

A Virtuous Growth Cycle:

*The Impact of Employee Benefits
on Firm-Level Sustained Growth*

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OVERVIEW

This study investigates links between employee benefit plans (such as 401k plans, ESOPs, and Profit Sharing) and sustained growth of for-profit firms. It begins with a short review of the critical literature on this subject and then uses a sample of 351,731 firms that were in operation from 2006 through 2012 and filed Form 5500 under the federal ERISA program. It evaluates whether specific benefit plans and their associated employee participation levels and plan funding have a significant statistical impact on the ability of firms to repeat employment growth over the study period. It then tests predictive models of whether providing specific plans in 2007 changed the odds of firm growth over the following five years. It concludes with recommendations for business owners and investors, business-to-business suppliers, and public policy leaders.

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KEY FINDINGS

1. Past research has shown that attracting and retaining top talent are some of the most difficult challenges faced by sustained growth firms. Several studies have demonstrated an overall positive relationship between employee benefits (used to attract, reward, and retain talent) and firm growth, although no other study has considered the link with sustained growth.
2. Using the Judy Diamond dataset, based on ERISA filings from firms offering employee benefits, 21% of firms achieved sustained growth (two or more years of employment expansion over the 2006-2012 period). These sustained growth firms grew their average employment by nearly 50% over the study period and created a total of 8.9 million net new jobs, compared to all other firms in the study that destroyed nearly 1.8 million jobs in total, for an average loss of 3% of their workers.
3. Sustained growth firms grew their average number of benefit plan participants from 184 to 274 over the period, while all other firms shrank from 150 to 134. In addition, sustained growers showed an increase of 69% in total annual contributions and 57% in total assets invested in benefit plans, much more than the 15% and 17% respective increases for all other firms.
4. Firms can dramatically increase their odds of achieving sustained growth in the future by adding new benefit plans that are positively correlated with sustained growth. For example, when offered together, 401k plans increase the odds of future sustained growth by 48% and Stock Bonus plans by 161%. This raises the odds of becoming a sustained grower from roughly 1-to-4 to 3-to-4. These insights could be used to help firms find the combination of plans that maximize their odds of future sustained growth. It also implies that the strongest combination of benefit plans encourages savings by employees and provides incentives matched to firm performance for managers.
5. Employee benefits appear to play a critical part in a 'virtuous growth cycle' driving sustained growth; whereby incentives encourage employees to help the firm grow - while they learn critical growth lessons in the process. This, in turn, improves the ability of the firm to afford more incentives that, consequently, increases talent retention and raises the odds of another cycle of growth.

BACKGROUND

Even in today's economic climate of anemic and uneven growth, paired with a myriad of reasons for future uncertainty, some precious businesses are able to beat the odds by sustaining the growth of their sales, productive capacities, and profits. We're not talking about 'one-hit-wonders' or the 'flash-in-the-pan' companies that grab headlines and then die in obscurity, but rather companies that build ever-larger operations and provide expanding benefits to investors, workers, and communities.

With the intent of improving our collective prospects for economic expansion, along with the benefits of well-being and wealth that derive from that, we must ask: ***What makes sustained growth firms different from all others?***

Over the past three years, my research at the Institute for Exceptional Growth Companies (IEGC) has demonstrated that sustained growth firms are found in every U.S. industry and in regions of all population sizes and densities¹. We have concluded that the ability of a business to sustain growth is overwhelmingly determined by their internal capabilities and past performance, rather than their industry or location as is widely assumed by many policy makers, academics, and investors.

This paper explores one of the most important factors supporting firm-level sustained growth: recruiting, rewarding, and retaining top talent. This research begins with a short review of recent studies along with some illustrative examples. We then break new ground by using a unique dataset that tracks the incentive systems firms use to attract, motivate and retain key employees and, at least indirectly, support firm growth.

Benefits of Sustained Growth Firms

Let's step back for a moment and remind ourselves what we're after and why. From the perspective of corporate leaders and owners there are many reasons why a firm should consider sustained growth as one of their most important operational objectives. My research has shown that for every year a firm experienced employment growth over the past five years, they increased their odds of:

- Surviving over the next five years by 50.4%;
- Growing by at least one new employee in the next five years by 67.4%; and
- Ranking in the top 1% all firms in sustained growth over the next five years by 155.6%.

¹ Kunkle; 2013

Sustained growth increases operating scale over time in a cumulative fashion. Increasing scale benefits firms in a number of important ways, such as:

- Decreasing overhead costs per unit produced and sold;
- Strengthening productivity;
- Increasing pricing and promotional power across distribution channels; and
- Improving ability to export to distant markets.

Sustained growth companies are also ideal targets for customer acquisition and retention for Business-to-Business (B2B) firms. Growing firms have ever-increasing demand for all sorts of products and services – both in volume and variety – as they:

- Ramp up new production;
- Increase customer service abilities;
- Add new employees;
- Manage larger and more dispersed workforce;
- Expand facilities;
- Extend distribution channels and logistics networks;
- Generate and consume higher volumes of more complex data;
- Finance higher volumes of inventories and goods-in-process, and new operations.

From my 20+ years of consulting experience I have found that many B2B companies already seek to acquire these sustained growth companies early, when they are relatively small and young, and then concentrate efforts to retain them as their needs and purchases grow. They realize that these companies can have the highest return on customer acquisition and retention investment of any companies in the economy when considering their lifetime customer value.

Further, from a public policy perspective, increasing the number of sustained growth firms in a region:

- Diversifies the economic base, thereby reducing the impact of industry-specific downturns;
- Increases social equity by raising regional employment across all skill and educational levels, as firms add new jobs from the warehouse to the HQ;
- Expands the tax base;
- Attracts qualified labor and new residents; and
- Raises incomes, both at the growing firms and across the regional economy.

On that last point, my colleagues and I compared changes in regional wages in all urban areas in the U.S. (1990-2010) against changes in the number and

concentration of local sustained growth businesses². We found that regions with faster growing concentrations of sustained growers tended to exhibit faster rising wage rates across *all* workers in their regions. Not only do sustained growth firms bid up wages of workers in their areas, they also draw in new residents from adjacent areas. Thus, sustained growth companies provide a truly quantifiable multiplier effect – not based on hypothetical input/output models, but on actual wage and employment data on all companies in each region.

Rare but Critically Important

As we have found, sustained growth businesses are the primary allocation mechanisms for new employment and wage growth across regions. Unfortunately, they are exceedingly rare. At the national level, only about 1% of surviving businesses add net new capacity (i.e., employment) twice or more over a five-year period; the rest stagnate or decline. Yet, that 1% is responsible for about 3/4s of all net new jobs created during that time. Thus, a relatively small group of companies is responsible for the vast majority of employment and wage growth in a region³.

The growth of a company can be measured in several different ways⁴. Traditional growth studies, such as the landmark work of David Birch back in the 1980's, focused on the amount and percentage of employment growth a company experiences over time⁵. While Birch's study helped us understand the important role that small businesses play in job creation, he and other scholars failed to find any reliably positive relationship between the amount or percent of past job growth and a firm's probability of future survival or growth.

My research tested those same relationships on 13 million surviving business establishments that operated in the U.S. over the 2000-2010 period. Consistent with other scholars, I confirmed that the amount of growth a firm experienced in the past has no significant change in the probability of future growth or survival. Even worse, the higher a firm's percent of past growth, the lower the odds of future growth or survival⁶.

² Campbell, James, and Kunkle; 2013.

³ I have found this same pattern at the state and regional levels in studies of Pennsylvania, Michigan, Louisiana, southern Indiana, and Baltimore County.

⁴ Most growth studies measure changes in employment rather than sales for several reasons. First, sales data is more 'spiky' than employment, showing substantial short-term volatility. Also, management is more prone to manipulate sales data in a given period rather than employment in order to meet internal targets or reduce taxes. Third, unpublished work I've conducted for GE Capital found that sales and employment tend to move in tandem over time. Interestingly, I've also found that while most companies show a change in sales prior to a change in employment, sustained growth firms tend to add employment in anticipation of future sales growth.

⁵ Birch; 1987.

⁶ There seems to be several interrelated causes for this phenomenon. First, growing at a very fast rate increases the odds that capacity will grow faster than demand, placing added burdens on a firm to finance the expansion, particularly if funded via debt. Secondly, exceptionally fast growth can

However, when I counted the net number of years a firm expanded in the past five years, I found that every additional year of past growth increased the odds of survival, growth, and exceptional growth over the next five years. Whereas other scholars found that growth was random (i.e., you can't predict future firm growth from its past performance), I found that you could - when using the sustained growth measure.

Learning to Grow

Successful long-term growth is a cumulative process, which seems very similar to a learning process. The more times a firm grows, the more likely it is to grow again in the future. When properly executed, managers and employees are encouraged to learn from their mistakes, and successful strategies and tactics are reinforced through rewards. Although growth becomes more difficult as the scale and complexity of the enterprise increases, the sets of problems that managers encounter are similar in nature almost every time it expands. Obviously, the learning is easier if the same people are involved with decision-making each time, or if the lessons learned are encoded into decision-making processes so that the firm develops institutional memory about best growth practices.

Think of all of the people involved each time a firm grows. Critical decisions need to be made about who to hire, how to train and supervise them, what tools they will use, where they will work, how to finance the expansion, how to integrate the new capacity into work processes, etc. Initially firm leaders such as the CEO, President, and/or CFO make all these decisions, but as they add staff these decisions – and their associated learning – are delegated to specialized individuals, and later to teams that they manage, throughout the organization⁷. As the size and complexity of the firm increases, so does the reliance upon teams to execute strategy.

Accelerating this growth learning appears to be one of the fundamental keys in helping more companies achieve and maintain sustained growth. But what sorts of problems are most vexing for sustained growth companies?

Over the past six years I have led three large-scale studies of how firms sustain growth. In 2008 I interviewed and surveyed the founders and CEOs of 600 sustained growth firms located throughout the Commonwealth of Pennsylvania, on behalf of Team Pennsylvania and the Pennsylvania Department of Community and Economic Development⁸. We sought to better understand the top challenges these

create operational problems - from training new employees to quality control (to name but a few) - which can jeopardize the company's ability to effectively serve markets. Thus, the company runs a higher risk of reversing the growth or going out of business than if they were to grow at a slower steadier pace. This is consistent with Penrose's Resource Based View of the Firm (1959).

⁷ See Scott and Tiessen (1999) and Vlachos (2008).

⁸ See <http://teampa.com/impact/business-growth/support-for-high-growth-firms/>

firms faced as they grew and which practices they used to overcome these obstacles. Regardless of their industry or location, these companies reported that the Human Resources challenge was the most reoccurring and difficult issue to solve, specifically hiring and retaining key talent.

In addition, CEOs I interviewed reported that the lack of trained supervisors and managers within their organizations slowed their growth at one time or another. Consider a typical story from a custom software development firm located in the suburbs of Philadelphia. When the business was young the founder tended to hire people based almost solely on technical skills and work history. But as the firm grew she began to look for candidates that also had some, even rudimentary, supervisory or management skills, all else being equal. She began to realize that there was a natural limit to how many entry-level workers they could hire before they began to lack enough supervisors to keep the firm operating efficiently. Even if the skills and experience of one candidate were somewhat less than another, they would favor the one that had been, for example, a crew chief at a fast food restaurant earlier in life. That would have given them at least some experience training and monitoring employees and working with shift scheduling - skills needed to one-day become a supervisor on the shop floor of her growing business.

Last year, as Economist at Large at Inc. Magazine, I conducted a study on behalf of GE Capital and their National Center for the Middle Market, to determine how a small proportion of companies managed to sustain growth through the recent recession of 2006-2008 and then experience sales growth during the following 2009-2011 period⁹. All firms studied began the period with revenues between \$10m and \$1b. We began by identifying the 1% of companies that managed to grow during the recession and then went on to double sales in the three years afterwards. Surveys were collected from 247 of these C-level executives, looking at eight dimensions of management: talent, innovation, vision, investment management, market expansion, products and markets, internal processes and partnerships. These leaders reported that retaining talented employees was most critical for sustained growth.

Last year, Inc. Magazine introduced the Build 100 project, funded in part by corporate sponsors such as the Principal Financial Group. We selected 100 companies with between 50 and 1000 employees that had net employment growth each of the past five years, and then interviewed their CEOs to discuss growth challenges and tactics. When asked which 'unplanned event' most worried them, 81% said 'sudden loss of key employees', which was the most common choice among 11 possible answers. In addition, 82% reported that 'sharing financial success with your employees' helps a company grow. These findings are consistent with the view that rewards reinforce growth learning, which in turn drives sustained growth.

⁹ *Pathways to Growth*; 2013

Scott Leibs, Inc.'s Managing Editor and my collaborator on this project, wrote:

“There’s a direct connection between the sharing of financial success with employees and higher revenue growth and productivity. Also, the companies that were the most generous to their employees, in terms of compensation and benefits, not only achieved higher performance; they also reported a boost in attracting and retaining the best talent”¹⁰.

These three recent field studies of sustained growth illustrate that human capital is the most important factor that drives or impedes firm growth. But since almost all companies have human capital, why do some learn to grow and others don’t?

The evidence suggests a positive feedback loop, wherein key employees (and their teams) are engaged towards achieving the firm’s growth objectives and then rewarded financially for success. Growth enables the firm to afford more incentives, which helps drive further growth. In addition, rewards increase retention of key employees and increase the firm’s ability to attract new workers who have learned growth lessons elsewhere, thereby increasing the probability that the firm will experience repeated growth into the future.

Let’s now consider the findings of several peer-review studies that have been conducted in recent years investigating the relationships between incentives and performance within for-profit businesses.

¹⁰ Leibs; 2014.

LITERATURE REVIEW

There are more than 100 academic studies on the links between worker and group incentives, HR policies, and their impacts on performance outcomes, using a wide variety of research methods and datasets¹¹. However, none of these studies used sustained growth as the measure of firm performance. Instead they used traditional measures such as the absolute and percentage amounts of sales and employee growth, as well as productivity growth. Despite these differences, they generally lend credence to the supposition that there is a link between employee/team incentives and the growth of the firm.

The study most aligned with this inquiry is from a team of researchers who used IRS 5500 data combined with Census Business Registry and State ES-202 data to evaluate the impact of Defined Benefit, Defined Contribution, and Other employee benefit plans on firm growth, survival, productivity, and worker turnover (i.e. 'churn')¹². Together, these are the employee benefit plans that many employers offer their workers to ensure them a savings when they retire (such as Defined Benefits plans) and to encourage them to save and to spur performance (such as many Defined Contribution and Other plans)¹³.

These researchers compared firms that provided these benefits with firms that didn't offer them at all. They found that firms that used employee benefits enjoyed significantly lower worker turnover, higher productivity, higher absolute growth, and were less likely to fail than those that didn't.

As qualifiers, they also found that firms were more likely to use these types of benefits if they had a higher quality and higher paid workforce when compared with firms that did not offer any of these plans. We can reasonably expect that key employees who had learned growth skills would be paid more because companies' leaders would view them as more valuable.

The researchers also concluded that employee benefits that encourage savings for the future, such as 401k, tend to attract employees who have less intention of changing employers. Retaining employees, however, should be viewed as a necessary but insufficient condition for sustained growth. After all, even stagnant firms can retain employees.

Of course, senior management must make clear that growth is an operational objective of the firm. But once this is established, the best performing companies

¹¹ See Kruse, et al. (2012) for a review.

¹² Decressin, et al.; 2009

¹³ A list of these plans are included in tables appearing later in this paper.

also have HR policies that align with their incentive system to create a culture of inclusion, trust, and cooperation, together with performance-based incentives¹⁴. Kruse, et al, write:

“The combination of group incentive pay with policies that empower employees and create a positive workplace culture reduces voluntary turnover and increases employee intent to stay and raises return on equity”¹⁵.

They found that companies perform best when employees' compensation is at least partially based on firm performance – such as employee stock ownership, profit and gain sharing, and widely shared stock options – and when management promotes the sharing of critical information to support decision making and includes employees in those decision making processes.

Reflecting the degree to which teams come to dominate decision-making as a firm grows, incentives should accordingly apply to both individuals and their work groups. Teams should be involved with setting performance targets and having input into the compensation policies. Research by Scott and Tiessen (1999) find that companies that follow these policies tend to perform better than others. They write,

“This research suggests that successful teams require an adequate information base, that members have sufficient power to make decisions, and that team performance be rewarded. Our analysis shows that when the management accounting system measures team performance more comprehensively, includes member participation in setting performance targets, and incorporates team performance into compensation, team performance is enhanced.”

Kruse, et al. found that Employee Stock Option Programs (ESOPs) were most strongly associated with the best corporate cultures, which are comprised of ‘high-trust supervision, participation in decisions, information sharing’. Deferred profit sharing had the second strongest relationship.

Ownership seems like a strong incentive for employees to strive to boost firm performance. However, the appeal of employee ownership can be contingent on the firm’s level of debt. The higher the debt ratio, the less confidence employees, suppliers, and customers have in the future viability of the firm¹⁶. Thus, we must

¹⁴ Group incentives create a ‘free-rider’ problem where some individuals tend to apply less than an optimal amount of effort (‘shirk’) and rely upon the work of others to receive the group incentive. The Kruse, et al (2012) research implies that a corporate culture that emphasizes collective participation and individual contribution can lessen the severity of the free-rider problem.

¹⁵ Kruse, et al; 2012

¹⁶ Kee-Hong et al.; 2011.

recognize that there appears to be several factors that need to be in place to reinforce the link between incentives and firm performance.

Aside from short and medium-term growth opportunities, there can be other long-term benefits for the firm that make all of these practices work to their advantage. Practices such as profit sharing, employee participation in decision-making, and extensive benefits programs for employees and teams can increase the appeal of the firm as an acquisition target. This may be very important for owners planning for a lucrative exit. Researchers have found a strong link between these employee friendly policies and the speed and probability of acquisitions closing. Prospective acquirers realize, consciously or not, that these policies tend to reduce staff turnover and other employee disruptions post-acquisition¹⁷.

Summary of Past Insights

From the previous research and my own field studies we can draw several propositions:

1. Sustained growth increases the odds that a firm will survive, grow, and achieve exceptional growth in the future.
2. Every time a firm grows individuals and teams within the firm accumulate valuable knowledge that improves their decision-making skills, which in turn improves the odds of future firm growth.
3. The top concerns of CEOs running sustained growth companies tend to center around attracting, retaining, and matriculating key employees, whom they need to support the firm's current operations and future growth.
4. Sharing financial success with employees and their teams, such as through employee benefits, increases their commitment to the firm, reduces turnover, and increases productivity, especially when matched with employee-inclusion HR policies.

When considering these observations together, we can propose that there is a positive feedback loop that companies with sustained growth rely upon to maintain growth momentum. By offering the promise of greater rewards to employees and their teams – along with policies that share information and include them in decisions making – a company increases the likelihood that it will grow, which then increases the learning of growth practices by key employees within the firm. The incentives also encourage talent to remain with the firm and reinforce the tendency of the firm to grow again. Subsequent growth provides additional financial resources that can be shared with the expanding workforce to fuel another cycle of growth.

¹⁷ Ertugrul; 2013.

RESEARCH AGENDA

To add necessary support to the theory described above, we should, at a minimum, observe a correlation between employee financial benefits and sustained firm growth. It would also benefit owners and managers if we could identify which specific benefits tend to have the greatest positive relationship with sustained growth and to measure their impact on the odds that a firm will grow in the future.

Objectives

These are our research goals:

1. Investigate a link between employee benefits and sustained firm growth;
2. Observe how employers and employees participate in and fund these benefit plans, and explore how that changes with sustained growth;
3. Investigate which categories of benefits have the greatest relationship with sustained growth (i.e. Defined Benefits, Defined Contributions, Other Plans, or Performance Incentives);
4. Test whether specific benefit plans (e.g. 401k, ESOP, Profit Sharing, etc.) increase the odds of a business becoming a sustained growth firm;
5. Test whether we can predict which firms are most likely to become sustained growers in the future if given a few pieces of key data about current operations and recent performance.

Data Source and Method Notes

Judy Diamond Associates has supported this research by providing its ERISA data covering all Form 5500 filings from U.S. companies from 2005 through 2012. This time-series data contains more than 500 variables for each filing, including but not limited to raw data obtained from the Form 5500 as well as Judy Diamond Associates' own proprietary calculations, plan scores, and company ratings. The dataset we will use includes a sample of 351,713 US-based firms that filed a Form 5500 for each year during the 2006-2012 period¹⁸. Because of the reporting

¹⁸ Our sample includes all companies that filed a Form 5500 during each of the years from 2006 through 2012. We eliminated firms from our sample if their ERISA data appeared erroneous or incomplete based on a number of data screening techniques. For more information, please contact the author.

requirements, these firms are substantially larger than the average U.S. firm¹⁹.

For this paper, we measure firm size using the variable ‘Total Eligible Participants’ which is included on Form 5500. This variable has the benefit of being a mandatory self-reported figure, which would tend to provide greater accuracy and stability than estimates. The drawback is that there may be a delay between the date an employee is hired and the date they are eligible for benefit plans. This limitation was deemed acceptable by the NIBR research team²⁰.

We began our analysis by calculating a Growth Score for each company in each year. This is accomplished by measuring the difference in eligible participants from one year to the next to determine whether the firm shrank, stayed the same, or grew. If the result is 1 or greater (i.e. an increase of one or more net new eligible participants) we assign a ‘1’ for that year; a ‘0’ is assigned if there is no change; and a ‘-1’ is assigned if there was a decline. We do this for every year in the 2006-2012 period, which yields an annual Growth Score (-1, 0, or 1) for each firm for each year.

For this analysis we wish to evaluate sustained growth over a five-year period as well as the year prior to that period. To identify sustained growth firms we sum each firm’s Growth Score for every year in the period (2007-2012), and then select those with a net sum of 2 or greater, meaning that the firm experienced at least two periods of growth. The prior year of study is thus 2006.

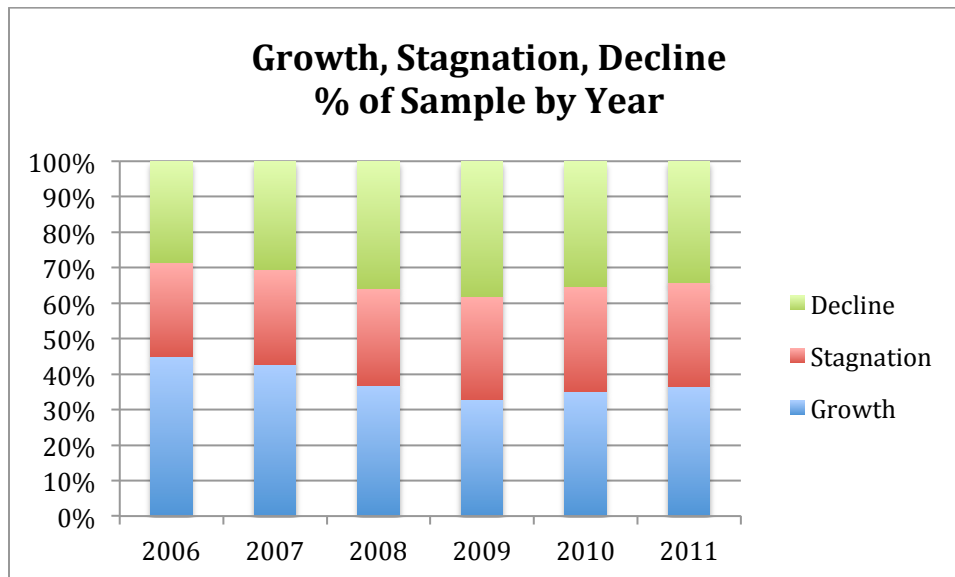
¹⁹ See Decressin et al. (2009) for further information regarding comparisons of firms filing Form 5500 and other firms in the U.S. economy.

²⁰ Decressin et al. (2009)

RESEARCH FINDINGS

To begin, we measured the number of firms in our sample that grew, stagnated, and declined for each of the years from 2006 through 2012. This simply provides a quick reflection of general economic conditions during this time of recession and mild recovery.

As the chart below shows, the percentage of firms that grew declined from 44.9% in 2006 to 36.5% in 2011²¹. The number of firms that stagnated rose from 26.5% to 29.2%, peaking at 29.6% in 2010. Those that declined rose from 28.6% in 2006 to 34.3% in 2011.



N=351,713

We now look at those firms that were able to grow for two or more years during the 2007-2012 period.

Past Growth Begets Future Growth

We need to confirm that the same underlying growth dynamic is visible in the ERISA data as it was in the NETS data used in my previous research: namely, that past growth increases the probability of future growth²². To do this we use simple correlations. If the correlations are positive and statistically significant for all years,

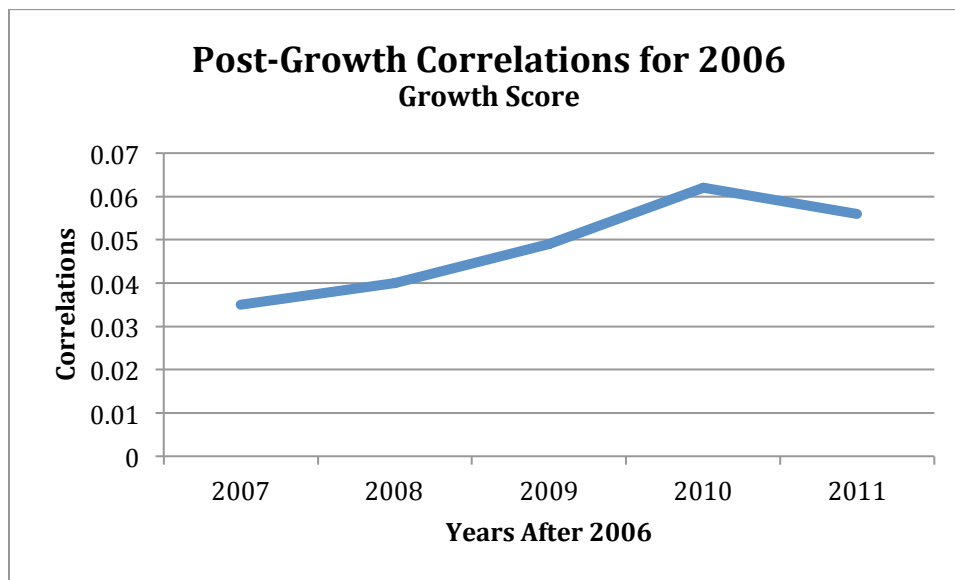
²¹ Recall that the number of growth firms in 2011 is calculated by subtracting the number of eligible participants at each firm in 2012 from 2011. It is reported as a change in 2011.

²² The National Establishment Time-Series (NETS) is a longitudinal dataset that tracks the operational characteristics, demographics, and performance of more than 55 million establishments in the US from 1990 through 2012. The Institute for Exceptional Growth Companies sponsors NETS, and that is the dataset I relied upon for several of the published works cited in this paper. See www.growtheconomy.org for additional information.

we can be confident that, indeed, past growth begets future growth²³.

We find that in all years from 2006 through 2011, growth in any year is positively correlated with the sustained growth score for every year both before and after the growth year. Every correlation is positive and significant at the 0.000 level of confidence, meaning that there is very little statistical doubt about the relationship. In other words, if a firm grew in one year, they were more likely than not to have grown in other years, before and after.

Take, for example, the Sustained Growth Score of all companies in the study for the year 2006. We measure the correlation between the 2006 Growth Score and each of the following five years, as shown in the chart below.



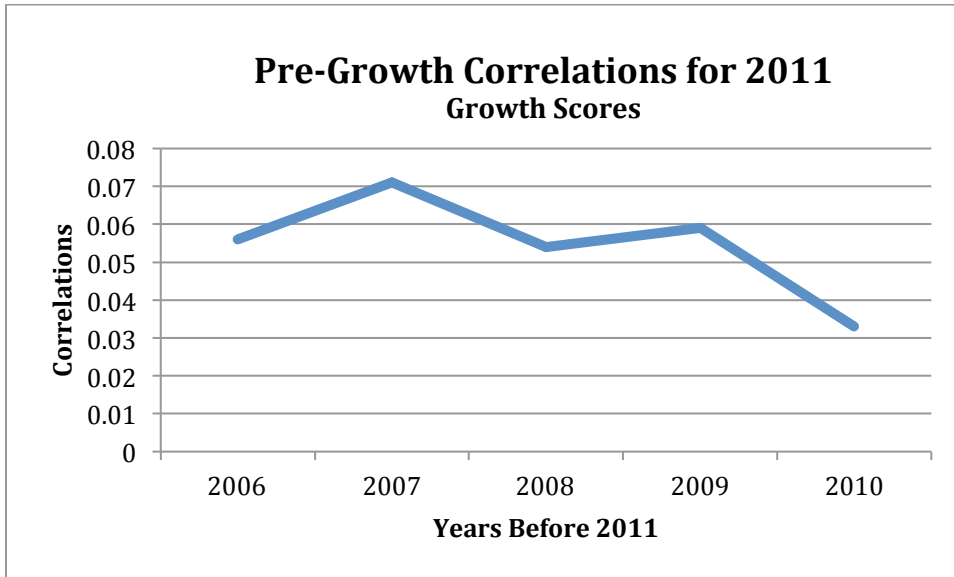
N=351,713
Significance for all years is .000.

There are positive correlations with the Growth Scores for 2006 and each year thereafter. In fact, the correlations nearly doubled over time. This tells us that if a firm had a high growth score in 2006 (for example a '1', meaning growth), it is more likely than not to also have had a high growth score in each of the following years. Conversely, if it had a low growth score in 2006 (for example a '-1', meaning that it reduced employment), it is more likely than not to also have had a low growth score in each of the following years.

As another example, consider the Growth Score for 2011, as seen below. There are

²³ Correlations measure the covariance of two variables, or the propensity of two variables to move in the same direction (if they are positively significant they move in the same direction, and if negative and significant they move in the opposite direction) as well as the amount that the movement of one variable is explained by the other. This also provides a relative measure of the strength of the relationship.

positive correlations with the Growth Scores for each of the previous five years.



N=351,713
Significance for all years is .000.

These two charts confirm that if a firm grows in one year, they are more likely than not to have grown in other years before and after our study period. Conversely, if a firm declined in one year it is more likely than not to also have declined in the other years of the study. Thus, growth, when measure this way, exhibits auto correlation or 'path dependency'. Stated another way: past performance helps predict future performance.

Sustained Growth and Employee Benefits

We now identify 'sustained growth firms' as those businesses with at least two net years of employment growth over a five-year period.

Of the 351,713 firms in our sample, 74,823 (or 21.3%) were found to have two or more years of growth during the study period. This compares to approximately 1% in the total population of all U.S. establishments with sustained growth²⁴. Although this is a large difference, it is somewhat expected because previous research demonstrated a large discrepancy between the average growth of firms that offered incentives and those that did not²⁵.

²⁴ See Kunkle; 2013.

²⁵ Decressin et al. (2009) found that firms providing employee benefits averaged 11% higher employment growth than firms without benefits when controlling for a variety of factors such as firm size and wage effects. That was during 1997 to 2001, a time of general economic expansion. Our

As shown in the table below, the average non-sustained grower had 221 employees in 2006, compared with sustained growers with an average of 240 employees, or 8.5% more. This starting difference was probably caused by earlier growth among the sustained growers. By 2012 however, the average sustained grower grew by 119 employees (nearly 50%) to 359, compared with a loss of 6 employees (3%) among the non-sustained growers²⁶.

Year	Mean Total Eligible Participants		Difference
	Non-Sustained	Sustained Grower	
2006	221.3	240.1	8.5%
2012	214.9	359.3	67.2%
Change	-2.9%	49.7%	

Number of Non-Sustained = 276,890

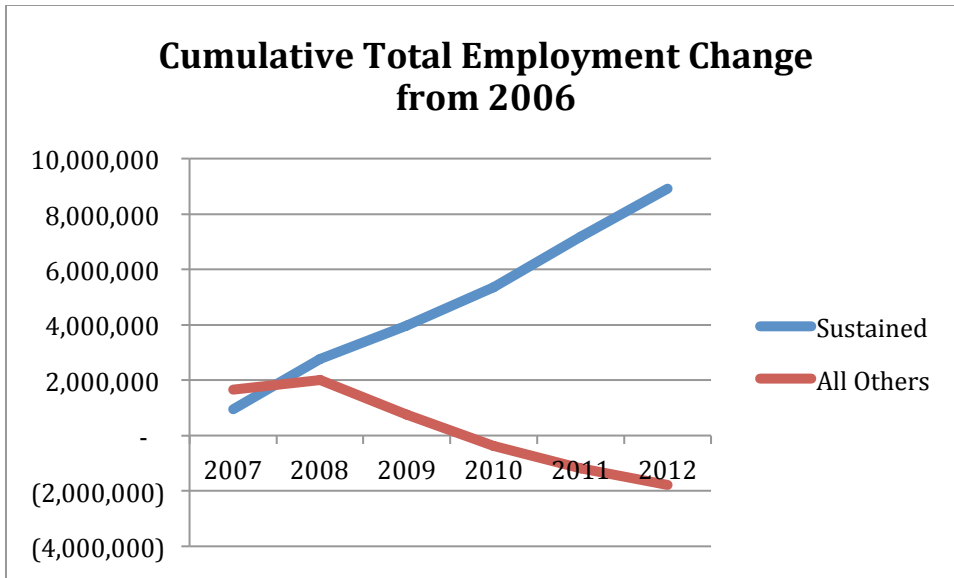
Number of Sustained Growers = 74,823

When you total the job creation of sustained growers and compare that to the loss among non-sustained growers, the cumulative effect is even more dramatic. As shown below, from 2006 through 2012 sustained growers added a total of 8,920,033 net new jobs, while non-sustained firms *lost* a total of 1,783,436 net jobs²⁷. This incredible difference highlights why it is so important for policy leaders, as well as B2B businesses, to focus on this relatively small but elite group of firms.

study, in contrast, covered most of the ‘Great Recession’. All firms in our sample offered at least one benefit plan in 2006, leading us to expect a higher percentage of growing firms in our sample than across the general economy, perhaps compounded by the comparably worse economic conditions. Thus, our findings that certain types of employee benefits, particularly those tied to firm performance, increase the odds of sustained growth could well be much stronger if we were comparing sustained growth companies with incentives against all other companies in the economy. We are currently investigating this relationship using NETS and the Judy Diamond dataset and anticipate releasing our findings soon. Please contact the author for more details.

²⁶ Recall that the sample includes only firms that survived the entire 2006-2012 period. If we were to include those that died during this period, the discrepancy in growth numbers would be more than a magnitude larger.

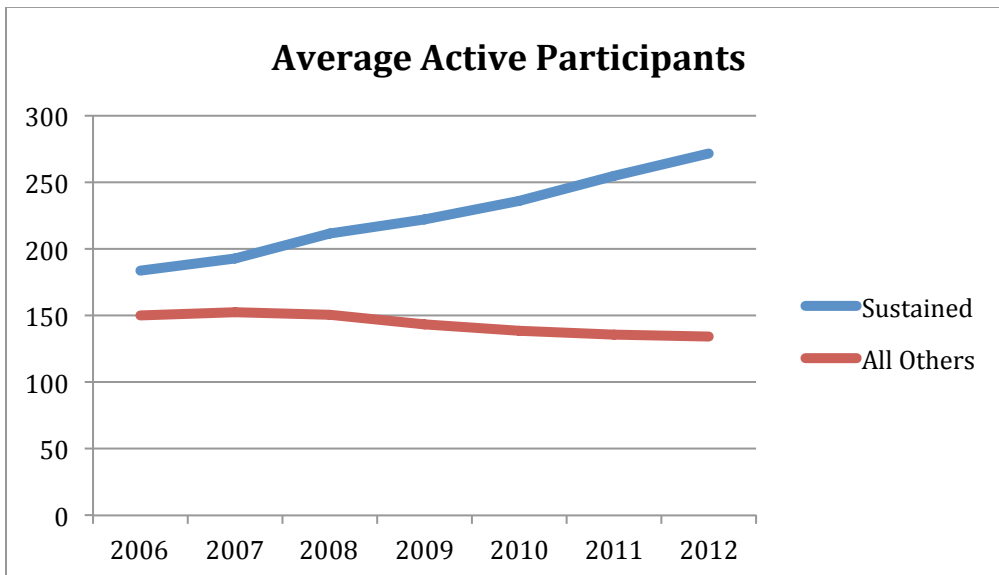
²⁷ Overall, there was net job creation by firms that filed benefit plans, despite the fact that this period corresponds with the ‘Great Recession’. Firms that filed plans are, on average, much larger than the average firm in the economy, and they are far fewer in numbers. Also, as mentioned earlier Decressin, et al (2009) found that firms that file benefit plans experience 11% higher employment growth over a four year period than firms that did not file plans.



N=351,713

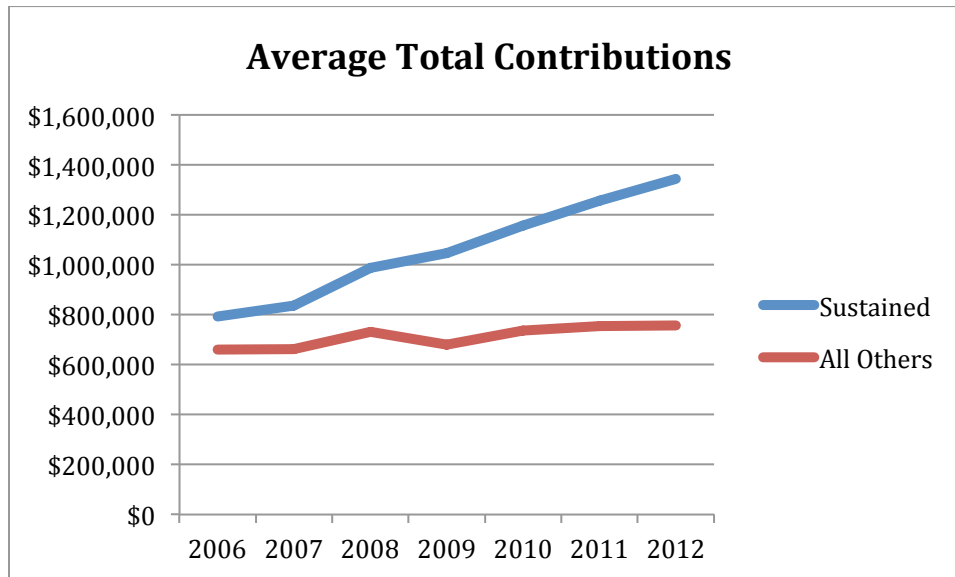
Differences In Participation and Funding

The divergence in overall employment between the two groups translates into a large difference in the number of active participants in benefit plans. As shown below, the average sustained grower grew the number of active participants from 184 to 272 over the period, whereas the average number of active participants at non-sustained firms shrank from 150 to 134 during the same timeframe.



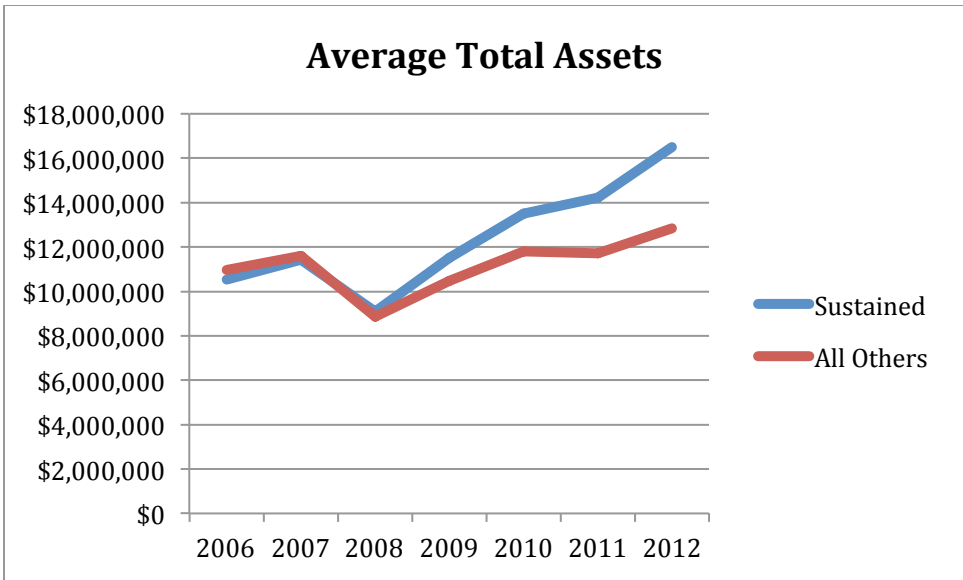
We should also expect that a change in the numbers of active participants should translate into a change in annual contributions by employers and employees into

these plans. In fact, over the period the inflows of total combined contributions also diverge. In 2006 the average sustained grower had \$792,455 new contributions from both employers and employees, growing by 69% to \$1,342,873 in 2012. In comparison, the average non-sustained began the period with \$660,395 and grew by 15% to \$758,004. Thus, by 2012 sustained growers had \$584,869 more in contributions, or 77% more than the average non-sustained growth firms²⁸.

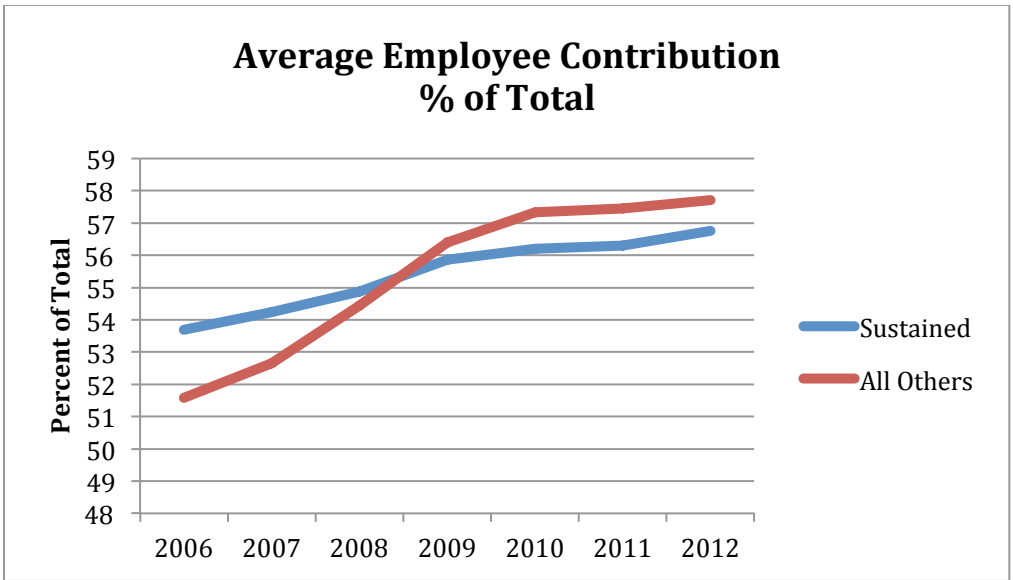


Total plan funding is part legacy of past funding patterns combined with recent changes in total contributions by employers and employees. Taking this into account, we can see that the difference in total financial assets invested in benefit plans becomes larger over time between the two groups. As the chart below demonstrates, both groups began the period with approximately the same average total assets (just under \$11m), yet by 2012 sustained growers averaged \$16,488,574 while others averaged \$12,834,249; growth of 57% and 17% respectively.

²⁸ Although sustained growers began the period in 2007 with an average of 19 more employees than other firms, most of the expanding disparities in participation, contributions, and total financial assets are a result of their subsequent growth. As mentioned before, sustained growers ended the period in 2012 with an average of 144 more employees than non-sustained growers.



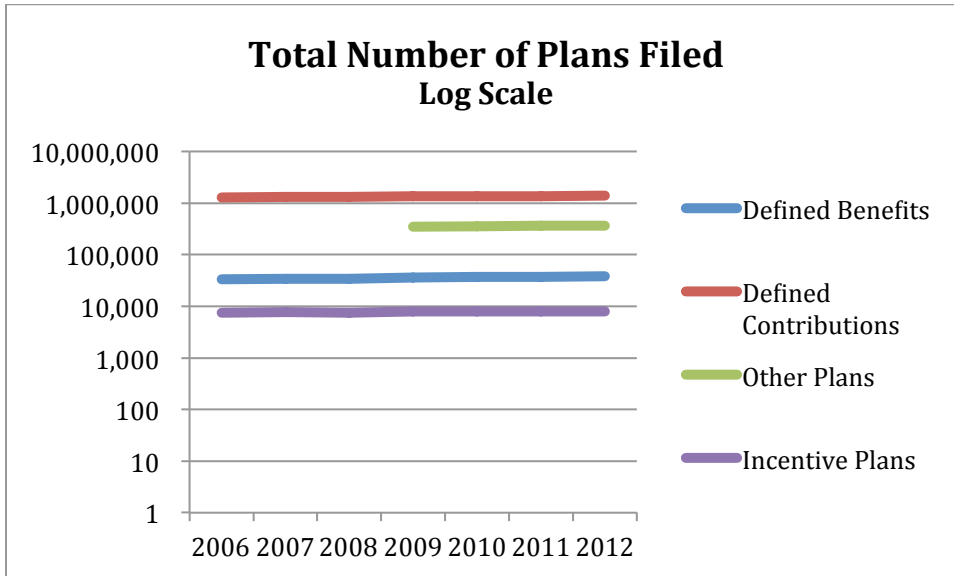
The table below shows that in 2006, employees at the average sustained grower contributed a higher percent than did those at the average non-sustained grower: 52.6% vs. 53.7%. However, by 2012 this relationship had reversed, with employees at sustained growers providing 56.8% while at all other firms employees contributed 57.7% of total combined contributions. This suggests that as firms grow they provide a higher proportion of savings for their employees, perhaps with the intent of encouraging employee retention.



Sustained Growth and Plan Types

We now turn our attention to different groups of employee benefits: Defined Benefits, Defined Contributions, and Other Plans²⁹. We also consider a subset of Defined Contributions: 'Incentive Plans' which are those that are linked directly to firm performance (ESOP, Profit Sharing, and Stock Options). Because of their direct relationship with performance, these are most supportive of our theory that a virtuous cycle exists between incentives and sustained growth.

The chart below shows the total number of plans filed over the study period by category (and as we shall see later, many companies file multiple plans). Because the number of plans filed in the Defined Contribution category is approximately 100-times greater than Incentive Plans, the chart presents the data on a logarithm scale. We can see that Defined Contributions are most prevalent, followed by Other Plans and Defined Benefits, and lastly Incentive Plans (a subset of Defined Contributions).

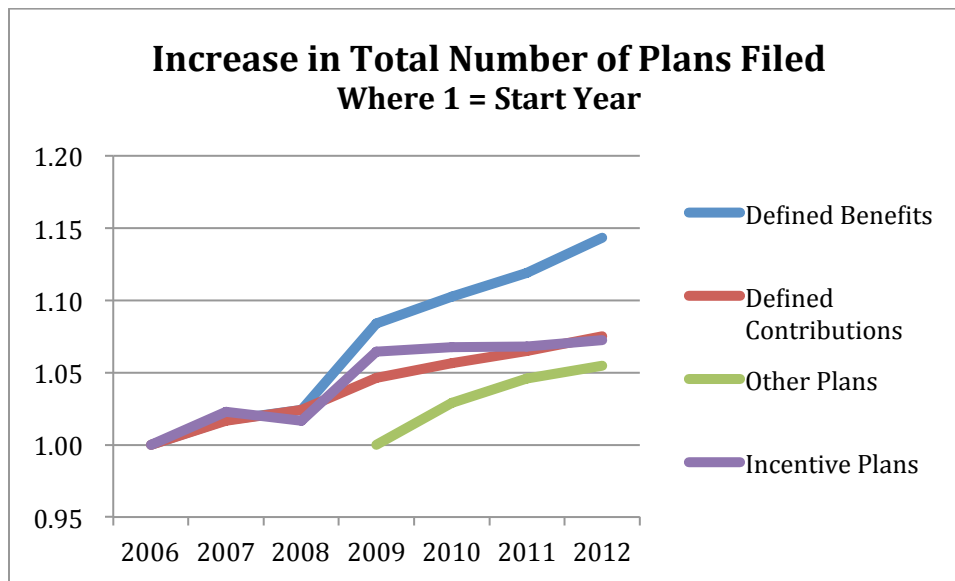


Unfortunately a log scale obscures changes in the number of plans in each category over time. Therefore, the chart below compares the growth in the number of plans filed in each category since the first year of the study (and since 2009 for Other Plans due to changes in filing requirements and definitions in that category³⁰).

²⁹ 'Other Plans', as defined in the Form 5500 filing, are miscellaneous benefits that fall outside of Defined Contributions and Defined Benefits. These specific plans are listed in the tables below as 3B through 3J.

³⁰ For example, filing rules allowed for electronic filing and the use of a new Short Form 5500. Perhaps related to this, the number of filers in our sample that reported Master Plan jumped from 10,737 in 2008 to 272,758 in 2009, while the number reporting Prototype Plan fell from 215,245 to 8,195. We can't simply conclude that filers switched the categories of the same plan because the

Benchmarking from the first year in the study period (where the number of plans by category are set to 1.0 for that year), we can see that Defined Benefits grew the most over the period – by nearly 15%. Note that this does not necessarily mean that these plans are growing because they are ‘popular’ in the positive sense of the word. Some of these Defined Benefit plans, such as Frozen Plans and PBGC Terminated, may indicate that firms filing these plans are undergoing some sort of distress, perhaps due to the general economic downturn over the study period³¹.

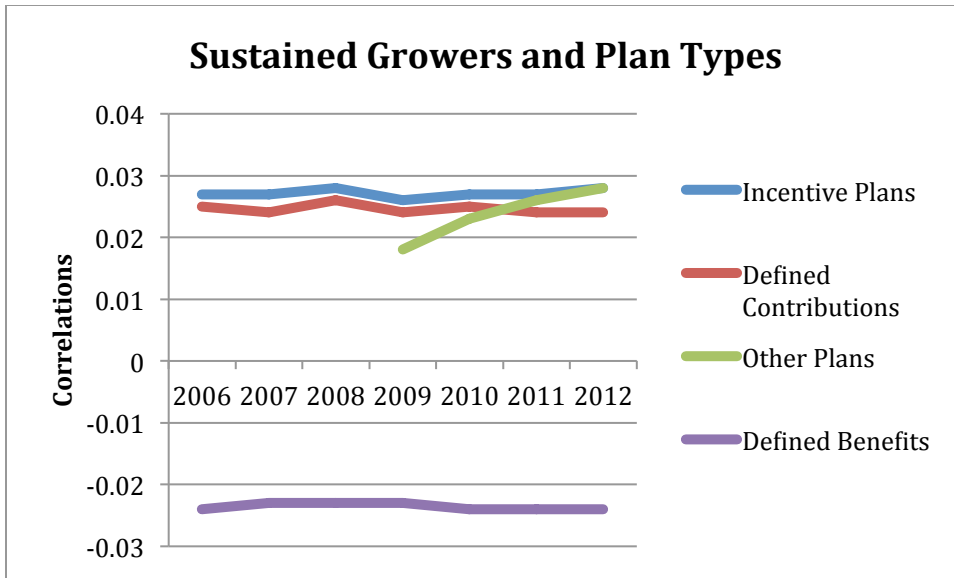


Both Defined Contributions and its subset, Incentive Plans, grew by 7% over the period, where as Other Plans grew by 5% since 2009. While these plans grew in popularity, this does not necessarily imply that they are positively related to sustained growth.

The chart below show the correlations between each of these benefit types and sustained growth companies for both the year prior to the measured 2007-2012 growth period and for each year during that timeframe.

discrepancies in these numbers do not match. In addition, filers stopped reporting Non-US and One Participant Plans in 2009.

³¹ We see more evidence of the recent growth of Frozen Plans and PBGC Terminated plans below.

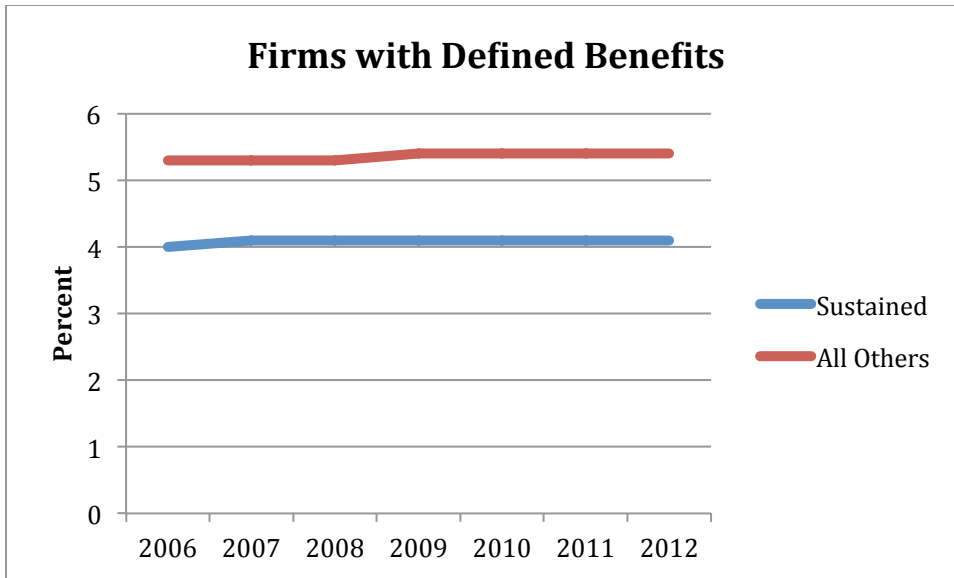


We can see that Defined Contributions and its subset, Incentive Plans, along with Other Plans are positively and statistically significant in their relationship with sustained growers for all years. In contrast, Defined Benefits has a significant negative relationship with sustained growth in all years studied³². The strong correlation with Incentive Plans provides strong support to our theory of a virtuous cycle between employee incentives and sustained growth.

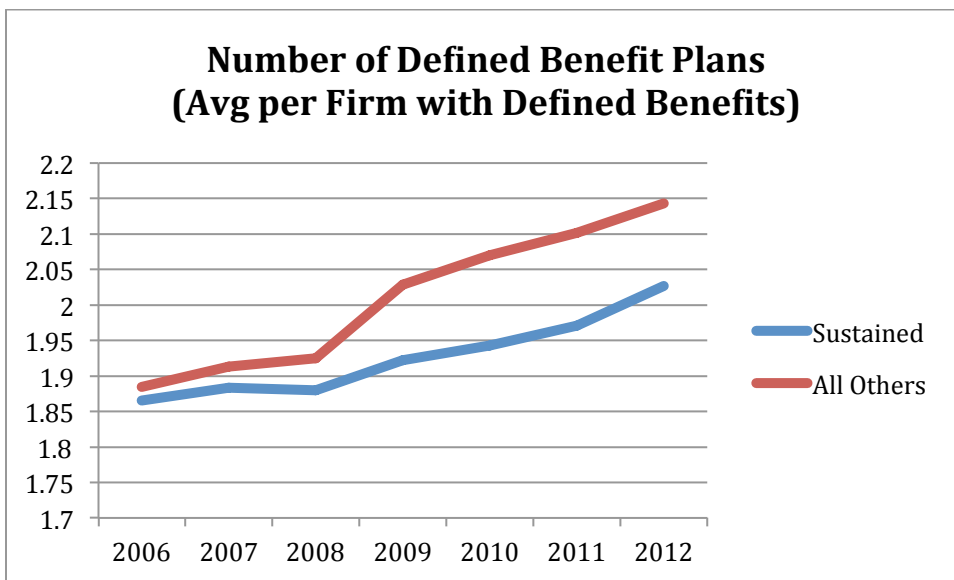
We now look more closely at each of the benefit types, comparing the percent of sustained growers and non-sustained growers ('All Others') that filed these types, as well as the average number of plans that firms filed within each of these types. We look at both these measures because the growth in popularity of a particular benefit type is a function of both new companies filing those plans and additional plans added by those filers.

Non-sustained growers were more likely than sustained growers to have Defined Benefits Plans during the years studied. For example, in 2006 some 4% of sustained growers filed Defined Benefits compared to 5.3% among all other firms.

³² These findings are consistent with the work by Decressin, et al. (2009) although they did not use a sustained growth measurement, as described above.

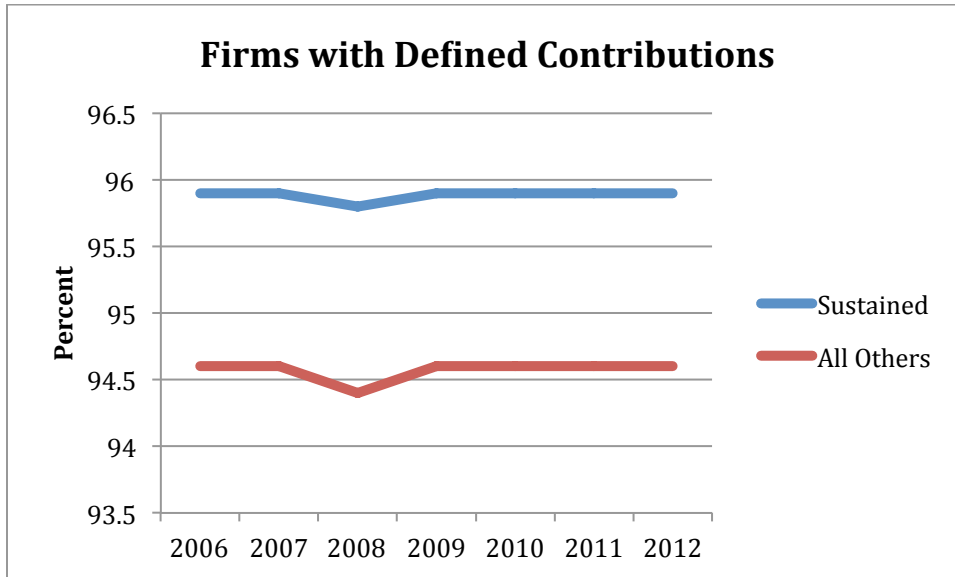


Considering now firms that filed Defined Benefits, the average sustained grower filed 1.87 plans of that type in 2006, growing to 2.0 plans on average by 2012. Other firms filed 1.88 plans on average in 2006, but they grew more than sustained growers, rising to 2.14 plans per firm by 2012. When considering the negative correlation with sustained growers, the higher popularity of these plans with other firms, and their faster growth among non-sustainers, we can infer that Defined Benefit plans are not the best choice for sustained growth businesses. This is consistent with the findings of other studies described in the literature review above that showed a negative relationship between Defined Benefit plans and growth (although growth was measured in different ways).

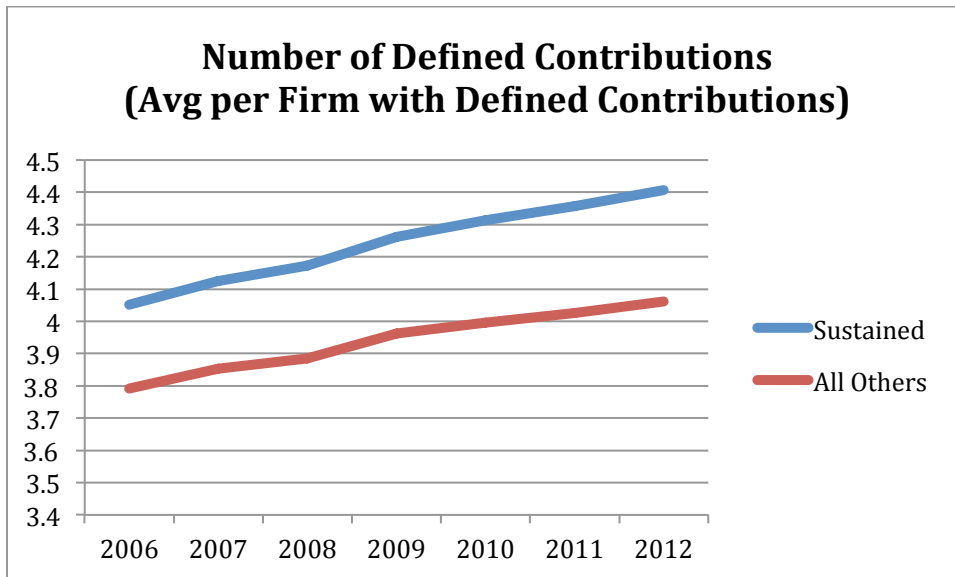


In contrast, Defined Contributions are more popular with sustained growers than with other firms. We can see below that there is about a one and a half percent

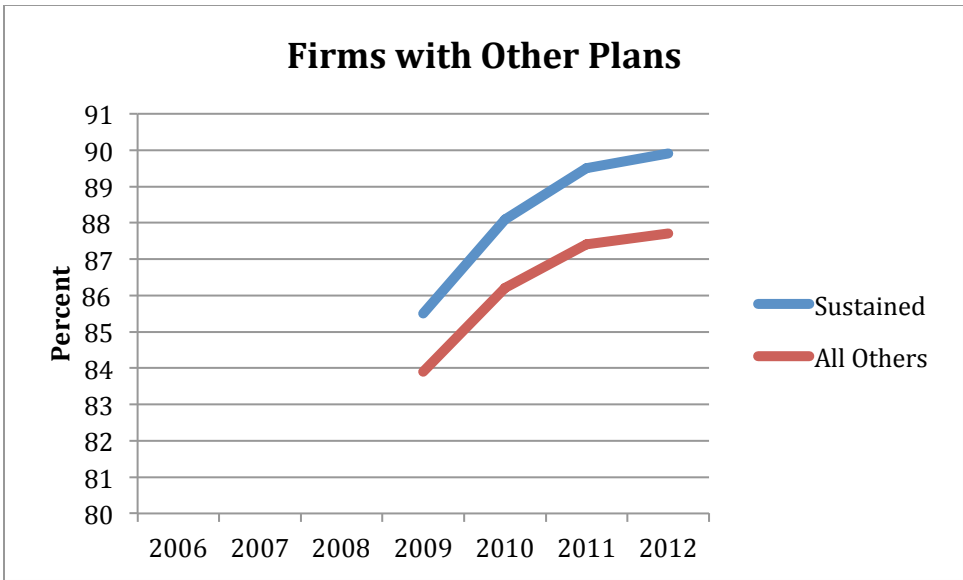
difference in the use of these plans across the two groups for all years studied.



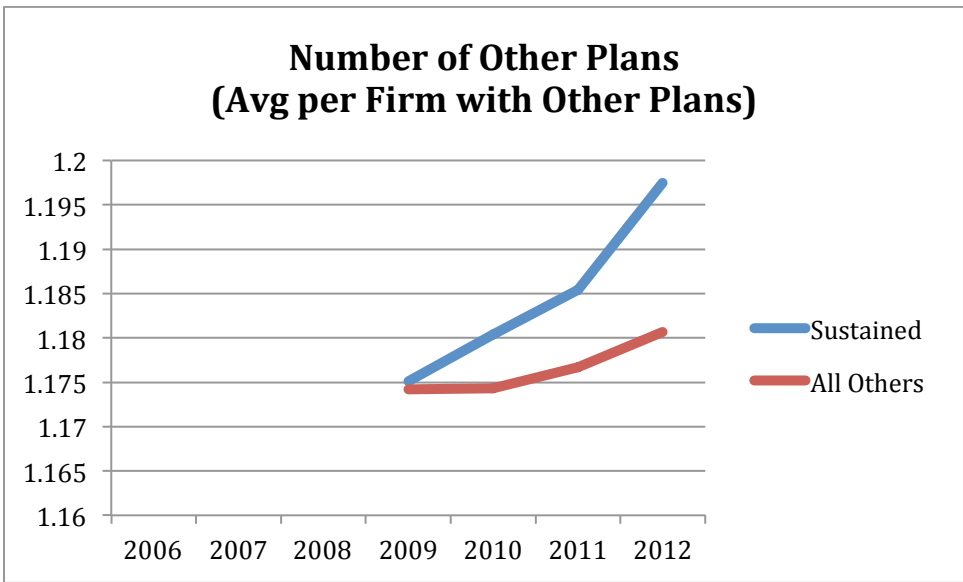
In addition, we find that sustained growers tend to have had more Defined Contribution plans than other firms, and their average number of plans per filer is also higher and rising faster. This, combined with the positive correlation with sustained growers that we observed earlier, implies that Defined Contribution plans are more strongly associated with sustained growth than are Defined Benefit plans. It also suggests that these sustained growers represent an expanding market for new plans from plan providers.



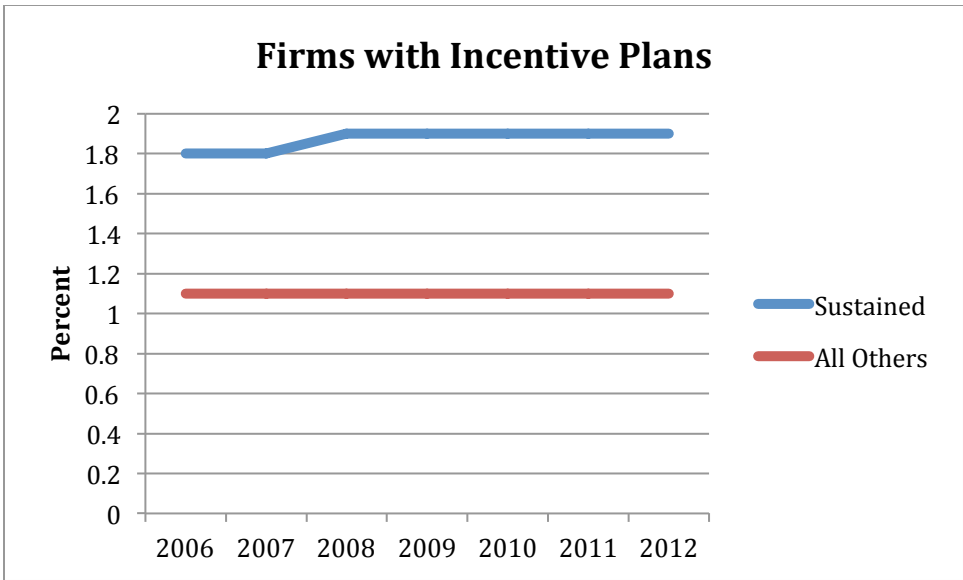
In a similar way, Other Plans are positively correlated with sustained growth firms, as we found earlier, and they are filed by a higher percent of sustained growers than other firms, as shown below



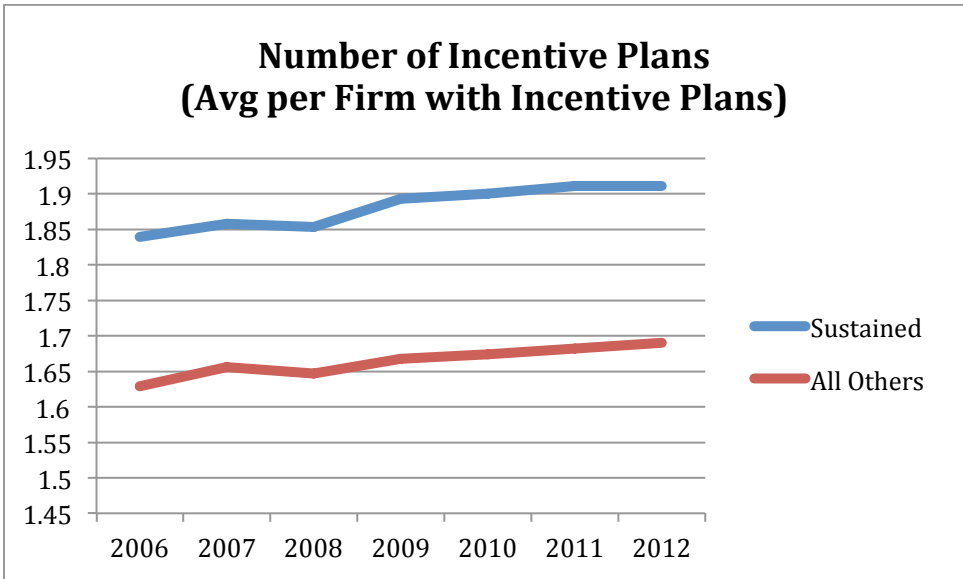
We also find that sustained growers file more Other Plans, on average, than do other firms. In addition, their adoption among sustained growers is also higher, as shown below.



Consistent with our 'virtuous cycle' theory and the literature review, Incentive Plans have the strongest relationship with sustained growth (as shown earlier), and they are also used by a higher percent of sustained growers than other firms.



In addition, more Incentive Plans are also filed by the average sustained grower than by other firms and this growth increases over time.



When we consider this evidence together, we find that Incentive Plans have the strongest relationship with sustained growth, followed closely by Defined Contributions (of which Incentive Plans are a subset) and Other Plans. In sharp contrast, Defined Benefits are negatively related to sustained growers and are more popular with non-sustained growth firms. This evidence is broadly consistent with our expectations that plans that link employee remuneration with firm performance are most likely to increase the odds of sustained growth; and plans that increase the incentive to save and invest with the firm tend to attract employees who are more

likely to stay with the firm for relatively longer periods, which is a necessary but insufficient criteria for the firm to retain the growth knowledge learned by key employees.

Sustained Growth by Specific Plans

We now look at the relationship between specific plans within each plan type and their relationship with sustained growers. The table below lists all of the specific plans evaluated in this study. In the Benefit Plans column, the code and description match the Form 5500. Codes starting in '1' are Defined Benefits; '2' are Defined Contributions; '3' are Other Benefit plans.

Also shown is the number of filers in 2012; the growth of the number of filers from 2006-2012; the percentage of firms in the sample that filed that particular plan in 2012; and the average employee size (total eligible participants) for each plan.

Glancing across the table we can see, for example, that 2E Profit Sharing (one of the plans within the Incentives type) was the most popular plan with 316,005 filers in 2012. It was filed by 90% of companies in the sample. Perhaps because this plan is used by nearly all the companies (i.e. market saturation), there was 0% growth rate in the number of filers from 2006 to 2012. We can also see that the average size of filers with Profit Sharing plan was 160 employees (eligible participants) in 2012.

Benefit Plans	Correlations with Sustained Growers in,		Number of Filers in 2012	% Change 2006-2012	% of Firms In Sample	Mean Filer Size 2012
	2006	2012				
1A: Pay related	-.018**	-.017**	14,259	1%	4%	1,347
1B: Flat dollar	-.020**	-.021**	2,716	0%	1%	3,548
1C: Cash balance	.010**	.013**	2,223	17%	1%	3,822
1D: Offset arrangement	0	0.001	554	-2%	0%	2,025
1E: 401(h)	0.003	.004*	203	4%	0%	19,227
1F: 414(k)	0	-0.002	89	7%	0%	3,110
1G: PBGC covered	-.018**	-.016**	12,479	3%	4%	2,249
1H: PBGC terminated	-.004*	-.004*	106	100%	0%	1,896
1I: Frozen Plan	-.032**	-.048**	5,486	231%	2%	777
2A: Age/service allocation	.027**	.043**	69,751	27%	20%	57
2B: Target benefit	-.009**	-.006**	342	-15%	0%	104
2C: Money purchase	-.024**	-.026**	7,898	-18%	2%	274
2D: Offset plan	0	0.003	585	76%	0%	256
2E: Profit sharing	.020**	.021**	316,005	0%	90%	160
2F: ERISA 404(c)	.047**	.068**	207,922	21%	59%	229
2G: Total part. directed	.057**	.066**	252,732	6%	72%	193
2H: Partial part. directed	-0.002	-0.001	12,598	-14%	4%	393
2I: Stock bonus	.024**	.024**	1,989	2%	1%	1,447
2J: 401(k)	.069**	.082**	269,395	4%	77%	192
2K: 401(m)	.046**	.062**	202,570	6%	58%	233
2L: 403(b)(1)	0	0.003	293	26%	0%	595
2M: 403(b)(7)	0.001	.003*	171	40%	0%	808
2N: 408	-0.003	-0.002	47	31%	0%	40
2O: ESOP	.016**	.014**	2,303	18%	1%	3,953
2P: Leveraged ESOP	.026**	.030**	1,525	-17%	0%	1,318
2Q: ESOP is S-Corp	.025**	.031**	1,610	15%	0%	264
2R: Participant-directed	.005**	.006**	31,948	49%	9%	326
3B: Self-employed	-.034**	-.030**	27,812	8%	8%	47
3C: Non qualified	-.011**	-.012**	1,428	17%	0%	155
3D: Master plan	-.013**	.033**	294,338	2720%	84%	78
3E: Prototype plan	.006**	-.022**	2,017	-99%	1%	16
3F: Regional prototype plan	0.002	.011**	3,224	-4%	1%	3,469
3H: Controlled group	.017**	.043**	36,880	17%	10%	1,150
3I: Employee Securities required	.012**	.020**	1,275	47%	0%	1,970
3J: US-based PR Plan	-0.001	0	173	14%	0%	13,494

N=351,713

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Increasing the Odds of Sustained Growth

We reorder these plans based on the strength of their correlation with sustained growers in the most recent year. In this way we can see that 401k plans have the strongest relationship in 2012, while Frozen Plan and Self-employed have the strongest negative relationship (re: sustained growers are least likely to have this plan)³³.

We can examine which plans gave the greatest boost to sustained growth by evaluating their relationship with sustained growers in the year before the growth period (2006) and then selecting those plans where the correlation rose in power through 2012. These are shown in bold type in the table below.

³³ According to the Pension Rights Center (www.pensionsrights.org), "When a company freezes its pension plan, some or all of the employees covered by the plan stop earning some or all the benefits from the point of the freeze moving forward".

Benefit Plans	Correlations with Sustained Growers in,		Correlation Change
	2006	2012	
2J: 401(k)	0.069	0.082	0.013
2G: Total part. directed	0.057	0.066	0.009
2F: ERISA 404(c)	0.047	0.068	0.021
2K: 401(m)	0.046	0.062	0.016
2A: Age/service allocation	0.027	0.043	0.016
2P: Leveraged ESOP	0.026	0.03	0.004
2Q: ESOP is S-Corp	0.025	0.031	0.006
2I: Stock bonus	0.024	0.024	0
2E: Profit sharing	0.02	0.021	0.001
3H: Controlled group	0.017	0.043	0.026
2O: ESOP	0.016	0.014	-0.002
3I: Employee Securities required	0.012	0.02	0.008
1C: Cash balance	0.01	0.013	0.003
3E: Prototype plan	0.006	-0.022	-0.028
2R: Participant-directed	0.005	0.006	0.001
1E: 401(h)	0.003	0.004	0.001
3F: Regional prototype plan	0.002	0.011	0.009
2M: 403(b)(7)	0.001	0.003	0.002
2D: Offset plan	0	0.003	0.003
2L: 403(b)(1)	0	0.003	0.003
1D: Offset arrangement	0	0.001	0.001
1F: 414(k)	0	-0.002	-0.002
3J: US-based PR Plan	-0.001	0	0.001
2H: Partial part. directed	-0.002	-0.001	0.001
2N: 408	-0.003	-0.002	0.001
1H: PBGC terminated	-0.004	-0.004	0
2B: Target benefit	-0.009	-0.006	0.003
3C: Non qualified	-0.011	-0.012	-0.001
3D: Master plan	-0.013	0.033	0.046
1G: PBGC covered	-0.018	-0.016	0.002
1A: Pay related	-0.018	-0.017	0.001
1B: Flat dollar	-0.02	-0.021	-0.001
2C: Money purchase	-0.024	-0.026	-0.002
1I: Frozen Plan	-0.032	-0.048	-0.016
3B: Self-employed	-0.034	-0.03	0.004

PREDICTIVE MODELS FOR SUSTAINED GROWTH

To maximize the value of our research we need to tie it together into a tool that can help predict whether a firm will achieve sustained growth in the future if it were to add or modify employee benefits offerings.

The predictive models we will test ask whether a firm would have increased its odds of sustained growth from 2007 to 2011 by adding specific plans in 2007, and by knowing just a little about its performance during the year of 2006.

The first step in building a model is to gather a few key indicators of how the firm performed in 2006. Ideally we would have used more years of past performance but we are limited by the years covered in the dataset. The key pieces of information we need to know are:

- If eligible participants grew in 2006;
- If their financial assets invested in plans grew in 2006;
- and how many Judy Diamond Red Flags were given to the firm in 2006³⁴.

We will then calculate the degree to which adding benefit plans with the largest correlation with sustained growth would have actually increased its odds of being a sustained growth firm over the 2007-2012 period and by how much.

To calculate whether a pre-condition (the independent variable) has an impact on the odds of a future outcome (the dependent variable) we use a statistics tool called Binary Logistics Regression. This tool is particularly appropriate when the outcome variable can only have two values, such as 'yes' or 'no', as in the case of whether a firm becomes a sustained growth firm over the next five years or not³⁵.

In our case, the dependent variable is whether a firm became a sustained grower in the 2007-2011 period (yes or no). The independent variables include the three performance indicators for 2006 (described above) as well as the addition of specific benefit plans.

³⁴ According to Judy Diamond's website, Red Flags are included in their Retirement Plan Prospector tool and are based on 401(k) practices that identify the most common problems with those plans. Red Flags are assigned to firms for a variety of reasons that may indicate that the plan is in distress or needs remedial action for reasons such as being in the bottom 10% of employer contributions; the plan was recently terminated; employer contributions have recently been substantially reduced; or the plan has an unusually high average account balance. For more information, please see: <http://www.judydiamond.com/new-judy-diamond-associates-analysis-reveals-the-five-most-common-401k-plan-red-flags/>

³⁵ Logistic regression is also better tool to use than Linear Regression when the distribution of the underlying data is non-linear. As demonstrated in Kunkle (2013), the distribution of firm sustained growth is LaPlace rather than Gaussian, meaning that it displays non-linear patterns similar to 'power laws' with fat tails rather than a 'bell-curve' shape.

We will consider two of the savings plans with the strongest relationship with sustained growth (401k and Total Partial Directed) and two of the best incentive plans (Stock Bonus and Profit Sharing). These, individually, are our additional independent variables.

Savings Plans

Binary Logistics Regression <i>(Simplified Presentation)</i>	Odds Change for Sustained Growth 2007-11		
	Model 1	Model 2	Model 3
Eligible Participation Growth Score, 2006	23%	23%	23%
Financial Asset Growth Score, 2006	16%	17%	16%
Red Flags, 2006	-11%	-11%	-11%
2J: 401(k), 2007	45%		35%
2G: Total part. Directed, 2007		32%	13%

All variables and the models are significant at 0. For more information on these regressions, contact the author.

In the table above we see in dark **blue** letters the independent variables linked to the performance of the firm in 2006. To the right are percent figures that indicate the degree to which the odds of becoming a sustained grower in 2007-2011 change³⁶. For example if the firm expanded its total eligible participants in 2006 the odds increased by 23% for each model. Increasing total financial assets in plans in 2006 increased odds by 16-17%, and for each Judy Diamond Red Flag the odds decreased the odds by 11%.

The individual models show the same variables in blue but add specific plans shown in bold **red**. If a firm had added or already had in place a 401k plan in 2007 its odds of being a sustained grower increased by 45% if that were the only employee benefit plan it had in place. Likewise, having a Total Partial Directed plan in 2006 increased the odds by 32%, again if it were the only plan in place. However, we see in Model 3 that when a firm had both plans in place, the impact on the odds for each plan decreased somewhat for each plan (e.g. 401k went from 45% to 35%) but the total amount of odds increase by having both plans was still higher than having either plan in place by itself (35+13 = 48 which is > 45 or 32).

Overall, these savings models tells us:

- If the firm expanded eligible participants and/or financial assets, their odds of being a sustained grower over the next five years increased;
- If the firm had any Judy Diamond Red Flags their odds decreased;
- Adding 401k plans alone increase odds by 45% and adding Total Partial Directed plans alone increased the odds by 32%
- Adding multiple savings plans such as these further increase the odds of

³⁶ The base odds that a randomly selected firm from our sample would be a sustained grower is approximately 1-to-4, since 21% of the firms in the sample were sustained growers over the study period. These tables show how each considered variable changes those base odds.

sustained growth but the individual impact of each plan was somewhat reduced if these were the only plans on offer to employees.

Next we look at two of the incentive plans with the strongest relationship with sustained growth.

Incentive Plans

Binary Logistics Regression (Simplified Presentation)	Odds Change for Sustained Growth 2007-11		
	Model 4	Model 5	Model 6
Eligible Participation Growth Score, 2006	24%	24%	23%
Financial Asset Growth Score, 2006	19%	18%	19%
Red Flags, 2006	-12%	-12%	-12%
2I: Stock Bonus, 2007	108%		134%
2E: Profit Sharing, 2007		13%	18%

All variables and the models are significant at 0.

The table above shows that having a Stock Bonus plan in place in 2007 increased the odds of being a sustained grower by 108%, effectively doubling its odds just by adding that one plan! Profit Sharing has a positive but much weaker impact at just 13% when it's the only plan on offer.

Unlike our observation with savings plans earlier, we can see in the table above that the impact of each incentive plan actually strengthens with they are combined. For example, the odds for Stock Bonus increase from 108% to 134% when added together with a Profit Sharing plan.

Overall, these models tells us:

- If the firm added only a Stock Bonus plan in 2007 its odds of being a sustained grower over the 2007-2011 period more than doubled;
- By adding a Profit Sharing plans by itself increased the odds by 13%;
- Adding additional incentive related plans actually increases the odds contribution of each individual plan. In other words, more appears better than fewer, when it comes to incentive plans if such plans are the only benefits a firm offers.

Now we mix things up a bit. We include in our next set of models both savings and incentive related plans, as shown in the table below. Then we refine down to a model with the optimal combination of plans resulting in the highest total odds for sustained growth.

Mixed: Savings and Incentives

Binary Logistics Regression (Simplified Presentation)	Odds Change for Sustained Growth 2007-11		
	Model 7	Model 8	Model 9
Eligible Participation Growth Score, 2006	22%	22%	22%
Financial Asset Growth Score, 2006	16%	16%	16%
Red Flags, 2006	-11%	-11%	-11%
2J: 401(k), 2007	41%	37%	48%
2G: Total part. Directed, 2007	15%	14%	
2I: Stock Bonus, 2007	155%	171%	161%
2E: Profit Sharing, 2007	-11%		

All variables and the models are significant at 0.

Model 7 above combines both the savings and incentive plans. If we compare with the previous tables we see that when all plan are included, their individual odds impacts are less than when they are considered separately (e.g. 401k changes from 45% to 41%), with the strong exception of Stock Bonus which increases from 108% to 155%. Interestingly, the odds impact of Profit Sharing goes from positive to negative³⁷

When we remove Profit Sharing in Model 8 we see a decrease in the impact of the savings plans but a rather large increase in the odds impact of Stock Bonus, from 155% to 171%. This model has the highest sum of odds increases of any model tested (37 + 14 + 171 = 222). Thus, regardless of how the firm scored on the variables in the top box (i.e. Eligible Participant and Financial Asset Growth Scores, and Red Flags), if they had the three plans in place as shown in Model 8 in 2006 their odds of becoming a sustained growth firm over the next five years would have increased from roughly 1-to-4 (the base odds) to more than 3-to-4.

Model 9 picks the best performers of the two groups: 401k representing savings plans and Stock Bonus representing incentive plans. In both cases, the impacts on the odds are higher when combined together than they are when offered singularly (45% to 48% for 401k, and 108% to 161% for Stock Bonus)

Overall, these models tell us that **the optimal mix of employee benefit plans encourages savings for all employees as well as incentives that are linked to firm performance for management.** These tools could be used to help firms find the combination of plans that maximize their odds of future sustained growth.

These are simple model structures. Additional variables can be added that would likely increase the predictive power (such as longer past performance data), making it a practical tool for the identification of firms with the highest probability of future

³⁷ This may reflect some sort of saturation in the impact of benefits on firm performance, particularly among non-management employees. While Stock Bonus plans tend to be targeted towards management, Profit Sharing and the two savings plans tend to be offered to most or all workers.

sustained growth³⁸. This can be useful for advising business owners on which combinations of benefit plans would maximize their odds of future sustained growth. It could also be helpful for targeted outreach and marketing activities by investors, B2B firms, and economic developers.

³⁸ In my previous study I radically increased the odds of predicting future sustained growth by knowing the growth of the past five years, rather than just one year as is used here. The data in this study does not allow that, but in a real-life scenario for 2015, for example, that information could be collected from a company or we can use Judy Diamond records of the past five years and thus increase the predictive power of these models.

CONCLUSIONS

We have found that most employee benefits are linked to sustained firm growth in some way. Most plans that encourage savings and provide individual and group incentives tied to firm performance have a strong positive relationship with sustained growth; others, particularly traditional defined benefits, are negatively related; and some have no measurable relationship at all.

Sustained growth companies experience substantially higher growth in the number of active participants in benefit plans, the amount of financial assets invested in plans, and the amount of annual total contributions to plans when compared with other firms. They also add more Defined Contributions plans, Incentive plans, and Other Plans, and have a higher percent of contributions attributed to investment by employers than do non-sustained growth firms, perhaps to encourage employee retention.

We also found that we can dramatically improve our predictions of which firms will enjoy sustained growth in the future by knowing just a little about their recent growth history and by adding specific benefit plans. When offered alone, 401k plans increase the odds of sustained growth by 45% and Stock Bonus plans by 108%. When offered together, 401k plans increase the odds by 48% and Stock Bonus plans by 161%. This implies that the strongest combination of benefit plans encourage savings by employees with the firm and provide incentives matched to firm performance for management. It also raises the odds of sustained growth from approximately 1-to-4 to 3-to-4, without considering any other firm related variables. These tools could be used to help firms find the combination of plans that maximize their odds of future sustained growth

This research is broadly compatible with the published work of NIBR and other academic teams. We have extended the general understanding of links between employee benefits and firm growth by 1) using a new outcome measure focused on the ability of firms to repeat growth over time; 2) investigating the relationship between benefits and growth at the individual plan level rather than just at the category level such as Defined Contributions and Defined Benefits; and 3) measuring how a firm can increase their odds of future sustained growth by adding new benefit plans that have strong positive correlations with sustained growth.

Perhaps our most important contribution is proposing the theory of a 'virtuous growth cycle' between employee benefits/incentives and sustained firm growth. We believe our research, combined with other peer-review and fieldwork, supports the idea that firms perpetuate growth by using incentives that both encourage employee savings and higher employee efforts towards supporting firm growth. This, in turn, stimulates growth which reinforces learning of best growth practices among employees and teams, helps retain talented employees, and enables the firm to afford new levels of incentives, which ultimately increases the odds that the firm will grow again.

There are a number of practical implications of our findings:

Owners and managers: Firms can increase their odds of survival and repeated growth by implementing new employee benefits, particularly those that encourage savings and link incentives to firm performance for management. They should also examine their HR practices to ensure that they encourage greater team efforts towards growth. This will increase the retention of institutional talent that has learned growth practices and thus set the stage for future growth.

B2B suppliers: Sustained growth companies offer the prospects of greater lifetime value than other companies because they are more likely to survive and expand their demand for goods and services. Providers of employee benefit plans in particular will find that sustained growth firms offer greater opportunities to sell more plans that will be funded at higher levels than at other firms.

Public Policy: Encouraging firms to adopt new benefits and incentive plans will likely boost the number and concentration of firms in their region that experience sustained growth. This could be accomplished through creative public awareness efforts as well as legislative and tax incentive initiatives. This will likely result in raising regional employment, average incomes, and the tax base, along with other positive social externalities.

We believe that it is imperative that further research is pursued regarding the links between employee benefits/incentives and sustained firm growth. In addition to finer measurement of these relationships, we also believe it is important to further investigate the impact that these links have on regional outcomes such as employment, income, and tax base growth, and firm outcomes such as employee turnover and productivity, and firm market-share, profits, and valuation – to name just a few topics. We also think it is important that future research guide elected leaders and economic developers towards specific initiatives that will spur more sustained growth at firms located in their regions. In this way, the positive link between employee benefits/incentives and sustained growth will expand the benefits across the economy to more workers, firms, investors, and communities.

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