active investors.

You know, to use Charlie's analogy, if passive investors were 100 percent of the market, think about that, you'd have a couple of index providers, largely S&P 500 and Moody's in today's environment that are making capital decisions -- capital allocation decisions for the entire economy. The good news is, we are not there now, we are about 20-or-so percent of the market right now, is indexed in passive investments, but we do have to start thinking about the problem now, because it's not going to take getting to 80 or 90 or 100 percent before some of these problems will start to show up in the fabric of the markets.

And just to give a couple things to think about, we have situations where all investors seem thinking alike or acting in the past. Think about stock market bubbles, while not driven by passive investors, passive investors have helped fuel those by buying into the largest companies that are going up, and when active investors are all thinking alike, we've see it in the U.S. -- in Internet bubbles, we've seen it in housing bubbles, in Japan we've seen it. It's good for the economy to have everyone moving in the same direction.

We also have other market functions that break down when everyone is moving in the same direction. Think about Japan over the last 25 years, with extensive cross holdings of companies from corporate and banking investors, that were very passive, never really trading, not taking any active role in corporate governance, well finally and recently with Abenomics, they recognize this and started to encourage more active investors, and even the corporate holders to take more active roles to help create that vibrancy that active investors bring to the market.

And finally, I'll just leave it; Charlie used a reference to a metaphor from the U.K., and I have one as well. About four years ago a colleague of mine, Ren Cheng, published a paper on the Millennium Bridge Analogy, and the Millennium was built in London and opened up crossing the River Thames in 2000. And after two days this brand new bridge, which was opened with much fanfare, was closed, and it was closed for two years.

The reason why, is they found that as people were walking over the bridge in crowds, the bridge would start to sway a little bit, and as it swayed people changed their step pattern to sway a little bit more, and it would sway more and more. He used that analogy to talk about what happens when all market participants start acting in the same direction. You can start to have a breakdown in the functioning of markets, and that's something we need to think about.

We think investors should have every option invest in active strategies or passive, but I think we need to be really careful about policies or regulations that might push all investors toward one angle, toward a passive angle. Thanks very much. (Applause)

MR. KLEIN: Will everyone grab their lapel microphones. And who from the audience was able to figure out the pattern of speakers? Did anybody figure it out? Yes.

SPEAKER: Reverse alphabetical order --

MR. KLEIN: Exactly, reverse alphabetical order by last name, so you see there are patterns. And we'll see about how investors find them. I think I wanted to start the conversation off here by picking up on a comment that was asked in the first question-and-answer session, from the audience, which is, kind of how fair are these markets?

There is much fanfare in the book Flashboys by Michael Lewis, and others who have kind of out there and said, you know, these markets are rigged for the little guy, for the average investor, for the person sitting at home thinking about investing, and that this is rigged many ways, and isn't a fair game. So, how do you guys react to that kind of argument out there? Charles?

MR. HIMMELBERG: Do you want me to take it first?

MR. KLEIN: Yes.

MR. HIMMELBERG: Okay. The COG and the institutional view, I don't think -- There are definitely very sophisticated, informed traders in the market, and I think -- so I think regulations that aim to level the playing field, and particularly make it hard to take advantage of passive -- which I kind of classify, retail investors investing on their own accounts is, kind of, you know, broadly speaking with passive investors, because they basically ride the market where it goes.

I guess my main instinct about that question is that there are -- is that it's an issue but I also think that there is a law unintended consequences that's brought us to this point, where you have such a preponderance of high frequency trading, and I think -- and I'm going reason by analogy to what I see playing out in slow motion in the credit markets. What I would argue are about 30 years behind the equity markets in the revolution.

So, you know, in the old days when equity markets were, you know, dominated by a small set of traders who probably traded less frequently and in a bigger size, it was much more common to have an intermediated broker/dealer system, right, and I always described, you know, the broker dealer's role in the market as stepping in between the asynchronicity of buys and sells. Right?

You know, when somebody wants to buy on Monday, and someone else is going to come along and want to sell on Tuesday, but you need to bring the buyers and sellers together in time to cross that trade, and either people can sit around and wait for it to happen, or they can just offload on another dealer who puts it inventory and sits on there instead, in any sort of economies to scale if you have one dedicated person you can sort of net out all those behaviors.

Over time in the equity markets what has happened is that the average trade size has been collapsing, the frequency in the volume of trading has been going up, but the individual bite size has been collapsing, and I would argue that has a lot of drivers, both technological and regulatory.

But one of the drivers of it is the -- is I think, some of the institutional problems that I alluded to, which is, it's hard to trade a big block of risks, if you are a big institution trading against it, and the world is populated by lots of small investors who actually, on average, probably have less information, and they don’t have big research teams that sort know of where the value is, they having done research.

What's your best trading strategy? And by the way, this characterizes a lot of hedge fund strategies too. Your best strategy is sometimes, it's just follow the trend, right? Figure out what the big guy is doing and then -- because he's informed -- and follow him. And I would say there is a sense in which I think high frequency trading -- So I'm wondering whether this is disadvantaging to the little guy or not. I think it does insofar as little guys, and I consider myself a little guy, you know, investing in funds managed by Fidelity, and then I'm hoping Fidelity gets best execution, right?

I don’t really care if I have best execution. My IRA funds depend on Fidelity's ability to trade, and I do think that some of the rules that were designed to ensure best execution, basically made it necessary for big guys to pretend and describes themselves as little guys, and to blow their big block trades into lots of little tiny trades, where they go to dark pools, and things like this.

So that’s what I mean by unintended consequences, I think, you know, to the extent that money is being managed on behalf of retail by institutions, and those institutions are now having a difficult executing because of rules that were designed to protect a small retail investor to doing a trade instead of the interest of the institutional investor doing the trade on behalf of the retail investor. I think that’s some of the imbalance that extends from the market. So I don’t know if that’s a great answer to your question, but I do think that’s always where my mind goes to immediately when I think about those issues.

MR. KLEIN: Yes.

MR. COHEN: You know, maybe I'll jump in Charlie, because you talk about some of the lack of liquidity in the bond market, but the contrast with equity market couldn’t be greater, right. I started Fidelity 20 years ago, and if we went back, if you think about the cost to execute a trade, and the analogy Charlie gave is great. We do research, we come up with an idea for a company we want to invest in, because really a few cost that enter into that.

What is the bid-ask spread in the market at the time we are looking at it. What is the impact we have as we try and execute that order on a large, institutional size? And then lastly, the commissions that we pay to the broker, that helps us to get that trade done? Those markets are -- Those costs are down anywhere between 50 and 90 percent over the last 10 to 20 years. And they continue to go down, that is meaningful.

With doing the rough math in my head that if you buy a stock and hold it for two or three years, that might add a percentage point to returns that the customer is experiencing. Very, very meaningful particularly in what might be a lower return that Susan was talking about. So, the empirical data show that particularly in the equity market, the cost of the transaction have will come down dramatically, there are still issues, and some of the issues that were raised in the book, are issues that we were aware of and would encourage regulators to dig into. It doesn't mean it's perfect, but the costs that the average investors are paying to execute trades and the inverse of that cost is the returns they are experiencing are better.

MS. LUND: I would add just a cautionary note as well. I mean, to look at what happens when markets are too dominated by retail investors, just go to China, Taiwan, Korea; they don't have institutional investors as we know them. Large pension funds and professionally manage money. And those markets are very much dominated by retail investors. They've got extraordinarily high turnover, in the rate of, say, 500 percent per year, so each share being sold five times during the year by day traders.

And that's just incredible volatility. You've all probably noticed the wild upswings, and then crashes of the Chinese stock market, that really seem to have very little to do with current economic news coming out of the country.

MR. KLEIN: Josh?

MR. GOTBAUM: I think it's entirely unsurprising that the nature of markets is that people compete to get advantage in them, and so the idea that some institutional investors take advantage of the calculation, collocation, et cetera, to pick up, you know, (inaudible) of a cent per trade, is not a surprise. The fact that it's the subject of regulatory interest should not be a surprise. But I think of it as an issue between institutional, competing institutional investors over fairness among institutional investors. I think it's working noting, since we are talking here about individual retail equity investors, that those marketing efficiencies with respect to market and education, et cetera, et cetera, are orders of magnitude greater.

MR. COHEN: And just to be clear, I know you are looking my way because I represent the institutional investors, but we are not high-frequency traders. We benefit from some of the liquidity provided, but we are not high-frequency traders.

MR. HIMMELBERG: I would point out one other -- you know, like a growth business for the dealer community now is the agency execution of block trades on behalf of smaller institutional investors, Fidelity is a sophisticated investor, but a large number of investors don't have the kind of electronic sophistication that it takes today to put a big block through the market. So, you know, how does that work? An investor who wants to execute a block trade brings it to Goldman, and then Goldman has sophisticated electronic algorithms that basic -- it's an arms race, right?

Our algorithms they try to outsmart the sniff rather than sort of trying to, you know, trade in front of us, and so, you know, we'll blast that trade out into thousands of little trades over several days. And so we are still in the business of servicing and intermediating that trade flow, but in some sense it feels socially wasteful that we have to have this whole business dedicated to, basically, engaging the other side of arms race with electronic trading.

So, I'm not casting aspersions at all, we also have electronic businesses too, right? So we are on both sides of that. So, I'm not casting aspersions on the electronic trading, per se, I think it actually has generated tremendous efficiencies, and machines are cheaper than people when it comes to executing trades, but I also think that with it comes a lot evolutionary, technological changes that have, I think, sometimes counterintuitive, negative consequences.

And so it will brace transparency and technology is, per se, good that always result in a better social outcome I think is wrong. It's just as for competition in the R&D business is also -- or perfect transparency also doesn't lead to the best social outcomes. So I just want to raise the questions or of the recognition that I think speed, transparency, technology, are not, per se, goods to sort of ask, functionally, what do I want this market to do for me?

MR. KLEIN: So, let me try to pick up a kind of theme that you raised and others have talked about which is, you know, you kind of posited that you have an army of research analysts all Goldman Sachs, very intelligent people, and they come up, and they think through, and they find this great deal. And what's the little guy to do, as Josh has pointed, and now that we are kind of in control of our own future, and retirement, and how in the world can we compete with you guys?

And then I think a little bit about my personal experience, and I did -- have done one smart thing, and missed one great opportunity. The first smart thing I did, was in the vein of financial literacy, when my nephew had just become a teenager, and was asking questions about how stocks work. I sat him down and I explained to him how you buy the future of a company, and I said, let's buy a stock together. What's a good company?

And he being, you know, a young teenager in Maryland, who liked to play lacrosse like most young Marylanders do, or many, said Under Armour. It's this new, cool company, all the kids are wearing it, it's really going to grow. And I have my Nikes, and I'm, you know, a different generation on your chart, and I'm thinking, great, we are going to get into it.

Apparel made in Baltimore, that's really, you know, what the McKinsey Interest says where trends are going to go. And lo and behold I believe since I invested with him, because it was his choice, I think Under Armour has been one of five top-performing individual stocks in the last decade, just split again, and they signed Steph Curry. What I think they said was worth $14 billion dollars in market cap.

So, that was a brilliant thing. Two months ago, I saw like many other, you know, middle-aged people with -- stuck in SUVs with these giant car seats in the back. Are these really new -- a minivan coming out or SUV coming out from Tesla. And I thought, gosh, this is the first cool thing in car I've seen to get me excited, in five years. And I went to the showroom and this was, you know, two months ago, and I heard a bunch of other people talking about it in my age group, but rather than going and investing in the stock, which was down to about 1.50, 1.60, I saw it starting to come 1.80, it was off of its highs.

And I said, I don't know, why is stock so depressed? And I didn't. Had I done that two months ago, I may even be able to afford one when they finally come out, since it's gone up $70 a share in last six weeks. Is there a role for the little guy in retail investors to use their daily experience in life to invest wisely even in the fact of giant, well-armed research arms.

MR. O'SHEA: Well, I mean, if you study firms like Fidelity and the brokerage arm of Charles Schwab, TD Ameritrade, people who with the do-it-yourself investors, only about half of them are actually do-it-yourself investors, the other half wants some form of advice. They want some form of guidance, they actually want the firm to take the management of their account and run it. And of that half that are do-it-yourself, it's probably about 20 percent are active traders, and they consistently underperform the market.

MR. KLEIN: What do you mean by active? I didn't buy Tesla. My mistake was not being active enough.

MR. O'SHEA: Yes, but there are -- You know, when you go to cocktail parties, you always hear about the wins people have gotten, it would be interesting to have a study of, okay, now you've told me about how many great stocks you've invested in, how many lousy stocks have you invested in? The reality of the situation is, an active trader is generally is defined as somebody who may trade 30, 50 times a year, right.

And for those people, it's amazing when you look at what's provided to them in terms of information flow, at a place like Fidelity, they essentially get -- if you go to an active trader's bedroom, you will see like six computer screens, throwing all sorts of information up, and at the end of the day they don't do any better than an institutional investor. I mean it's a bit of a fool's errand. The best thing to do is to sort of invest with an institutional investor pooled in, say, a mutual fund or something like that.

So, I guess, you know, to get to what Joshua said, what these people really need is someone to help them out. And I don't think education is going to cut it, to be honest with you, because, think about this for a minute. I think about a relative of mine who rolled over their IRA, this man works, he's a union electrician, so he's got a great pension, thank God, because he rolls it over, and he gets his advisor invest it in a variable annuity with a huge commission and a huge trail, and he keeps referring to him as an advisor, I think I'm going to meet this guy, he's very sophisticated, and he is an insurance agent.

Most people, there's so much information asymmetry that it's really hard to surmount it even with education. So, I think that's where some of the things that Joshua mentioned are so critical, you know, about regulating, and even the marketing of these products.

MR. KLEIN: Josh.

MR. GOTBAUM: I'm not intending by this remark to be disrespectful to all the individual investors on the planet, disclaimer, but I think of a lot of day trading, not as an investment activity, but as a consumption activity. People like it, (laughter), they like what's on the screens, they like making guesses, they like investing. Other people who do something similar, we call them gamblers.

I think it is a huge mistake to conflate this relatively small in number population of day traders, with the very large number of individuals who were tossed into the pool of investment by the fact that their employers could no longer take care of this for them. And so I think our challenge is not to have a regulatory over a guidance system, et cetera, that works only for day traders, it is to work for the people who have no idea what asset allocation even means.

MR. HIMMELBERG: I would gladly underscore that. I mean, I never bought a stock in my life, and I don't plan to. I think the task of regulating this in the best interest of investors, retail investors, is a high one, and I base that experience with my father, who is a retired math professor, so he's nobody's fool, but he has some single stocks that he came into one way or the other, and so he asks his Goldman Sachs son, you know, what should I do with these? I said, sell them. Sold them 100 percent down, and buy a mutual fund.

And which he, of course, ignored and he's been -- And this particular stock had been up 100 percent, and now it's down like 70, and so his action on that, it was related to the North American oil exposure, this is for what it's worth. Anyway, I said, you know, you should be -- you shouldn't have that much of your portfolio concentrated in one stock, and it wasn't that big, but it wasn't nothing, and so the point is like, you know, I have the most paternal instincts toward my father and his investment portfolio, and I tried so hard to reason him out of that.

And he had all the best reasons to listen to me, but he didn't. And so I don't know what the answer -- what that means the answer is, but I am a huge fan of reducing options in some ways to investors to some minimum degree like from a -- If our goal is to ensure that retirement prosperity of all Americans then, I think you have to some degree, I don't think, you know, there's a balance here, but I do think it's sensible to some degree to think about ways to save them from themselves; and your worst instincts by the way.

MS. LUND: Let me add on to that. I mean, we have opt-in programs now for 401(k), but as we know, people don't choose to save, we like to consume now, rather than save.

MR. HIMMELBERG: It's a great example.

MS. LUND: But there are other countries, Australia has set up a mandatory savings, and not only are you opted into your 401(k), somewhere in the order of 6 or 7 percent is taken out of your income every month, and put into a saving fund that is then unprofessionally managed.

SPEAKER: And they are raising the rate, and they are raising the percentage of interest.

MS. LUND: They are raising the percentage and their household saving rate was very low, in the 2 to 3 percent, where the U.S. rate had fallen too, and went down to about up to 5 percent, but it's gone up near 10 percent. So there is a way of helping people, and it's called regulation. And I know in America that would be very unpopular. Uncle Sam forcing you to save, but if we want people to have money and retirement being on Social Security, we may need to think about that.

MR. KLEIN: Well, Social Security was Uncle Sam forcing you into a defined benefit pension plan, and I think it's one of the most popular areas -- government programs to date. But speaking of government programs and regulation is a giant elephant in the room, so let's address it. And this is the new Fiduciary Duty Rule. You know, it's made a tremendous amount of news. What do you guys think? You know, you heard Rick's, kind of earlier pointed that he felt the Final Rule was better than the prior version. I don't know if you share that opinion or not. And then what's that impact going to be going forward? Joshua?

MR. GOTBAUM: As I said in my prepared remarks, this is a case in which the universe of retirement products has changed dramatically from a largely wholesale situation, to a largely retail situation. And I kind of view most of government is trying to catch up with that development, and it requires government agencies to figure out how little do people know? What should consumer protections be, et cetera?

There are plenty of people who argue that the Department of Labor will not be the perfect regulator for this, because they do not have a history of product regulation, or paying attention, et cetera, but it is clearly a fact that other government regulators were not stepping in. That this was a market where people, where we had tens of millions of people, and we had dramatically inadequate consumer protections.

And so my personal view is, and part of the reason why I am a fan of this Secretary of Labor, is that not only did -- they weighed into this ticket, politically controversial and substantive as well but -- and make a proposal, but they actually also modified the proposal as the financial services industry said, by the way, your best interest contract is operationally a little difficult for us to do, and would muck things up, and would actually scare people away. And so they've changed that.

I think there is a general willingness to modify what -- however, from my personal perspective, I think it would be a mistake to treat that as the final form of regulation, because it really does -- as I mentioned also -- it really does rely on the fear of being litigated for violating fiduciary duty as the mechanism. It doesn't, except in very crude ways, talk about what is or is not a good product. It doesn't, except in very crude ways, even hint as to what reasonable fees are.

And so from my perspective, it's a (inaudible) early effort, but anybody who thinks this is the mature regulatory scheme for these consumers is kidding themselves.

MR. COHEN: Do you know, at Fidelity, as the CIO, I'm on the investing side of the business, so we are thinking all day about which companies to invest in and how to put those together in portfolios. There is not a part of Fidelity that is (a) the largest provider of 401(k) to define contribution plans out there. And one of, if not the largest providers of IRA, so this is very close to us, not right in my wheelhouse, but it's been discussed around the halls a little bit the last week or two, or a year.

And I would want to echo the comments we heard, though, from Mr. Ketchum before, that the Final Rule clearly demonstrated that the department listen to the concerns of the industry, and made meaningful changes in improvements to get there. Now we still want to work with regulators, and work with policymakers to refine and improve it, so we can continue to offer the best products and services and education for our customers.

You've heard a lot about individual financial education around investing, that's a key part that gets caught up in this ruling in an area we need to continue to work with regulators to improve.

MR. O'SHEA: You know, the best way I've heard this described is at a recent industry conference called "The Five Stages of Grief," and they were referring to all the brokerage firms that are dealing with this right now. And everybody has gotten through denial, anger, bargaining, depression, and they've now reached acceptance. And when you talk to the executives in the industry, we did our survey, in-depth interviews with about 50 executives on this topic. They are all trying to figure out how to implement it.

They've all accepted it, and many of them, actually looking at some of these digital solutions that I talked about, which are effectively ETF allocation products for some of the smaller investors, and the biggest impact I think it's going to be for those firms that tend -- the large firms, the large bulge-bracket brokerage firms already have their major -- and interestingly enough, Joshua, this is a high net worth versus a retail lower net worth investor decision.

The big firms will only accept a client who has $250,000 or more. Those people are already in a fiduciary relationship, they are already in an advised program under the corporate IRA of the firm. That's already done. It's really the smaller investors who are going to be impacted, people who are typically much lower. The folks I talked about, the average investor, who is essentially sold the commission product.

In Asia, mutual fund, variable annuity, I think you are going to see a lot of these types of advisors challenged in how they redefine their practice. There's a bit of that 5 percent commission, it's almost like a -- it's like a drug, and kind of getting off of that, into a different relationship can be a challenging business model change. But I think that's what you are going to start to see hopefully. And I don't think it is the end.

I think we need to really stay on top of this. You know, paternalism isn't necessarily a bad thing, particularly when you are dealing with people's financial lives, and capacity markets are really, really complicated for the average person to understand. So, I think it's generally a good move, and I do think the -- you know, the original big contract was, you know, you were supposed to have to, I think, hand it to the person before you even talk to them, and so before I can talk to you about what I'm going to do for you, I'm going to hand you this intimidating document that might suggest that I'm not being a good person for you.

And so I think, you know, the deal all kind of help the -- hurt the industry that this probably wasn't the right solution, and they've done some things to modify it. But, you know.

MR. KLEIN: Great. Well, I think we have questions from the audience, and so why don't we start right there. And please introduce yourself, and please ask your question.

MS. O'CONNELL: Yes. Thank you, all, very much. My name is June O'Connell, and you often hear corporate boardrooms say we are doing A or B for the benefit of the stockholder. And increasingly, as you all have described, more and more people are investing, not as, Susan owns 100 shares of Johnson Industries in Wisconsin, but Susan owns 100 shares but Joshua owns 5,000 shares in a Vanguard managed fund, that has a lot of, either 401(k) money, or IRA money, and you manage a stock index fund that includes Johnson Industries.

So essentially, you have three different kinds of stockholders, yes, two of whom are passive, is my question, the one who manages the mixed, the managed fund, and the one who manages the index fund. Aren't they essentially passive investors with the companies, and does that then create sort of Uber stockholders in the Susan's who are active? Do you follow my question? Because everything is moving towards funds through retirement accounts --

MR. KLEIN: So, how does affect --

MS. O'CONNELL: -- but it seems to encourage a fixation in corporate boardrooms with those of us who are not active stockholders.

MS. LUND: I think that's a very interesting question and a good concern; the time that any CEO spends and any CFO, is an increasing amount of time with their major shareholders. And you are right, the passive index funds don't get as much attention, but who really gets attention, is not me owning 100 shares, but it's major hedge funds, we could move the price, and active equity investors. And I'm sure Tim gets a lot of attention from these folks.

But it's becoming an increasing law of both the CFO and the CEO, to communicate and manage expectations. Communicate company strategy and where is the company going with the major shareholders, and you right, that they focus on being the most active, you know, the squeaky wheel gets the attention.

MR. COHEN: You know, I'll just make one small distinction, there are different types of passive and active investors, but a typical passive fund and Fidelity manages those as well, it's a different area, but we manage those as well. While they don't, if you think about the ways that shareholders can influence a company, and a company strategy, capital decisions, et cetera, the first way is by buying or selling that security, which reinforces -- it impacts the price of the stock and would reinforce, hopefully, positive behaviors that are good, and also the opposite.

The second way is through voting the shares, voting in the proxies; so, voting for managements, voting for boards of directors, other proxy items that come up. The passive investor is not making a conscious decision on the first day. They are going to own that stock, if it is in the index, that they tracking, they are going to own that stock in good or bad times.

The second element though is still an active type of decision, I guess, for a passive investor; there's been a lot of literature, and a lot of press about how active that decision is, but it is an independent decision, and still a fiduciary responsibility of the passive fund companies, to vote on proxy issues, to vote on many Board-related issues in a way that they think is best for their shareholder customers.

MR. KLEIN: I think we have one question over there, and then we'll go to Martin.

SPEAKER: Hi. Tip Gosch. This is a question for Tim, but for the rest of the panel as well. And we have negative rates, zero interest rate, very low interest rate environment, cost of money being low. For individual investors the search for yield is pretty difficult when it comes to choices. Even within the equity market, especially the way the equity markets have functioned this year, it's not exactly a great time for individual investors. So, how do you -- You know, when you are dealing either individuals or groups of individuals in our current market environment, how do you -- You know, what kind of advice would you give them.

MR. COHEN: I'm not going to give individual investment advice, and that’s actually not what we are doing, because I am -- that said, your statement is true, it's very hard to find yield. We don’t have negative rates now in the United States, but other parts of the world do. A lot of that has been driven by policymakers, central bank decisions, which I don’t think are necessarily -- again, my view -- I don’t think are necessarily the right decisions to be going there. But fortunately, we are not there in the U.S., but we have very, very low rates, and it's hard for investors to find yield.

You know, part of the discussions I think we had about the markets, I think there was universal opinion here on the panel that equity markets are not rigged, and it's not rigged against the small guy, yet the reality is, the perception is that it's still -- that that is the case in large parts of the market. And now is the time where maybe it's not a bad idea for investors to look for yield in the equity markets because it's actually a lot higher really across the board than it is in traditional fixed income markets. But I think some people are afraid to do that, because there is this perception that the markets, the equity markets are a challenging place, so it is a real issue, but I'm not going to give specific advice for this.

MR. BAILY: Thank you. Martin Baily, Brookings. If you are a listed company on the exchanges it can be a hassle, and you have to fine quarter GAAP earnings, you have to be subject to earnings pressure, and a lot of other things. And if a lot of companies react to that, do you see a trend towards going private? Either private equity, or privately-held companies, and is that going to be a problem for the retail investors that may not have access to those companies? Is that something that retail investors should be worrying about, or it's not significant?

MR. HIMMELBERG: I'll take a crack at it. I actually was thinking of exactly that in response to the previous question as well, because I think among net worth investors, there's a trend toward investing in private equity as opposed to public equities on the view that the expected returns in public equities are much lower than in private equities. And I think there's a lot reasons for that, not least, the fact that global investors come to U.S. markets, you know, and we have an expression that, you know, in the credit market at least it was true up until this year, which is that everything with the CUSIP whether it's bonds or equities is too expensive, right.

But that’s a tribute to the accessibility, right, and the desire of the best of the scoreboard to invest in the U.S. markets. I do think that it sorts of points to the bigger importance -- the larger importance of ensuring the public markets to prevent them being chronically overpriced. You know, you need to make them functionally useful to the suppliers of assets, right. And the only way to offset the excess demand for security is to create the more supply, and to your point, the supply of public securities has been declining in the U.S. and I think that’s for some good reasons, some of that supply has been repatriated, but it's also I think for bad reasons.

You know, partly that it's a hassle, and it's liabilities, and there's a whole overhead cost of being public, but it's also, you know, I think a function of the markets themselves not being as useful to the companies, and part of being useful, and I think to the companies, is being efficient right. If markets aren’t efficient, that they just paint you with a broad brush; you are an oil company, you are a tech company, and that’s as far as it goes. Well then, you know, you don’t stand out and you don’t get paid for being a better company.

MR. COHEN: You know, I love the chart that I think you had, Josh, up which showed the timeline of passing ERISA, and the participation in the various types of retirement savings. And intentionally, or unintentionally made me think, about maybe the risk of unintended consequences from regulation. I haven't looked this question to speculate but I will, and I would bet if we looked at the chart of IPOs in the U.S. or even the United States share relative to other markets, and we look back to the early 2000s when there was, for good reason, new regulation around public companies, disclosures, Sarbanes-Oxley and other things, that was probably about the peak in IPO activity in the U.S.

Companies are waiting much longer to go public, it is more costly and, again, it's not the idea behind some of those regulations are bad ideas, but we do hear from companies in terms of why they are staying private longer. Part of the reason is some of the regulation. The second part of the question though, in terms of investors being left out of it, it is a lot -- it is harder to get access to that, but not impossible.

At Fidelity and other mutual funds, we do invest small parts of our funds in illiquid -- less liquid securities. I don't want to say illiquid, there is always a market at some point, but that aren't -- that don't have CUSIPs, that aren't quoted on exchanges everyday in private companies, so not just the private equity in venture capitals, which most folks don't have access to through their 401(k)s, you know, the mutual funds and R&R funds, some of them, but it's on the order of 1 or 2 percent of the fund, type of the size, and there is some exposure to that, in the public markets.

MR. KLEIN: So I think we have time or a couple other questions. I see a couple hands raised. I think in the back you've yet to ask a question, and then we'll combine a couple of the last folk.

SPEAKER: I'm curious. In the sustained low-interest rate environment we've had for seven or eight years, do you get any sense that hurdle rates in the financial industry have been adjusted downward?

MR. HIMMELBERG: The one-word answer is, absolutely; absolutely; much faster than they did pre-crisis, right? Because everybody learned from the crisis that it was a mistake not to adjust your hurdle rate to the opportunity side.

MR. KLEIN: And when you say hurdle rate, for the benefit of everybody?

MR. HIMMELBERG: Yes. For example, let's say you are an insurance and you are selling, you know, you are selling liabilities, let's say that need to be funded with assets that immediately leads -- you are assuming a 4 percent return and then the opportunity, say it drops to 3 percent, and the question is, do you adjust your insurance products to match down, and offer a lower yield on your liabilities to match the assets that are available to fund those.

And I would argue that in the pre-crisis period, insurance companies were, I'm just that as an example, but it describes a whole host of institutional investors. They were reluctant to give on the product offering, right, for competitive reasons, and as a result got sucked into higher-yielding, riskier products that they probably should have avoided, and certainly in hindsight would have been better off avoiding, and I think the post -- you know, the consequence of the crisis experience was a very painful lesson that, you know, let's be disciplined in our product offering, so that we are not -- we don't become yield pigs.

MR. GOTBAUM: Now I would say, in the retirement market the equivalent of the hurdle rate is the actuarial discount rate, and in that market, for a variety of institutional reasons, they have not -- they have in fact recognize that the world has changed, but with such a lag and to such a minor extent that it has created a transparency and an accountability problem.

There is a divide, because Congress in private retirement plans mandated not exactly, but in effect that you follow a bond, a corporate bond rate. Whereas, in the public retirement plans, they were left to the vagaries of the actuarial profession; so it really does vary, and I would say, unfortunately for the retirement market it's not -- it's mark-to-market over a generation rather than over a year.

MS. LUND: And even more unfortunately, the corporate -- in the corporate sector where you wouldn't want to see companies undertaking investors recognizing the new now sustained lower rate -- interest rate environment, they haven't changed their hurdle rate. So, when they consider new investment opportunities, they consider the low-rate environment to be temporary. That's one of the reasons why investment in many countries around the world isn't as strong as we'd like it.

MR. KLEIN: I wish we would reduce our hurdle rate for infrastructure investment as a public policy.

MS. LUND: Absolutely!

MR. KLEIN: But that's neither here nor there. I want to really thank the panel. It's been a fantastic conversation. I thank the audience for their engagement. I know that we are joined by our next speaker, so let me turn that over to Martin. And please join me in thanking the panel for this conversation. (Applause)

MR. BAILY: Thank you. We are very pleased and lucky to have as our last speaker, Roger Ferguson. Roger served since April 2008 as president and CEO of Teachers Insurance and Annuity Association, College Retirement Equities Fund or TIAA-CREF. From 1981 to '84 Roger was an attorney and the NYC Office of Davis Polk & Wardwell. He became a part of McKinsey & Company, based in New York from 1984 to 1997, where he managed a variety of studies for financial institutions.

He also served as director of Research and Information Systems, overseeing a staff of 400 research professionals. He and I overlapped at McKinsey, although I don't think we ever met in person at that time. From November 1997 until October 1999 he served as a member of the Board of Governors of the Federal Reserve System, and in October 1999 he became the vice chairman of the Federal Reserve. Please welcome Roger Ferguson. Thank you. (Applause)

MR. FERGUSON: Martin, thank you very, very much for that kind introduction and it's my pleasure to be here at the Brookings Institution. I think it was last year, or about a month ago, where we are talking low-interest rates, and other things, so it's a pleasure to be back talking about equities.

I'm going to focus my attention today on retirement. And that’s for two reasons, one is retirement and retirement savings are clearly heavily intertwined with the equity market, obviously as it was already discussed. And secondly this happens to be National Retirement Planning Week, so the timing is apt. And I should say, the obvious third reason, which is TIAA, is a very large player in the retirement sector, particularly in not-for-profit space and the 403(b) space.

I will also say, of note this week, TIAA announced the findings of a study that we conducted of our retirees that I think may shed some light on retirement and retirement security, and interactions with equities. This is a follow up to some research that we did about 30 years ago. So, I'm going to say a bit more about that study later, which we called the Voices of Experience. There's a spoiler alert about the Voices of Experience Study, by the way, which is that despite all the current anxiety that surrounds retirement may be, appropriately, for many people, where we found when we surveyed the TIAA participants is that their degree and safety and security and satisfaction in retirement was remarkably high.

And I think that intersects with some of the topics have already been discussed. So, with that, news as backdrop and that spoiler alert, my talk is going to be around three things today. First, I'm going to outline some of the challenges that we face around retirement in the U.S. This will be the stage setting, for many this may be a repeat, for some it may be new.

Then I'm going discuss what we've learned at my company, and other over the last 98 years about creating financial security and appropriate use of equities, obviously, in that space. And then I'm going to talk about policy solutions that we are important to addressing these challenges, and in some sense making the equity markets and the use of equities as part of the retirement tool, or maybe more useful.

So first, and this is sort of -- Susan is here, at McKinsey we used to describe, you'll want to say -- you want to set up the situation and the complication and solution. So for those who are McKinsey aficionados, this is the situation and complication part of the speech.

So, the retirement story, and as you all said, you know, it's one in which we face many challenges, driven by three factors. First, the lack of adequate savings, by individuals; secondly, the decline in traditional pension plans in the private sector, and then third, the aging in population, which should be a positive thing, as life spans increase and birthrates fall, but there is a negative component which that it leaves fewer workers to support the aging baby boom populations around the world.

A lot of folks would say, well, gee, the financial crisis was the thing that really started to drive us toward a period of insecurity around retirement and, in fact, that is not true. The financial crisis and the great recession only exacerbated the trends that preexisted for that period, that we are already showing us, and created some threats stresses in the retirement outcome. So, to understand a little bit of the degree of the challenge that we are confronting, the Federal Reserve, where I used to work, is estimated that fully one-third of Americans have save nothing at all, leaving nothing for retirement, hard to imagine.

Only a fifth of Americans say are, "Very confident about having enough money for a comfortable retirement," and that’s even as many are going to be living because of longevity, longer periods of time, in so called retirement. To give a little sense of what that means, the average life expectancy in the U.S. has hit an all-time high of nearly 79 years overall. But importantly, for those who are already 65 today, they are likely to live much longer, to about 85 for women, or 83 for men.

With an outline-based TIAA, we know that for many participants who reach 65, there's a

45 percent chance that at least one spouse will make it to 90. We serve a slightly more highly-educated population than the average, I'm not suggesting that the people at Brookings have easier lives of anything of that sort, it's just they are much smarter and take better care of themselves.

So, the truth is that life spans have been rising broadly, and in fact they have been rising disproportionately high for individuals who have high education, which is not in any sense, a joking matter, because it says something about some other challenges in society. At the same time that life spans have risen in the U.S., the birthrate has fallen, so now we have about 2.1 births per woman.

For those who don't know the statistics, at the height of the baby boom, if we are now at 2.1 births per woman, at the height of the baby boom, that number was around 4, and so birthrates have come off quite dramatically in the U.S. And so what these two trends have combined to create, is a steadily-aging population, and it's predicted that the elderly will make up nearly 22 percent of the U.S. population by 2040.

What does all this mean? Well, one, I think it's already come up, which is that this will create some great strains on Social Security, whereas in 1950 there were 16 or 17 workers per each retiree, today there are only about 2.8 worker per retiree, and then it's forecast to drop to 2 to 1, in the few decades.

So what this really means is that one of the biggest challenges for individual is that today, like it or not, and most do not like it, we are bearing more and more responsibility for ensuring our own individual retirement security, and Social Security and other things come under more and more threat. I think this came up a little bit in the earlier panel, I know my friend Josh Gotbaum from his PBGC days, is really an expert on this. One of the other things that's changed is that most of us used to be able to rely on company pensions, also known as defined benefit plans.

In 1980, 62 percent of private sector workers relied solely on the company pension for their retirement income. By 2013, that year it has risen to about 17 -- it had fallen to about 17 percent. So, the company pension used to be the bedrock fallback for literally two-thirds of Americans. In fact their only approach, now that's down to less than 20 percent.

So what has happened? What's happened? I think it came up in the earlier panel, today the 401(k), and other defined contribution plans dominate in the private sector, in fact a few years ago in

2013, 71 percent of private sector employees retired on -- relied on these plans as their core retirement savings vehicle. The problem with all of this, the shift from -- to some degree the private sector in the form of DB to DC, and some uncertainly around Social Security, is that far too many people lacked the financial knowledge that they need to make the kinds of savings and equity investments or other investment choices, that now have been placed squarely on their shoulders.

There's a famous book around this by a Yale Economist, called the “Risk Shift,” and that’s really what we are talking about here. Studies have clearly identified a widespread lack of financial literacy in the U.S., and this has serious implications for retirement readiness and for the ability to use equity markets, for example, as a retirement tool. So what does all this mean? Well, we know that people with a high degree of financial literacy, are more likely to plan for retirement, and those who plan for retirement, are more likely to accumulate the wealth required to retire.

In fact, people who plan for retirement have more than double the wealth of people who do not plan, and conversely people with a lower degree of financial literacy, tend to do a number of things that put their financial state at risk. They tend to borrow more, they tend to accumulate less wealth, and then they tend to select investments with higher fees, which obviously links into the way equity markets perform.

Interestingly, those with a lower level of financial literacy are less likely to invest in stocks. They are more likely to experience difficulty in debt, and they are even less likely to know the terms of their mortgages or other loans. And so, you can see that there's really a quick bit of witches brew developing out there. And it's quite clear, there is ample evidence that the current model is just simply not getting a job done, n terms of adequately preparing workers for financially secure retirements.

Some statistics, over 67 million Americans lack access to a retirement plan at work, of those who do have a plan, many choose not to participate, and even when employees do participate in workplace plans, they and their employers often don’t contribute enough to their investment accounts. Other challenges in this space, many employees don’t implement an appropriate asset allocation strategy for investments, and many get fixated, I'd say, overly fixated on the size of the account balance, the accumulation process without considering the most important thing, which is the income flow, or that they’ll need in retirement.

And finally, many fail to preserve assets for retirement, i.e. there's much too much leakage, as retirement economists would call it. So, for those who are still with me, and enthused about the opportunities in front of us. What I've clearly done now, is pointed out how complex the retirement situation is, and how we've moved risk from individual -- to individuals from institutions, and obviously how that plays into equity markets will become more obvious as we go forward here.

So, let me now turn my attention to the solution part of the story, if I set up situation in complication. What's the solution? I think, back to what I said earlier, there actually are some models that seem to work in the private sector. One is TIAA. I'm not here to sort of advertise the company but just talk about a model. So, I talk about the voice of experience study that we did earlier. We surveyed 1,600 of our retired planned participants, and we are delighted to find that 93 percent of them said they were satisfied with their retirement.

And that’s the same result that we got 30 years ago, so if you think about where the country was 30 years ago, around a general sense of security versus where we are now, around a general sense of insecurity. It's interesting to see that there are ways that one can maintain a pretty high level of a sense of security around retirement if you do it the right way. So one of the things that’s important, that we've learned, is it's important to start by planning for retirement early in life.

And even the majority of those who started planning after the age of 50 considered themselves satisfied with the retirement, so a simple message here, that it's never too early to start thinking about retirement, and the appropriate set of investments, but in some sense, you know, even if you start at the age of 50, given what longevity looks like, that’s also a good thing. And so we shouldn’t discourage people.

I think we sort of give a sense to folks that, gee, if you don't start thinking about retirement when you are 25 or 30 you are lost. You are better off if you do it at the age of 25 or 30, but if you start thinking about it seriously, at the age of 50, that’s also a useful thing to do. The other thing that we learned from our study is that planned participants, surprising enough are retiring earlier than they had planned. This is a real surprise to us, right, because we are thinking about reluctant retirees, people not having enough to retire, delay in retirement.

So when we surveyed these 1,600 people, over 70 percent had expected to work until the age of 65, but it turns out that only 47 percent actually did that, and they retired of their own choice in most of those cases. My phone is going off and embarrassing people in the front. It's one of our retirees calling to cheer us on. (Laughter)

So let me then describe a little bit about the models, so that we can look at a really good system looks like, and again, figure out ways that we might emulate this across society. Or, there are differences; I'm going to just talk about the commonalities across these various models that have gotten people to this place where they are feeling more secure about retirement.

One of them, very important, is the mandatory employee participation. I talked earlier about the number of folks who, one, don't have plans; but two, who don't participate, I think Woody Allen once said, or someone once said, you know: The most important part about life is short of showing up. The most part about getting ready for retirement, is actually participate in the program, that is available to you, and it's a big challenge obviously, but it's really a simple and easy lesson.

The other thing is, particularly here where we are talking about equities, is that the appropriate mix of investment options, I'll come back and talk about that a little bit. A third component of a really good plan is to make it a joint responsibility between employer and employee. So in our case all institutions almost all contribute to retirement savings. And then something that is a little more controversial, but very important is to think about your retirement plan, not just around the investment side, but the so-called de-accumulation side.

Having a component of the plan that looks like a historic DB, or the private sector equivalent which is an annuity, and I know in this room, perhaps people's ears perk up and say, annuities, my goodness we thought those weren't such good things. I think the truth of the matter is a well-structured annuity appropriately priced without embedded options and unrealistic guarantees, really is pivotal, because that is the way one guarantees income for life.

And just as most of you undoubtedly have insurance on your homes, or insurance on a car, or insurance should you die prematurely, an annuity is just simply a way of providing insurance in case you are blessed with an unexpectedly long lifestyle. And so one should think about annuities in that context, and really take some time to understand them.

And then the final structural element here that will come into play a little later in my talk is the folks tended to have access to educational advice to help them make these decisions. So, a real recognition that the investment decisions associated with anything, but certainly of retirement, are pretty tricky and complicated, and therefore having objective advice is very important.

So what does all this end up with? Well, we estimate that part of the reason this group of 1,600 folks was so pleased, and this is true across all the programs that we administer, is that we have in our plans about a 90 percent income replacement ratio, which is to say that people in retirement in these plans are going to be able to replace about 90 percent of the incomes they had during their earning years, which is really quite a strong statement give that most people think, in order to have a good retirement you probably need to replace 75 to 80 percent of your income.

So now let me drill down to the thing that brings us all together here, which is the role that equities play in this approach. And the answer, just to go straight to the headline, is that equities are a pivotal part of the approach, which is why this kind of conference is so important. When you heard Martin mentioned the name of the company, it's a pretty long mouthful, TIAA and CREF, which was now recently shortened it back to TIAA; where we originally started the TIAA part of the company, was the assurance and annuity part of the organization -- By the way, we started in 1918, so it predates Social Security by about 35 years.

Importantly though, and this is where the equity story comes play, in 1952 we created the second big product of the company, which is the College Retirement Equity Fund, CREF. This was a phenomenal insight that, in fact, in order to deal with both longevity, to deal with inflation and frankly to, potentially, create well, third diversification, and then fourth potentially better returns over a period of time, with risk, it was important to include equities and a well-balanced retirement program.

So, what's happened with that? Six decades later, our CREF stock account, it remains professionally managed, low-cost way to add this diversification, and it's grown from literally zero to $230 billion, thereby, I think, validating the importance of equities. The other point I'd make though, is that it's not just an accumulation vehicle, so if one is thinking about equities in retirement, we tend to think about it as the accumulation vehicle.

One of the magical parts about CREF is that it actually underlies a variable annuity, so it links very much into our retirement thinking, and I think was an important theme here, because as you are talking about equities as an investment tool or retirement one is then asked, but what happens to it once you get to retirement? And an answer, one that seems to work pretty well in the retirement space is to use that pool of equities to create a variable annuity option that then allows you to have, again, income that goes up and down admittedly with markets, but is there for those special needs when markets are good, and perhaps you use less of it when the markets aren't so good.

Now, obviously since the creation of CREF in 1952, we and others have added mutual funds, IRAs and lifecycle funds, as equity-based ways to save for retirement as well. They are clearly also very important asset accumulation vehicle for millions of Americans. And so we recognize the importance of those, but we don't step back from the importance of both a fixed annuity and a variable annuity.

Let me move on to talk just a moment about annuitization, and then talk a bit more about policies as they exist today, and then open up for questions. So, on the annuitization story, about fixed and variable, it turns out that very few Americans really understand the value of buying that insurance policy for longevity. It seems odd in some ways, because we all understand the importance of buying insurance for other things.

But only about 6 percent of Americans, according to the GAO, in a defined contribution plan, either it shows or purchased an annuity at retirement. Obviously, for our company, given that we are a retirement-oriented company, that number is much higher, and as it turns at about 70 percent of retirees work us at a fixed and variable annuity, and 92 percent are very satisfied with that choice. So, I think this is another very important theme about what do you do once you've gathered this pool of equity investments, how to use them when you get to retirement, and creating an annuitization option I think is an important part of it.

Let me close by just saying a few words about the current policy situation. I heard some discussion of the Fiduciary Rule on the prior panel. I'm going to put that in, as well as a few others. One of the first issues that I've already hinted at, that we should be more explicit about in terms of policy prescriptions, is around this lifetime income challenge; i.e. the ability to get more people to share the risk of a longevity with a big professional risk management company, such as an insurance company, and we think that as part of the story, of good retirement security, that a good equity portfolio, a good equity choice should also include a lifetime income option in the plan.

So, many workers today, not many as we would like, but many are automatically enrolled in their employer's retirement plans. They accumulate often in the default, which tends to be a lifecycle fund or target-date fund, again, very equity drive. This automatic revolution, automatic enrolment, has also been joined recently by another positive thing, which is automatic escalation. So these are some very good, positive things, but the challenge that I think we see, is with most folks defaulting into, let's say, the targeted fund, or a lifecycle fund, they are not quite getting what they expect to get.

What they are getting a good equity-based program with a glide path that reflects when they are likely to retire, moving from equity to fixed income, for example. But what they don’t get is what they often expect, which is a lifetime income features. So when you survey people about target-date funds more than 80 percent of them think that what they are going to get is not just a good equity investment but also a way to get guaranteed income for life.

In fact that’s not included in target-date funds today, mostly speaking. And so this is policy challenge number one, which is how to respond to what people think they are getting in target-date funds, by having in the fund themselves, a lifetime income option? And one of the things that could happen here, is the Department of Labor might be able to modify its rules that govern these plans, so called qualified default investment alternatives, QDIA plans which are primarily these target-date funds, or lifecycle funds.

And we would certainly like to see the Department enable some default options that include lifetime income features. The Department's QDIA rules, again, to qualify default investment alternative rules were put in place following the enactment of Pension Protection Act a few years ago, to ensure that employees, and again remember employees do default, so employees would default in retiring have the risk-wide investments, that’s a great idea, but we think that they need to take one step further around the rules, to allow for lifetime income option. So we think revising the QDIA rules to embed income options would be a very good policy step forward.

Another idea in which policy can make a difference is in access to retirement plans. Every worker we think should have an opportunity to save for retirement at work, it's clear that people are far more likely to save for retirement at work than on their own. And so a new idea that’s starting to merge that we think is a good idea, is the state-level Secure Choice Initiative, which was establish state-administered payroll deduction IRA arrangements for workers whose employers do not offer a retirement plan.

We think the Secure Choice approach is just a start, but it's an important one, and it's one that we think could help enhance the opportunities for workplace savings.

And then a final point I'd like to make is about something that came up earlier, which is the DOL's recently-announced Fiduciary Investment Rule. We support his rule, we think it's significantly and appropriately expands ERISA's definition of fiduciary investment advice, which we think is a good thing for savers, and ultimately for the industry. And I heard, you know, a range of comments at the front here, so I just want to make it clear that you've heard me say, that we, at my company, really do support this rule, we think it's the right thing to do.

Putting your customer first has always been a core value that defines the way we work. It's an important part of what we include, even as we think about retirement plans, and IRA known owners now. And we applaud the Department for pushing to make this an industry standard. We also applaud them obviously for listening to industry concerns and modifying the rule in ways that has made it much more workable.

We think one of the most important aspects of this rule relates to the IRA rollovers, and IRAs are a key part of creating retirement security, so we strongly agree with the Department of Labor that individualized distribution advice including whether to rollover, should be subject to the same fiduciary standards and all other investment advice. We think this rule, I'm sure, that rollover discussions, including whether to roll over from an employer-sponsored plan to IRA, they are always in the employees' and retirees' best interests, which is to us, pivotal.

This is going to have important implications for retirement securities, and IRA assets grew from about 2.6 trillion in 2000 to 7.6 trillion in 2015. So they now eclipse retirement plan assets. And this growth has been really largely driven by rollovers out of plans into IRAs. In fact, 93 percent of contributions are not new moneys, 93 percent of IRA contributions are not new moneys at all, but rather roll-ins from retirement plans, or other IRAs, and it's pretty clear that the amount rolling into IRAs will continue to grow. It's projected to reach about 550 billion by 2018.

So, subjecting a rollover advice to a fiduciary standard, we think will help protect participants from potentially harmful practices. We think it's an important way to help more Americans build financial well-being, and we think it's an important way to create a higher degree of trusting confidence between provider of financial services and individuals.

So, let me close by reiterating what I've shared today. I've started with a fairly dire statement around the situation that we face in the retirement world. Our nation faces many challenges around retirement, our population is aging. Individuals are becoming much more responsible for their retirement savings and other savings.

The second point I made is there's actually some good news, which is we know how, as a society, to build retirement security, and includes a number of features that I've talked about, but the good news is that they do exist. And the third point I made is that policymakers have an important role to play in helping achieve many of these goals and challenges.

Particularly I've related to lifetime income related to coverage and important they just did relate it to making sure that the industry puts individual's interests first. So with that, thank you very much for listening, and I look forward to the Q&A session. Thank you very much. (Applause) Do I need a mic or will we --

MR. BAILY: No. There's a mic there, and we'll have someone come and -- I'll wait till the mic comes -- the mic is on. So you mentioned as one of the main challenges that not enough people are contributing, and maybe not contributing enough once they contribute. Now one of the panelists, I think, Susan Lund, mentioned earlier that in Australia they have a compulsory superannuation system. I myself, in a book I wrote when I was -- co-authored when I was across the street, argued that we should have initially a voluntary scheme on top of social security, and maybe ultimately make it a compulsory scheme like Australia's.

What's your judgment on that? Obviously your clientele is probably is saving more than the average and is a little bit different, but to make sure the rest of America is sort of better provided, would you actually favor a compulsory system, or maybe just favor something like secured choice that gives a push to people?

MR. FERGUSON: I think, Martin, it's a great question, and it's ultimately what I describe as a political economy judgment question about what works. Here in Washington, D.C., as you well know, if anyone uses the word mandate, you know, folks run in the other direction. And so I think the wisdom of our democracy, for better or for worse, and it's both good and bad in obvious ways, because I think it's really hard to credibly argue that we should move to move something that's compulsory.

And so, it is -- and we work a lot with the superannuation systems in Australia, and it has worked quite well. There's no doubt that it has created a lot of retirement security in that country. I just don't think as a matter of judgment that we can actually -- a politically judgment we can actually get to a place in this day and age where a government mandate works. Not that its bad policy, as it is just not the type of politics, if you will.

And so I think, the better approaches are the ones that have started to emerge, automatic escalations, enrolments where opt out comes into play, particular choice, those things, to me, are frankly much more workable in the 2016 American context opposed to trying to swing to the Australian superannuation model.

MR. BAILY: Well, let me just, so that I follow up on that a little bit. We hear a lot about the shift to a new labor market, Uber is always the example that's cited. Some data suggests that that's still a small part of the economy, but it may be growing, and it may be the wave of the future. Doesn't that raise the challenge there, where you maybe don't have an employer, or you have a very different employer from one month to the next, or one week to the next?

MR. FERGUSON: No. And it actually does raise the challenge to the so-called gig economy was not what any of us were imagining, and it's starting to emerge. My view is that, the fact that it raises a challenge doesn't mean it's impossible, it means we have to start to do some new thinking. I've been in touch for example, with a group called the Freelancer's Union, probably not known at all in the space, maybe known to a few.

MR. BAILY: Yes. Yes. I know.

MR. FERGUSON: And, you know, they are very much thinking about the possibility of creating products and services aimed at that population. In my view obviously, I think we all fully understand this, the way free markets work, where there is a clear demand it will be supplied, I think policy and the industry will come to grips with this large and growing number of -- I will use word freelancers, folks in the gig economy, and figure out what the solutions might be.

The challenges will be one, obviously, you know, who is the planned sponsor? I.e. takes on the fiduciary responsibility to some degree. There are other challenges though around a very, very large number of likely small balance accounts. And then the areas, something I think can be easily resolved which is literally just tracking people.

MR. BAILY: Right.

MR. FERGUSON: The attracting part of it is, I think, the easiest because we are no longer in a place where it's -- the stamp and the envelope, it's all about electronics, and so I think we can track people well. It's the first two that I think are going to be the issues. How do you deal with such a large number of small balance accounts where, by the way, the contributions are probably sporadic, and then the first one is, well, who sets up the plan? What are you involved in? And how do you make it better?

The final point I should say, is one of the points that I may have moved over quickly, but it's very important is also to the question of how you provide meaningful advice to that population. Again I'm pretty optimistic about the advice story, it won't be necessarily totally tailored to people, but with technology, you know, with webinars, with phones, et cetera, and certainly, you know, iPhones and smart apps it should be possible to get an element of advice. It may not be appropriately tailored though, and that’s the risk.

MR. BAILY: I'm going to get some questions from the audience, but let me ask you, and this maybe, seem an odd question, but I was very struck in introducing you, that you had such an interesting career. You’ve been at a law firm, you’ve been at McKinsey, you’ve been at Fed, and now you are president of TIAA-CREF. Of the things you did before you went to TIAA-CREF, did all of them help in your composition? Or, is there some that you say, you really -- because it's such an interesting history there.

MR. FERGUSON: A checkered background.

MR. BAILY: A very impressive background.

MR. FERGUSON: You are awfully kind. The truth is each one of them helped and in lots of different ways. So starting life as a lawyer, you know, if you ended up in a place that’s highly regulated, I am not in any sense the chief legal officer of this company, but being --

MR. BAILY: It's good to know the law?

MR. FERGUSON: But it's good to know a little bit about the law. And frankly, what's good about it is, a little bit of poking and prodding is helpful. McKinsey in terms of general management problems, so I think that's always a useful set of skills. The Fed, obviously, thinking about markets monetary policy, we have a very large fixed income portfolio. I am not the chief investment officer of the company, at all, but certainly, you know, a little sense of the market space. So all of that had been really, really quite useful; actually the most useful thing was I spent between the age of 17 and 29, on a college campus. And so I'm --

MR. BAILY: The education?

MR. FERGUSON: No. It's not just the education; it's actually spending the time understanding what higher education is like, and the culture in the campus. So it's all work, it's all work to be very helpful.

MR. BAILY: Now there was a question earlier about persistent low interest rates, and the tendency to reach for yield, that must have been a challenge for TIAA-CREF. Obviously you got a big equity portfolio, but you also a big bond portfolio.

MR. FERGUSON: So it's been a little bit of a challenge, but not when it's all insurmountable, and so we certainly see, as the higher coupons, fixed-income investments mature and rollover, there is reinvestment into what will be lower-yielding assets, but the way -- the thing that is giving us a lot of very positive momentum even in this low-interest-rate environment is, we have a very broadly-diversified portfolio and I don't think people think of us that way. They think of us as the big fixed income and big equity.

MR. BAILY: Right.

MR. FERGUSON: The other big part of the company is around real estate, agriculture, timber, infrastructure, and alternative is private equity, and I remind all of my colleagues that I would see all the time, that a low interest rate environment is also a low default environment. It's an environment in which equities, not of late, but for long periods, have gone through quite a rally, and in which we think about it, and the private equity portfolios, the cash flow generated there, have been strong, and because we've been in agriculture, timber, and real estate for such a long period of time, as those investments mature, the cash flows from those and the ability to sell them as nice profits had played out.

So, the way that we manage this, is not by stretching for yield, in the sense of taking more and more risks, it's really by putting together and leveraging a much more broad and diversified portfolio, some things do well in low interest rate environment and others don't. And it is proven to be not the easiest of times whatsoever, but manageable.

MR. BAILY: Well, you've done well by my retirement, so I'm happy with that. (Laughter) Can we get some questions from the audience?

MR. FERGUSON: I think we can stop with that comment.

MR. BAILY: Yes. Over there, and then Josh?

SPEAKER: Mr. Ferguson, this was a great presentation. One question, in your list of investment, you didn't mention venture capital, you talked about private equity. Does it include your -- Do you invest in venture capital funds to improve your returns?

MR. FERGUSON: We do some --

SPEAKER: Some?

MR. FERGUSON: -- but small amounts, and here is, again, where one thinks about the risk-reward tradeoffs, because of who we are and what we do, we tend to be slightly, I'd say, underweight venture capital, because that is such a -- you know, almost a zero sum game, if you will, s people get very excited about the so-called unit, and the things that really pay off, they ignore the large number of things, that don't pay off, and so I think one has to be -- well, we have some, one has to be cautious in that space, as opposed to putting a huge amount of weight on that particular asset class.

SPEAKER: How did that ended up?

MR. FERGUSON: Yes, the venture capital industry is moving. One other point I'd make though, is one has to be really careful, I never demonize any asset class. I've been in and around markets since, you know, Josh and I were undergraduates together, you know, we've been watching markets for this long, and you know that whatever was out of favor 10 years, ago, it's going to be in favor, you know, five years hence. And since, you know, companies that one wants to be associated with will have 100, 200, 300-year history, important to have a bit of exposure and everything, because something will back into favor. Something is already in favor, something goes out, something moves back in.

MR. BAILY: Josh?

GOTBAUM: Josh Gotbaum, Brookings. You talked about the importance of lifetime income, and one of the things that hits anyone who is looking at this, is that the theoretical arguments for lifetime income do not match people's willingness to buy, to purchase it. And so my question is, you offer product offerings, you offer lifetime income as a default, you offer lifetime income as an alternative, et cetera. In order to actually get people to do this, does it have to be in the default, or are there ways to convince individuals to make a choice for lifetime income?

MR. FERGUSON: Well, first, like anything else, I mean one of things we know from behavioral economics is if you make it -- put it into the default, it does tend to work better. Better so we should recognize that. One of the things that we've seen is that it works well, because people are buying or thinking about annuities, and with us buying annuity units, almost from the very beginning, so they accustomed to the notion that some of this money is going to be annuitized.

It's not something that you are setting this, gosh, at age of fifty-nine and-a-half, or whatever it may be, you think about it before then. Having said that, you know, in order to make the lifetime income option work, again, I think you use levers available from abenomics. So what are the things that are slowing people down around a selecting annuity option at the right time?

One is how it's framed. And there's an economist -- and Jeff Brown at the University of Illinois has done a lot of work on this, and he happens to be on our board. And if you say to someone, are you willing to ensure against -- The (inaudible) the culture of a really good life, and you want to make sure you have income for many, many years, the answer is always, yes. If you say to someone, are you willing to give some of your savings to an insurance company, and they'll give you an annuity contract back? The answer is, no. Okay? So, framing is important.

The second thing is to build a lifetime income products that really reflect and respect the concerns that people have. What are the concerns that people have? They have a concern that, you know, I am in perfectly good health, I sign an annuity contract today, and I'm hit by a bus tomorrow. Highly unlikely income, but people have deep, deep aversion around that particular outcome.

So, you develop, as we have, a product that has payment period certainty. So whatever happens you will get -- someone will get a guaranteed income for a period of time; checkmark that concern.

The third concern, or another concern that people have is, well, gee it's not just me, but it's also my loved one, I'm the chief breadwinner, and so you develop, as we have years ago, was a so-called two-life annuity, where we guarantee both lives. A third concern that people always have is around the so-called bequest motivation, which is, gee, you know, if I give it all to you, I can't support this charity, or that charity.

So, you explain how this should work, you make sure you don’t annuitize everything, so what I'm suggesting, Josh, is you can still get annuitization done when it's -- the age 62 and it's the first time they’ve talked about it, if you create the option that respond to the natural concerns that individuals have.

The final thing, obviously, is it falls upon the industry to creates just basically, more consumer-friendly products. So obviously everyone knows that the ones that I talk about really are. I'm going to be quite honest, one of the reasons that lifetime income/annuitization has gotten a less-than-positive name, is there are some products that are sold by others, that have not performed so well, you know, hidden options, points that have been on the panel earlier.

And so the industry has to, you know, police itself a bit better in terms of introducing product and services that can be made appealing. Consumers are not totally irrational, when they, you know, reject a product if, you know, the product may not be the best thing for them.

MR. BAILY: Yes. Question here?

SPEAKER: Thank you. Sandy Akbar, it's a pleasure to see you again.

MR. FERGUSON: Nice to see you.

SPEAKER: Are there lessons for the retail investment sector, from the 2008 election and this current election, where very large numbers of individuals make very small contributions, and they will buy the electronics in their pockets, almost instant reactions to whatever may motivate them, and as we've listened this morning, and I'm not a specialist in this sector by any mean, I wonder if that phenomenon is, if you will, transferrable, and how, if it is, it would be?

MR. FERGUSON: Well, obviously I can't answer from experience, but I can answer -- my hypothesis is similar to the nature of your question which is, we know that, in large part because of technology, individuals who may or may not be so engaged, are willing do what they think is right. I support a candidate. Now, a couple of things that we observer, one is the folks who are giving probably do have a relatively high level of engagement.

They get excited about, you know, candidate X, candidate Y, whatever it may be. Folks that generally not so engaged in their financial lives as they are in the passion of, you know, who they think is good for the country, so one challenge is to get that level of intimate engagement up, so that the people who want to do these things.

The second thing that I think we've observed from the success of these micro giving kinds of campaigns; is they are leveraging big data. You know, a clear understanding of your appeal to individual acts around her, his specific hot-button topic by saying your candidate feels strongly about it, and then you sort of go through the list of all the possible fittings, that might appeal to one person or the other.

So, obviously, the financial sector is working really hard on sort of big data and tailoring, et cetera, but that’s one of the big lessons that I think one can learn from what's happening in the electoral space.

The third is, it's absolutely got to be mobile. We already know that, but if it's not working on a in iPhone, or a iPad, you know, if you expect someone to be at their home computer or (inaudible), you know, answering the phone, or even worse, opening mail, you are forgetting and not learning what we've learned. Now the industry overall is really well aware of being mobile.

But I would say, I've looked at, and we've looked at lots of industry websites, most of them do not have the intuitive feel of what you see that most people are used to. You know, we've recently redone ours trying to leverage a lot of that understanding, you know. You now scroll the way you do with a more modern app, the Uber look has become really important. The other thing that I think one learns is the app has got to be interactive; something has to be happening again, similar to Uber, right?

So if you look at what goes on the Uber, you order it, and a name pops up, and you can watch the little car coming, and all that sort of exciting stuff. So it's the gamification of life, and it's not -- I introduce Uber into the conversation. So there are a lot of behavioral tools that one can learn from both the fund raising apparatus, and then get out the vote apparatus that has emerged in elections, plus other things that are really successful, and bring those appropriately into financial services.

Obviously, you know, this is a little bit of what Robo Advisors do as well, so it's not its own -- this is not new, but what is new I think, is really big companies, and others include, watching and learning very, very quickly. The other thing I think is important about this, is we tend to associate all of this with millennials, and young people, the truth of the matter is that no way are they the only ones who are influenced by this. And I think the financial services firms will need to understand and we certainly do, that aging baby boomers, millennials, gen Xs, everyone is influenced by the same thing.

You know, it has just become ubiquitous, and it's not just a generational shift, we are going to be -- one would less relevant to almost any population if you don't give the capability of doing what when learning is available, though big campaigns, through fundraising and through, let's say, the Uberiztion of the world. If that makes sense?

MR. BAILY: Well, I think that was -- Oh. We've got one more question out there. Gary Buttless, and a retirement expert, so we've got give him a chance to ask a question.

MR. BUTLESS: Absolutely!

MR. FERGUSON: Well, I don't -- We'll see if we want to give him a chance to ask the question. (Laughter)

MR. BUTLESS: Dr. Ferguson, the topic is equity markets, and one of the problems I think of the current defined-contribution retirement space, is that the workers who are owners, of the nation's businesses through equity markets and through the retirement plans they have, seem to have no voice at all in corporate elections. It's unfair to bring this to your attention because you offer a retirement option, Social Choice --

MR. FERGUSON: Right.

MR. BUTLESS: -- which does permit people to exercise some degree of control over the companies that are purchased. But 99.9 percent of assets invested through our system, Vanguard never asked me how I think they should vote the shares. Fidelity never asked me how I should vote the shares.

MR. FERGUSON: We asked you --

MR. BURTLESS: CREF really doesn't ask me how to --

MR. FERGUSON: You'll have to know, but okay. Now, look --

MR. BURTLESS: And so it strikes me that if this is a form of people's capitalism, the people are left remarkably voiceless, and I kind of wonder what you think about that problem?

MR. FERGUSON: I think its like -- Your question sort of hints about the way we work. I think it is a double-edged sword, and so, yes, one of the reasons that we are one of the largest, sometimes measured as the largest, socially responsible, socially screened portfolio, is to give people a voice. There are certain kinds of companies, they don't want to see their money invested in and so we have come forward saying, you know, we want to invest in this or that, you will get a socially-screened portfolio, et cetera, including low-carbon and everything.

So, one is, yes, you know, the point you raise is one the industry should respond to. The flip side of it is two or three things. One is Yale does matter, and I know even as we think about introducing new socially-screened choices, how big is the demand for that going to be, right? So, you and I may both say, we are really socially responsible individuals, and your definition and mine might be quite different.

So for a big institution, you know, you want to make sure you are not creating such plethora of choices, what you end up with, is a large number of really, really small funds, whereby definition of the management expenses are high, and you have problems there. The other challenge that I think industries deal with and try to respond to specific interests, is the diversification issues that arise.

You well know that one of the big diversification challenges has always been the so-called home bias, right? We all tend to invest disproportionately in -- typically in the U.S., in U.S.-oriented equities. One of the great things about CREF is that it is structured to overcome that, by having a disproportionally large, compared to most, external exposures, which works really well, for diversification.

So I raise it to say, you want to protect people a little bit from their preconceived notion of what's good for them, because they are, by definition, are going to be cutting out some of the benefits of broad diversification, which one has to be careful of.

And the final problem, or challenge that one has to do deal with in responding to a specific individual concerns, is transactions costs start to go up as you, again, start to shrink your portfolio, or the turnover might go up, as companies change a little bit. So, a prime example, I'm not putting it forward as the example, but a number of companies, the Loews Corporation, for example, used to be a really large owner of a tobacco company. Then suddenly they got rid of that. So are they now back in, back because mainly what they do is hotels? You get this question of how you define, and the transaction costs are moving from one through the other.

So, it's a long answer saying, yes, we ought to offer, and we do, but others do it as well, products that are responsive to the tailoring needs of individuals, or the preferences of individuals, but one has to be careful, all of us, both you and we in the industry, how much of that you do, because, you know, the difficulties of doing that for smaller and smaller groups, are noticeable. And like everything else, therefore a tradeoff.

Should it ignore the voice of the participant, we certainly listened closely, but also recognize that there may be a limit to how far you want to go, because that may not be in long-term best interest of that individual even, and they change over time.

MR. BURTLESS: Well, I'm sure more to talk about here but --

MR. FERGUSON: I can tell from your body language that was not exactly, completely, totally persuasive, because it's not going to be an easy totally persuasive answer to a very good question.

MR. BAILY: Well, I think we've taken a lot of your time, and you’ve been extremely informative and helpful, thank you so much, Roger. We much appreciate it. (Applause)

MR. FERGUSON: Sure.

MR. BAILY: You are tied to the chair, so we have to -- Thank you, all.

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2016